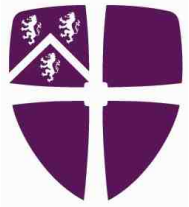
SANITATION INTERVENTIONS IN THE URBAN INFORMAL SETTLEMENTS OF BANGLADESH: THE ROLE OF GOVERNMENT, NGOs AND THE GRASSROOTS

RAHMAN, MD.,MIZANUR

SANITATION INTERVENTIONS IN THE URBAN INFORMAL SETTLEMENTS OF BANGLADESH: THE ROLE OF GOVERNMENT, NGOs AND THE GRASSROOTS



Thesis Submitted for the Degree of
Doctor of Philosophy

By

Md. Mizanur Rahman

Department of Geography
Durham University

July 2012

DECLARATION

I hereby declare that this thesis entitled "Sanitation Interventions in the Urban Informal Settlements of Bangladesh: The Role of Government, NGOs and the Grassroots", submitted by me to the Durham University, UK for the Degree of Doctor of Philosophy is a bona fide record of research work carried out by me under the supervision of Professor Peter J. Atkins and Dr. Colin McFarlane. The contents of this thesis, in full or in parts, have not been submitted by me to any other university or academic institution for the award of any degree or diploma. In all cases material from the work of others has been acknowledged and quotations and paraphrases suitably indicated.

.....

(Md. Mizanur Rahman)

July 2012

STATEMENT OF COPYRIGHT

.....

(Md. Mizanur Rahman)

July 2012

ABSTRACT

The Bangladeshi capital, Dhaka, is the world's fastest growing primate city, having nearly 15 million people and approximately 6 million living in slum areas. Their high population density and growth rates, coupled with inadequate and inappropriate water and sanitation (WatSan) facilities, are creating social, economic and environmental effects. Until recently, several attempts have been made to provide infrastructure services to those slums. But the extent of the services is unsatisfactory due to resource constraints and a burdensome concentration of slums that contaminates the city ecology on a broad-spectrum. In consequence, the trend of development ventures through government (GO) and non-government organizations (NGO) is not only disappointing but also questionable due to disastrous project histories. The complex social dynamics of these informal settlements, together with inappropriate or inadequate WatSan facilities and incompetent governance systems obstruct the pace of sanitation interventions. Apart from this, Bangladesh has succumbed to political indiscretion and bureaucratic intemperance which have severely diminished the capacity of the GOs and NGOs to perform at a reasonable level. The result is all round deterioration in the quality and adequacy of the urban basic services and people of the informal settlements are the worst sufferers. It is widely recognized that the poor communities mostly have no proven demand for improved sanitation facilities, as their basic priority, rather, is managing their next meal. In this situation, some NGOs have come forward with their 'flexible' and 'tailor-made' working strategies developed from previous project experiences whereas government agencies are more geared to 'facilitation' and continue with their 'supply-driven' strategy, ignoring criticisms and pitfalls. As one of the most dysfunctional sectors in Bangladesh, urban sanitation is traumatized and its coverage is affected by several interconnecting factors while the government continues to bypass questions related to slum improvement arguing that the slums are illegal settlements and do not qualify for government services. Several NGOs have come forward to work in the urban sanitation sector and in most instances, the poor slum-dwellers have appreciated the NGOs' participatory working strategies. In fact the dynamics of the 'social-technological-governance' system of the slum areas often determines the success of sanitation interventions.

In this research, the vibrant dynamics of 'social-technological-governance' systems and the roles of GO-NGO service providers and beneficiaries in the selected slums are critically analysed through a qualitative methodology and a bottom-up approach that has the potential to identify inherent policy weaknesses and factors that facilitate or hinder the successful implementation of sanitation programmes. This research is entirely based on empirical evidences and the qualitative assessment of field data that were collected from five informal settlements of Dhaka city and associated GO-NGO sources. The outcome of this research suggests that the impacting factors are not equally weighted in WatSan projects as some could be defined as crucial and influencing factors that shape other interrelated factors. In order to smoothen the pathways of different WatSan projects it is necessary to carefully identify and restrict those problem-breeding factors on a priority basis. This research also describes different stakeholders' practices and links with existing policies to identify the gaps between them. Here, the proposals are made for reality-based, short-term and long-term solutions and policy recommendations that might offer guidelines for addressing the overwhelming slum sanitation agenda in urban Bangladesh.

ACKNOWLEDGEMENT

Carrying out a Ph.D seems like a journey through a long tunnel, step by step, escorted with hardships, disappointment, resentment, encouragement, trust, happiness, achievement and many people's kind supports and cooperation. At the end of this journey, when I saw light at the end of this tunnel, I realised that it was, in fact, result of a team work that took me there. I owe my deep gratitude to all those keen hearted people who have helped me to make this laborious journey possible.

In preparing this thesis, firstly, I would like to express my deepest debts of gratitude to both of my supervisors in the Geography Department of Durham University. I could never have completed this work without help from Professor Peter J. Atkins and Dr. Colin McFarlane, whose generous and continuous guidance, supervision and precious advice always kept my bewildered thoughts towards an appropriate focus. I extend my sincere gratitude to Professor Peter J. Atkins for his unhesitating support, advice, encouragement, care as well as thoughtful reading, timely comments and critiques in the early drafts at different stages have been an outstanding factor in completion of this thesis. I would like to acknowledge his unfailing cooperation and help both in my postgraduate career and family life. I am indebted also to Dr. Colin McFarlane who has provided his careful thoughts, ideas, advices regarding contemporary concepts and feedbacks in my early drafts have enabled me to sharpen my ideas and helped me to develop the organization of this thesis. I would like to express my special thanks to Dr. Sarah Atkinson and Dr. Marcus Power for their valuable comments and feedbacks in my early progression paper. I would like to acknowledge the financial, academic and technical support of the Geography Department of Durham University and its staff especially to Ms. Veronica Crooks for her continuous and prompt administrative support throughout the whole period.

I am grateful to Professor Manzurul Hassan and Professor K.M. Shariful Huda, Department of Geography and Environment, Jahangirnagar University, Bangladesh for encouraging me in my research. I am thankful to Professor Mesbah-us-Saleheen, an evergreen personality of the Geography and Environment Department of Jahangirnagar University, for his ever-smiling encouragement, unconditional support and blessing.

I am indebted to my friend Anowar Kamal, Executive Director of UST for providing me his valuable support especially during my fieldwork planning, organizing links and contacts, scrutinize relevant data and active support throughout my fieldwork. I am also grateful to several DSK official Mr. Ronjit, Mr. Akhil, Mr. Hakim and several UPPR project personnel Mr. Nazrul Islam, Mr. Shapon for their kind support and help that enabled me to work in those slum areas. My especial gratitude to all of the slum dwellers who gave me their time and shared their everyday lives which are the central ingredients of this research. I would like to thank to many personnel from different GO-NGO and other relevant organizations. Among many I could mention some names are: DCC, DPHE, LGED, DWASA, UDD, BBS, DSK, UST, NGO Forum, PSTC, WaterAid, Plan International, UNICEF, BRAC, ICDDRB, ITN-Bangladesh and CUS. My thanks are also due to my research assistants Mukta and Sajid for the way they have worked with me in the course of this research.

My time at Durham was made enjoyable in large part due to the many friends and groups that became a part of my life. I am grateful for time spent with them. I would like to thank all of my family members for all their love and encouragement. For my parents and mother-in-law who raised me with unconditional love and supported me in all my pursuits. Most of all for my loving, supportive, encouraging, and patient wife (Rezwana Anwar) and son (Rafsan Rahman Raayan) whose faithful support and blessing during this Ph.D is so appreciated. Thank you all.

I gratefully acknowledge the funding sources that made my Ph.D work possible. I was funded by the Association of Commonwealth Universities (ACU) under the Commonwealth Scholarship which was administered by the British Council. In addition, I am grateful to the Charles Wallace Trust, Sidney Perry Foundation, Muslim Aid, Bestway Foundation, CISN Hardship Fund, Gilchrist Educational Trust, Hammond Trust and Geography Department Hardship Fund for their financial support for my fieldwork and for completion the thesis. Finally, I bow my head in gratitude to almighty Allah, who blessed me with the ability and energy to complete this work.

Md. Mizanur Rahman
July 2012

TABLE OF CONTENTS

Declaration	... ...	... ...	... ...	II
Statement of Copyright	... ...	... ...	... ...	III
Abstract	... ...	... ...	... ...	IV
Acknowledgement	... ...	... ...	... ...	V
Table of Contents	... ...	... ...	... ...	VI
List of Figures	... ...	... ...	... ...	XI
List of Tables	... ...	... ...	... ...	XIII
List of Boxes	... ...	... ...	... ...	XIII
List of Abbreviations	... ...	... ...	... ...	XIV

Chapter One
General Description, Aim and Objectives **1-24**

1.1	Introduction	... ...	1
1.2	Statement of the Problem	... ...	2
1.3	Sanitation in Bangladesh	... ...	6
	1.3.1 Sanitation Approaches	... ...	6
	1.3.2 Institutional Framework	... ...	7
	1.3.3 Quality and Scope of Sanitation Data	... ...	8
1.4	Sanitation in Dhaka: Background and Contexts	... ...	10
1.5	Sanitation in World's Cities	... ...	11
	1.5.1 Africa	... ...	12
	1.5.2 Latin America and the Caribbean	... ...	13
	1.5.3 Asia	... ...	14
1.6	Ring Fence/Scope of this Research	... ...	15
	1.6.1 Sanitation: Definition and Scope	... ...	15
	1.6.2 Dhaka City: Concentration of Poor and Poverty	... ...	16
	1.6.3 Inadequate Sanitation: Consequences, Risks and Vulnerabilities	... ...	19
1.7	Aim and Objectives	... ...	20
1.8	Justification of this Research	... ...	22
1.9	Organization of the Research	... ...	23
1.10	Conclusion	... ...	23

Chapter Two
Literature Review and Conceptual Framework **25-55**

2.1	Introduction	... ...	25
2.2	Sanitation: Linkage across Disciplines	... ...	26
2.3	Sanitation: Theory, Practice and the Issue of Generalization	... ...	27

2.4	Theoretical Framework and Analytical Agenda		
	The Social-Technological-Governance Systems	... ...	29
2.5	Social Dynamics and Sanitation: A Theoretical Discussion	... ...	30
	2.5.1 The Setting	... ...	30
	2.5.2 Knowledge, Realities and Taboos	... ...	32
	2.5.3 Sanitation and People's Participation	... ...	34
	2.5.4 Sanitation, Hygiene and Public Health	... ...	37
2.6	Sanitation Technology and Sustainability: A Central Discourse	... ...	40
2.7	Governance: Global, State and Local	... ...	42
	2.7.1 Global Attentions	... ...	43
	2.7.2 National Initiatives	... ...	44
	2.7.3 Local Responses and Actions	... ...	46
	2.7.4 Political Economy	... ...	47
	2.7.5 Political Ecology	... ...	48
2.8	Women and Sanitation	... ...	50
2.9	Service Provisions and Existing Debates	... ...	51
2.10	Sanitation: People's Priority and Position in the Development Sector	... ...	52
2.11	Research Gap	... ...	54
2.12	Conclusion	... ...	55

Chapter Three
Data and Methodology **56-87**

3.1	Introduction	... ...	56
3.2	Approaches to Study Area Selection	... ...	57
3.3	Methodological Approaches: Quantitative vs. Qualitative	... ...	60
3.4	Qualitative Methodology	... ...	62
3.5	Gaining Community Trust: My Positionality and Ethical Issues	... ...	63
3.6	Field Survey Plan	... ...	65
	3.6.1 Survey Methods	... ...	66
	3.6.2 Sampling Procedures and Selecting Suitable Respondents	... ...	67
	3.6.3 Survey Language and Settings	... ...	70
	3.6.4 Formation of Research Team	... ...	70
	3.6.5 Data Capturing and Documentation Technique	... ...	71
	3.6.6 Personal Safety	... ...	72
	3.6.7 Pilot Survey	... ...	72
3.7	Data Collection Procedures	... ...	73
	3.7.1 Participant Observation	... ...	73
	3.7.2 In-depth Interviews	... ...	74
	3.7.3 Focus-Group Discussion	... ...	76
	3.7.4 Round Table Discussions	... ...	78
3.8	Methods of Data Analysis	... ...	79
	3.8.1 Transcription	... ...	79
	3.8.2 Ethnographic Representation	... ...	80

3.8.3 Qualitative Content Analysis 80
3.8.4 Narrative Approach 81
3.8.5 Grounded Theory Approach 82
3.9 Challenges Faced During Fieldwork 84
3.9.1 Planning Phase 84
3.9.2 Data Collection Phase 85
3.9.3 Data Analysis Phase 86
3.9.4 An Unforgettable Event 86
3.10 Opportunities During the Fieldwork 86
3.11 Conclusion 87

Chapter Four
Study Areas and Project Features **88-107**

4.1 Introduction 88
4.2 Description of the Study Areas and their Ecologies 89
4.2.1 Gulshan City Colony 89
4.2.2 Mohammadpur City Colony 92
4.2.3 Bagan Bari 95
4.2.4 Begun Tila 98
4.2.5 Kamar Para 100
4.3 Sanitation Service Providers in the Study Areas 103
4.3.1 Description of the Government Projects: DCC 103
4.3.2 Description of the NGO Projects: DSK 105
4.4 Conclusion 107

Chapter Five
Society, Neighbourhood and Sanitation **108-133**

5.1 Introduction 108
5.2 General Household Characteristics 109
5.3 Residential Status 111
5.4 Law and Order Situation 113
5.5 Dimensions of Power Relations 114
5.6 Society and Neighbourhood: A Complex Place to Act 117
5.7 Poverty and Dependence 118
5.8 Demands and Realities 120
5.9 Access to WatSan Facilities and Community Practices 122
5.9.1 WatSan Facilities and Societal Confrontation 122
5.9.2 WatSan Facilities and Enviousness 126
5.9.3 WatSan Facilities and Hygiene Behaviour 127
5.10 Dimensions of Knowledge 129
5.11 Occupational Status and Responsiveness 130
5.12 Conclusion 132

Chapter Six
Sanitation Technology: Suitability and Responses **134-161**

6.1 Introduction 134
6.2 Sanitation Technology and Community Perception 135
6.3 Access and State of Sanitation Facilities 138
6.4 Demand and Preference 139
6.5 Acceptance and Levels of Satisfaction 141
6.5.1 Queues and Waiting Time 142
6.5.2 Convenience 143
6.5.3 Odour 146
6.5.4 Durability and Robustness 147
6.5.5 Aesthetics 149
6.6 Maintenance 150
6.7 Gender and Technology 152
6.8 Technology and Cost 153
6.9 Technology and Human Health 155
6.10 Technology and Environment 156
6.11 What Works and Why? 158
6.12 Conclusion 160

Chapter Seven
Governance Systems and Sanitation **162-188**

7.1 Introduction 162
7.2 Concept of Governance 163
7.2.1 Social Governance 164
7.2.2 Technological Governance 164
7.2.3 Institutional Governance 164
7.3 GO-NGO Activities 164
7.3.1 Project Location: Target and Selection 165
7.3.2 Organizational Structure and Public Relations 167
7.3.3 Governing the WatSan Services 169
7.4 CBO Activities: Governing the Governance 171
7.5 Community Practices: The Bottom-line Governance 173
7.6 Grassroots Participation: A Range of Reactions 176
7.7 State of Coordination between Agencies 179
7.8 Role of Political Leaders and Parties 181
7.9 State of Transparency, Accountability and Corruption 182
7.10 Women and Governance 184
7.11 Willingness to Pay 186
7.12 Conclusion 188

Chapter Eight
Actors, Policies and Practices: Gaps and Remedies **189-210**

8.1 Introduction 189
8.2 Urban Poor and Policy Dimensions 190
8.3 Actors in the Sanitation Sector: Policy and Politics 191
8.3.1 Donor Policy and Politics 191
8.3.2 NGO Policy and Politics 192
8.3.3 Government Policy and Politics 193
8.4 Sanitation Policy and Strategy: Issues and Critiques 194
8.4.1 'Paper Work' vs. 'Development Activities' 195
8.4.2 Metropolitan Cities: A Victim of 'Favouritism' 197
8.4.3 Land Tenure and Service Provisions 199
8.4.4 'Sanitization' vs. 'Latrinization' 200
8.4.5 'Low-cost Technology' vs. 'Appropriate Technology' 202
8.4.6 State of Coordination between Stakeholders 203
8.4.7 Finance, Corruption and Transparency 205
8.4.8 Sectoral Priority 206
8.5 Current Situation and Future Directions 208
8.6 Conclusion 209

Chapter Nine
Summary and Conclusion:
Options for Target Achievement and Recommendations **211-225**

9.1 Introduction 211
9.2 Facilitating Factors: Fuels for Ignition 212
9.3 Land Tenure: A Central Concern 213
9.4 Operation and Maintenance: Fragments Social Strength 215
9.5 Good Governance: Shield against Failure 216
9.6 Technology: A Silent Victim 217
9.7 A New Direction: 'More for Some' 218
9.8 Recommendations 220
9.9 Avenues of further Research 223
9.10 Conclusion 225

References **226-253**
Annexes **254-265**

LIST OF FIGURES

Figure No.	Title		Page
1.1	Location of Dhaka city in Bangladesh	... ...	2
1.2	Location of slums in Dhaka city	... ...	3
1.3	Photographs showing unhealthy surroundings and practices in slums	... ...	4
1.4	Trend in sanitation coverage 1990-2015	... ...	9
1.5	Photograph showing the blackish water of the river Buriganga	... ...	10
1.6	Worldwide use of improved sanitation facilities in 2008	... ...	11
1.7	The North-South divide	... ...	12
1.8	Progress towards meeting the MDG sanitation target in South Asia	... ...	15
1.9	Photograph showing the flood levels in 2009 in two study areas	... ...	17
1.10	Relationship between depth of tubewell and travel time of microorganisms	... ...	19
2.1	Input-throughput-output model	... ...	29
2.2	A visual impression of a slum in Dhaka	... ...	30
2.3	A single room for all the family members	... ...	30
2.4	Road and walls are acting as physical barriers to hide slum areas	... ...	32
2.5	Photograph showing advertisement for local yellow-fever treatment through *'Jhar-Fuk'* and *'Kabirazi'*	... ...	34
2.6	Preferable latrine and urinal options in Bangladesh	... ...	41
2.7	Global framework for action in the water and sanitation sector	... ...	43
2.8	Photographs showing the unequal development of urban spaces	... ...	49
2.9	An interpretation of Maslow's hierarchy of needs, represented as a pyramid	... ...	53
3.1	Location of study areas in Dhaka city	... ...	59
3.2	Process of selection of the study areas	... ...	60
3.3	Field official's role in initial introducing session	... ...	64
3.4	Refreshments served during FGD sessions	... ...	65
3.5	Interview session with different target groups	... ...	69
3.6	(Fe)male research assistants interviewing (Fe)male respondents respectively	... ...	71
3.7	Participant observation through informal discussions	... ...	73
3.8	In-depth interview sessions with slum residents and GO-NGO personnel	... ...	75
3.9	Male and Female FGD sessions in the study areas	... ...	77
3.10	Round table discussion sessions	... ...	78
4.1	Location of GCC and MCC in Dhaka city	... ...	90
4.2	Photograph showing overall scenario of GCC	... ...	91
4.3	Photograph showing overall scenario of MCC	... ...	93
4.4	Location of Bagan Bari in Dhaka city	... ...	95
4.5	Photograph showing overall scenario of BB	... ...	96
4.6	Location of Begun Tila in Dhaka city	... ...	98

Figure No. and Title **Page**

4.7	Photograph showing overall scenario of BT	... ...	99
4.8	Location of Kamar Par in Dhaka city	... ...	101
4.9	Photograph showing overall scenario of KP	... ...	102
5.1	A part of *'Bede'* residents evicted in late 2009 by landowner to build their residential structure	... ...	112
5.2	Emotional Monua and her empty goat firm	... ...	114
5.3	Absence of water source inside the latrine	... ...	121
5.4	Usual scenario at the water point every morning	... ...	123
5.5	Waste disposal and urination practice underneath elevated houses	... ...	125
5.6	Abdul delivering their community concerns in a national forum	... ...	127
5.7	A quick demonstration of fingernails during the FGD in BB	... ...	128
5.8	General waste disposal practices in the study areas	... ...	129
5.9	Visible dirt and unhygienic practice of household water storage	... ...	129
6.1	Different types and design of latrines in the study areas	... ...	135
6.2	Photograph showing a broken pipeline of STL and exposed faecal material in MCC	... ...	136
6.3	Condition of drains in BT	... ...	139
6.4	State of latrine superstructure, tubewells and water quality in GCC	... ...	142
6.5	A child waiting for latrine use	... ...	143
6.6	Overhead water storage tank in BT	... ...	144
6.7	A typical scenario of water point during the day	... ...	144
6.8	Water supply arrangement to water points in BB	... ...	148
6.9	Organic waste disposal facility in BT	... ...	148
6.10	General state of adjacent WatSan infrastructure area in the study areas	... ...	149
6.11	A handmade latrine with locally available materials	... ...	151
6.12	Communal water storage facility	... ...	153
6.13	The Sanitation Ladder	... ...	155
6.14	Skin diseases amongst children	... ...	156
7.1	Issues considered for the selection of DSK project locations	... ...	165
7.2	Evidence of early failure of sanitation infrastructure	... ...	168
7.3	Practice of lock and key strategy in BT and MCC	... ...	170
7.4	Social maps for BB, BT, MCC and GCC	... ...	173
7.5	Road digging: A symbol of non-coordination	... ...	180
8.1	Bangladesh framework model for sanitation improvement	... ...	196
9.1	Posters and cards as one of the effective motivational strategies of DSK	... ...	213
9.2	Perceptions of slums by slum dwellers	... ...	214

LIST OF TABLES

Table No.	Title	Page
2.1	Main issues and associated options in the sanitation sector	28
3.1	Name of the service provider organizations, study areas and their theoretical characteristics	60
3.2	Sampling methods in this research and reason for choosing those methods	69
3.3	Data collection methods and adopted sampling strategies	70
5.1	Community preferences including sanitation and other demands	121
6.1	Existence and state of hygienic sanitation service provisions of the study areas	138

LIST OF BOXES

Box No.	Title	Page
1.1	Standard latrine definitions by GoB and UNICEF-WHO	8
1.2	Associated Aspects of Sanitation	16
3.1	List of in-depth interview sessions held with GO, NGO & other actors	74
7.1	Major four steps of grassroots participation in DSK managed slums	176
7.2	Major obstructions of grassroots participation in DSK managed slums	177
8.1	Wording of previous and current sanitation targets	201

LIST OF ABBREVIATIONS

ADB	:	Asian Development Bank
ADP	:	Annual Development Programme
AL	:	Awami League (Ruling Government Party)
ASEH	:	Advancing Sustainable Environmental Health
BB	:	Bagan Bari
BBS	:	Bangladesh Bureau of Statistics
BNP	:	Bangladesh Nationalist Party
BRAC	:	Bangladesh Rural Advancement Committee
BT	:	Begun Tila
BUET	:	Bangladesh University of Engineering and Technology
CBO	:	Community Based Organization
CCAC	:	City Citizen Action Committee
CDC	:	Community Development Committee
CLTS	:	Community Led Total Sanitation
CPD	:	Centre for Policy Dialogue
CUS	:	Centre for Urban Studies
CV	:	Contingent Valuation
DCC	:	Dhaka City Corporation
DFID	:	Department for International Development
DMA	:	Dhaka Metropolitan Area
DMC	:	Dhaka Municipal Corporation
DND	:	Dhaka-Narayanganj-Demra
DPHE	:	Department of Public Health and Engineering
DSK	:	Dushtha Shasthya Kendra
DWASA	:	Dhaka Water Supply and Sewerage Authority
EA	:	Environmental Assessment
ECA	:	Environmental Conservation Act
ECR	:	Environmental Conservation Rule
EEHCO	:	Enhancing Environmental Health by Community Organization
FGD	:	Focus Group Discussion
FY	:	Fiscal Year
GCC	:	Gulshan City Colony
GCR	:	Global Corruption Report
GDP	:	Gross Domestic Product
GO	:	Government Organization
GoB	:	Government of Bangladesh
GT	:	Grounded Theory
HH	:	Household
ICDDRB	:	International Centre of Diarrhoeal Disease Research in Bangladesh
IDS	:	Institute of Development Studies
IGS	:	Institute of Governance Studies
ITN	:	International Training Network
JMP	:	Joint Monitoring Programme
KAP	:	Knowledge, Attitude and Practice
KP	:	Kamar Para

LG	:	Local Government
LGED	:	Local Government Engineering Department
LGI	:	Local Government Institutions
LGRD	:	Local Government, Rural Development
MCC	:	Mohammadpur City Colony
MDG	:	Millennium Development Goals
MICS	:	Multiple Indicator Cluster Survey
MoLGRD&C	:	Ministry of Local Government, Rural Development and Cooperatives
NGO	:	Non-government Organization
NSS	:	National Sanitation Strategy
O/M, O&M	:	Operation or/and Maintenance
OECD	:	Organization for Economic Co-operation and Development
OPP	:	Orangi Pilot Project
ORS	:	Oral Rehydration Solution
PL	:	Pit Latrine
PM	:	Prime Minister
PRSP	:	Poverty Reduction Strategy Paper
PSTC	:	Population Services and Training Centre
RAJUK	:	Rajdhani Unnayan Kartipakkha
RASSU	:	Research and Social Survey Unit
RTD	:	Round Table Discussion
SACOSAN	:	South Asian Conference on Sanitation
SDF	:	Sector Development Framework
SSP	:	Slum Sanitation Programme
ST(L)	:	Septic Tank Latrine
SWOT	:	Strength, Weakness, Opportunity and Threat
TI	:	Transparency International
Tk	:	Taka (Bangladesh Currency)
UD	:	Urine Diverting
UK	:	United Kingdom
UN	:	United Nations
UNDP	:	United Nations Development Programme
UNICEF	:	United Nations Children's Fund
UPI	:	Unit for Policy Implementation
UPPR	:	Urban Partnerships for Poverty Reduction
USDBP	:	Urban Basic Service Delivery Project
UST	:	Unnayan Shohojogi Team
WASH	:	Water, Sanitation and Hygiene
WatSan	:	Water and Sanitation
WHO	:	World Health Organization
WSP	:	Water and Sanitation Program
WSSCC	:	Water Supply and Sanitation Collaborative Council
WSSD	:	World Summit on Sustainable Development
WTP	:	Willingness to Pay

Chapter One

General Description, Aim and Objectives

Chapter One
General Description, Aim and Objectives

1.1 Introduction

I come from a city called Dhaka, one of the largest megacities of the World. It used to be a city of lakes surrounded by several rivers which offered a possibility of a natural water and sewerage management system for the benefit of this huge city. Just three-four decades ago, the lakes were clean, navigable and connected with the rivers and the citizens didn't have much complain about in terms of drinking water and sanitation. Now, with the massive and uncontrollable rural-urban migration, centralization and commercialization of the city, the lakes are shrinking, disappearing and all of the water bodies, including the surrounding rivers, are becoming filthier than ever, while fresh air by the river side is unimaginable nowadays. Not only this, with a huge 'water and sanitation' (WatSan) crisis, this city is now suffering from large-scale pollution due to lack of resources, appropriate infrastructure, a suitable management system, and the encroachment and illegal occupancy of various government-owned land and water bodies by poor migrants. There seem to be more skyscrapers these days but credible development solutions by the government, NGOs and other relevant sectors are lacking for the overwhelmingly negative WatSan situation in the slum areas. On the other hand, people's negative perceptions, the lack of participation, and the diverse social atmosphere of those settlements are obstructing the urban WatSan-related targets. The present research seeks those factors creating an impact not only through the analysis of diverse social atmospheres but also through the technological- and governance-related dimensions in the hope of making the analysis constructive. In so doing, the entire 'social-technological-governance' system is critically analyzed and proposals are made for reality-based solutions and policy recommendations that might offer guidelines for addressing the overwhelming slum sanitation agenda.

This introductory chapter is in several interconnecting parts. First and foremost, the statement of the problem describes the wider WatSan-related problems in Bangladesh, especially in the informal settlements of Dhaka city. The second and third sections link to the first section and attempt to outline the ongoing approaches, institutional framework, sanitation related data and historical background of this sector, with emphasis on why these problems have emerged and are sustained in those settlements. A perspective of world sanitation is added in the fourth section, considering regional differences, approaches and

other relevant issues. The purpose of the fifth section is to narrow down the overall research focus by clarifying some key definitions, concepts and issues that are within the scope of the research. The aim and objectives of the thesis are formulated in the sixth section, whilst the seventh and eighth sections explain its justification and organization respectively. The final section comes up with some concluding remarks related to this research.

1.2 Statement of the Problem

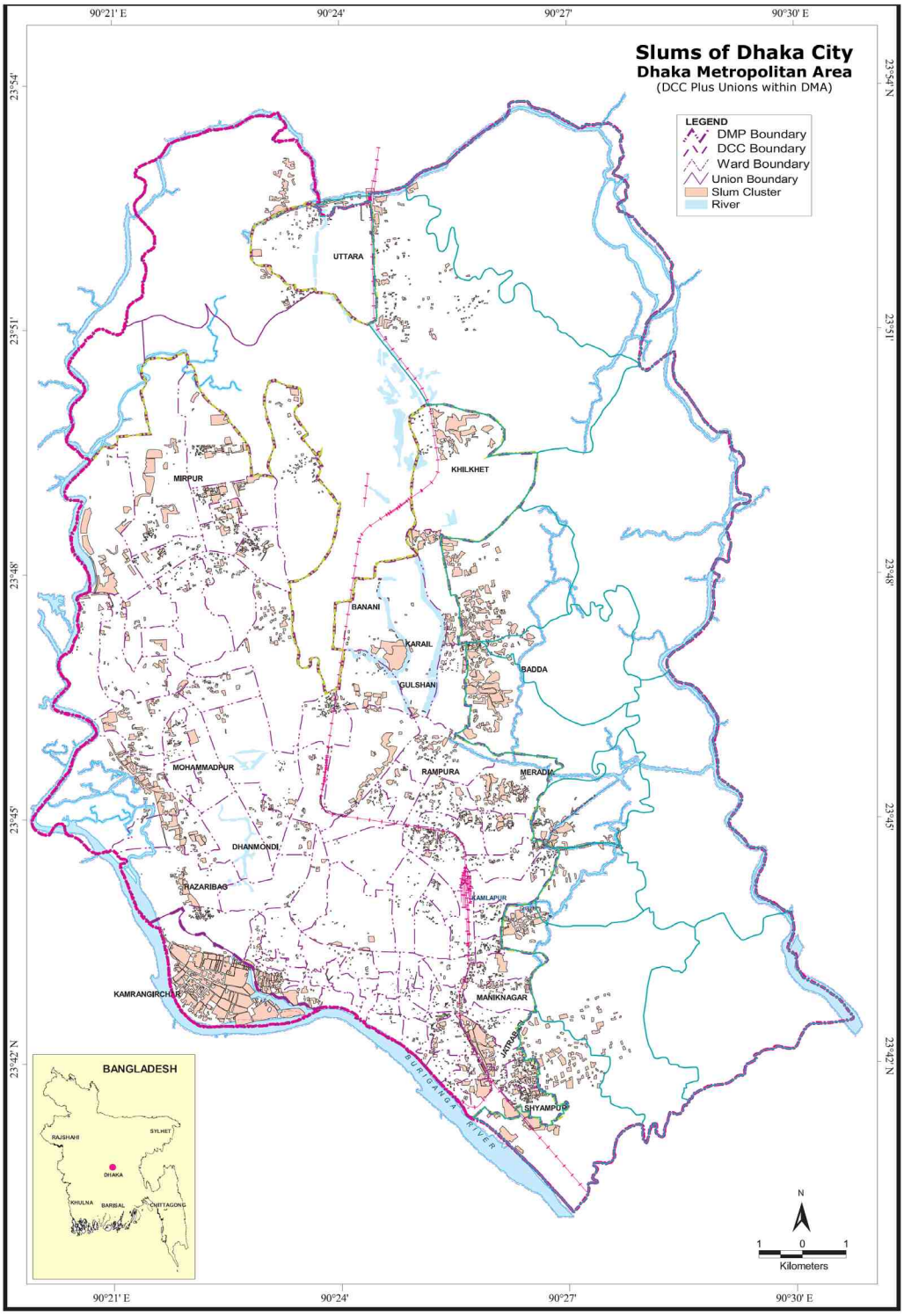
The Bangladeshi capital, Dhaka (Figure 1.1), is one of the world's fastest growing primate cities, having nearly 15 million people and approximately 6 million living in slum areas (Royal, 2011). These slums occupy only 5.1 percent of the city's total land but accommodate nearly 40 percent of the total city population, having around 531,000 persons per square mile (CUS NIPORT & Measure Evaluation, 2006). It is hard to believe but it is also true that these slums are built mainly with single storey temporary residential structures and these settlements are generally out-with the domain of basic civic amenities, including water and sanitation. The city authorities are reluctant to extend their responsibility to facilitating these informal clusters because their existing capacity to provide services to the legal connection holders is already stretched to the limit (Mwangi, 2000). A recent study revealed that there are around 5000 slums (Figure 1.2) in Dhaka city (Podymow et al c2006; World Bank, 2008). "This alarming increase of slums is mainly due to rural-urban migration. Dhaka is the major city in Bangladesh producing around one-third of the country's total GDP and it

Figure 1.1: Location of Dhaka city in Bangladesh

Source: http://www.nationsonline.org

is pulling in rural migrants faster than any other city. The result is that rural migrants flock to Dhaka in search of jobs and other opportunities and around 56 percent of migrants come here for economic reasons" (Rubel, 2010, p.1). Thousands of new poor people arrive every day (Chowdhury and Amin, 2006) and most end up in the slums.

Figure 1.2: Location of slums in Dhaka city



Source: CUS, NIPORT and Measure Evaluation, 2006 (Modified by author)

This burdensome concentration of slums with their high population density and growth rates contaminates the city ecology (Mabud, 2008) and the whole city is paying a price in social, economic and environmental consequences. It is also evident that there is a lack of demand from ordinary people, who do not see the need or feel the desire for sanitation. This may be due to their extreme poverty; about 70 percent of the total population of Dhaka is classed as poor (Siddiqui et al, 2000). Reasonably, people searching for their next meal do not think about the places and modes of defecation. Moreover, many informal settlements have grown up in topographically unsuitable, hazardous (Bapat and Agarwal, 2003), dangerous, inconvenient areas (Satterthwaite, 2009) or close to water (UN-Habitat, 2003a; Uzma et al, 1999), where the main contents are waste from the drains and sewage (Figure 1.3-A,B,C). This type of unhygienic surrounding downgrade their ideas of demand for sanitation that often lead to their insanitary condition. It is also true that, due to the absence of 'adequate sanitation' (Mara, 2012; UN-Habitat, 2003) and a general land scarcity, they are obliged to adapt to unhealthy surroundings.

Figure 1.3-A,B,C: Photographs showing unhealthy surroundings and practices in slums

Source: Field Survey, 2010

Here, I am not arguing that the poor migrants are responsible for the upcoming uncontrollable situation, where it is assumed that the capital will turn into a dysfunctional city within few years. But, the uncontrollable increase of country's population, together with lack of work opportunities and the devastating environmental consequences like floods, cyclones, river bank erosion and drought are pushing displaced and impoverished people towards the cities even though the city authorities and NGOs are unable to provide services due to socio-political, economic and policy-related barriers. One might expect the government to take some responsibility but their sanitation policy doesn't propose providing any services to informal settlements. Their resources are limited and they are unable to install proper and adequate urban infrastructure to connect the whole city to a centralized sewerage network. Only 20 percent of Dhaka city's daily output of solid waste is collected everyday (Shamsuzzoha, 2002); only 16 percent of the slum population uses safe water (GoB, 2005) and only 8.5 percent have sanitation coverage (MICS, 2010). As a result, slum residents are often dependent either on open defecation, or use risky and unhygienic latrines for the disposal of human sewage (Islam, 2005). Currently, 70 per cent of Dhaka city dwellers do not have access to the sewerage system (RASSU, 2002) and the other 30 per cent find that it is not running effectively, due to poor maintenance and increased waste loading (Haq, 2005, World Bank, 2008). Recent studies have revealed that the access to sewerage network may be as low as 25 percent (Barkat et al, 2011), 20 percent (SACOSAN

III, 2008), or even 15 percent (GoB and ADB, 1996). Over the last two decades, problems have been experienced with sanitation systems in urban informal settlements as many have fallen into disuse due to technical failures and/or misuse. Here, the slum dwellers and the users are not entirely responsible. The social diversity, inadequacies, technological aspects and governance-related dimensions are responsible for many disastrous WatSan projects. NGOs in Bangladesh have played a significant role in implementing sanitation programmes through their 'flexible' and 'tailor-made' intervention strategies but, unfortunately, most government programmes have failed because the public sector is inherently inefficient in producing and distributing essential public services (Castro, 2008). Nor has any community spirit developed (Lovell, 1992) due to the 'facilitate and forget' strategy of government institutions. Watters (1994) has identified the fact that the recent socio-political unrest has hindered sanitation interventions. Despite this fact, the Government of Bangladesh decided to carry out countrywide sanitation projects through a supply-driven strategy that could achieve short-term goals only. The World Bank also recognizes this supply-driven strategy as a backdrop, while Gulyani (1999) stated that this strategy can't solve sanitation related problems.

Another backdrop to the WatSan sector is that its associated data is untrustworthy and confusing. This is one reason why national sanitation targets have continuously missed their deadlines and it is assumed that the government will most likely fail to achieve even their revised existing target in 2013. A significant amount of financial resources have been spent to collect data on water and sanitation but unfortunately this empirical evidence is rarely reflected in policy. The unrealistic and over-ambitious target is much ahead of the WatSan-related Millennium Development Goals[1] (MDGs).

The problem of the overwhelming slum sanitation is associated with several interconnecting issues such as user practices, technology, governance systems, the role of different benefactor organizations, including government and NGOs, data, policy dimensions, etc. However, the harsh reality and the consequences of inadequate sanitation is frightening, as for example, the total number of deaths related to diarrhoea in Bangladesh in 2007 was 84,569 of whom almost 90 percent were children under five years of age (Barkat et al, 2011). Despite this, unhealthy water- and sanitation-related practices persist. Together with the issue of low demand from the slum dwellers, one of the major problems in this regard is that people look at sanitation through their cultural lenses (Douglas and Wildavsky, 1982 cited in Avvannavar and Mani, 2008) and Mukhopadhyay (2006) pointed out that, the cities in the developing countries like Kolkata would remain grievously incomplete without public display of filth. This scenario also persists in Dhaka. However, it is appreciated by all concerns that behaviour changes related to sanitation are critical (WaterAid, 2008a); yet low political prioritization, under-investment and weak institutional capacity have chronically impacted this sector and total achievements seem to be uncertain in the context of urban

[1] The Millennium Development Goals arose from the United Nations Millennium Declaration adopted by the United Nations General Assembly (The Millennium Assembly) in September 2000.

Bangladesh. This research will show that the urban sanitation in Bangladesh requires a comprehensive and thoughtful understanding of local contextual issues; and that responding to sanitation challenges requires a 'short-term' and 'long-term' strategic plan that should be based on the existing factors that facilitate and hinder sanitation interventions.

1.3 Sanitation in Bangladesh

In 2003, a national baseline survey was conducted by the Government of Bangladesh (GoB) to assess the sanitation situation. This survey result revealed that 33 percent and 25 percent of population use hygienic latrines and unhygienic hanging latrines respectively. An astounding 42 percent did not have any kind of latrine and defecate in the open (GoB, 2005). These striking findings led the government to launch the National Sanitation Campaign in order to achieve a rapid progress in sanitation coverage in the country (Rahman, 2009). But as a matter of fact the government is not seeing sanitation as potentially the single most cost effective health intervention (World Bank, 2006), as adopted worldwide. In Bangladesh, sanitation is one of the neglected sectors and is positioned in a sub-sub sector within the health sector and typically placed under the water sector, which in most cases leads to it being overlooked (Bruijne et al, 2007; Burra, Patel and Kerr, 2003; Diamant, 1984; JMP, 2011; Paramasivan and Calaguas, c2002; Paterson, Mara and Curtis, 2007). The government, NGOs and other actors in the field of sanitation are continuously implementing different sanitation projects with different approaches and strategies in a fragile and non-coordinated institutional framework, which is outlined in the following sub sections.

1.3.1 Sanitation Approaches

In spite of resistance, one of the major achievements that Bangladesh has made over the years has been in evolving and applying several sanitation approaches that are being practised across the country by different sector stakeholders. Due to overlapping elements of these approaches, it is very difficult to identify the difference between them (SACOSAN III, 2008). At the local government level, multi-stakeholder partnerships have been partially established, whereas the government organizations (GOs) and NGOs have been substantially supported by the government itself, foreign aid donors, NGOs and development partners. But generally the approaches that are currently adopted by different sector actors are a combination of different terminologies and approaches that include the 'CLTS (Community Led Total Sanitation) approach' (Kar, 2005; Kar and Bongartz, 2006; Kar and Chambers, 2008; Pasteur, 2005), 'participatory approach', the 'cost recovery approach', 'subsidy' (Garbutt, 2010; Klawitter, c2006), 'self-help initiatives' (Kar, 2003; Kar and Pasteur, 2005), and the 'bottom-up approach' (Ahmed, 2006a; Kurian, 2010; Eawag, 2005). These are visible in different NGO-managed projects, whereas the GO-managed projects are mostly geared to 'facilitation', 'latrinization', 'top-down approaches' that are mainly 'supply driven'

and rural focused. Apart from this, different approaches were also adopted considering different geographical areas. For instance, CLTS approach were mostly adopted in dry regions whereas non-CLTS NGO programmes and the government programmes only approach hazard (floods, cyclones or flash floods) prone areas that likely to affect latrine superstructures. Rest of the geographically mixed areas including the hilly areas and the unions[2] were covered by government-donor programmes (Hanchett et al, 2011) which basically emphasize latrine installations. The above-mentioned sanitation approaches unveiled the fact about the strategic urban sanitation approaches which is continuously ignored by the national sanitation campaigns.

1.3.2 Institutional Framework

In Bangladesh, the statutory responsibility for the sanitation sector is vested in the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C), which shares it with the Ministry of Planning and the Ministry of Finance (SACOSAN III, 2008). The Department of Public Health and Engineering (DPHE) holds the functional responsibility for all rural and urban areas except for Dhaka and Chittagong (World Bank, 2008), while the Water Supply and Sewerage Authorities (WASAs) are responsible for managing the water and sewerage system. The Dhaka City Corporation (DCC) has responsibility for improving sanitation, drainage and waste management. Specifically, "this WatSan sector is mainly supported by multilateral agencies like UNICEF, IDA, ADB, WSP-World Bank and WHO, and bilaterally by DFID, DANIDA, JICA and the Dutch Government, and by international NGOs like WaterAid, CARE and Plan Bangladesh" (SACOSAN III, 2008, p.16). A huge network of national NGOs like BRAC, Dhaka Ahsania Mission, NGO-Forum, VERC, DSK, UST, and PSTC work primarily at the field level in collaboration with Local Government Institutions (LGIs) (Rahman, 2009; SACOSAN III, 2008). Currently, the Local Government Engineering Department (LGED), the DCC and several municipalities are implementing slum improvement projects funded by ADB, UNICEF, World Bank and other development partners. The Asian Disaster Preparedness Centre (ADPC), DPHE, CARE Bangladesh, WaterAid and some national level NGOs such as Prodipan, DSK, Fulki, PSTC, are also implementing small scale development programmes in the slum areas including the construction of drains and sewage lines, drinking water supply, household and community based latrines, footpaths, waste disposal facilities, housing, and flood protection. It is remarkable that no effective watchdog exists in this sector to monitor the activities of these diverse institutions. The NGO affairs bureau is working for the government to administer the financial matters of the NGO projects but the activities of this government section are questionable in terms of efficiency, accountability and honesty. Despite having these difficulties and ongoing programmes in the field of sanitation, some evaluations reveal that government, donor agencies and NGOs often implement slum improvement projects in a piecemeal way without proper assessment, staffing and coordination (Asthana, 1998; Sandhu, 1998). Instead of solving a problem,

[2] 'Union(s)' or 'Union Council(s)' are the smallest rural administrative and local government units in Bangladesh and are formed under the Local Government Act, 2009.

sometimes these interventions create adverse impacts on society and the environment, which is particularly evident in urban low-income areas.

1.3.3 Quality and Scope of Sanitation Data

Before arguing about sanitation coverage data, it is necessary to be familiar with the term 'sanitation'. According to the national safe water supply and sanitation policy 1998, sanitation refers to human excreta and sludge disposal, drainage and solid waste management. In this policy document the hygiene issues that were not considered were later incorporated into the national sanitation strategy published in 2005. Likewise, the standard definition of a latrine also impacts on the sanitation coverage data while some organizations, such as UNICEF and the WHO, only consider a fixed defecation place. When the government standard is applied, latrines come with a water seal/lid/flap option. An example of varied latrine standard definition is to be found in Box 1.1.

Box 1.1: Standard latrine definitions by GoB and UNICEF-WHO.

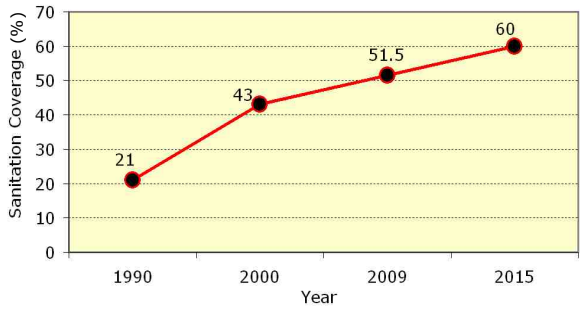
Hygienic sanitation facilities as defined by the Government of Bangladesh (GoB) in National Sanitation Strategy 2005	Improved sanitation facilities as defined by the UNICEF-WHO Joint Monitoring Programme for Water and Sanitation
Facilities that are individual or shared by a maximum two households of the following type: • Flush or pour-flush latrine to piped sewer system or septic tank • Pit latrine with slab and water seal • Pit latrine with slab and lid, no water seal • Pit latrine with slab and flap, no water seal • Ventilated Improved Pit (VIP) latrine • Composting latrine	Individual facilities of the following technology type: • Flush or pour-flush latrine to piped sewer system or septic tank • Pit latrine with slab and water seal • Pit latrine with slab and lid, no water seal • Pit latrine with slab and flap, no water seal • Pit latrine with slab but no lid & water seal • Ventilated Improved Pit (VIP) latrine • Composting latrine

Source: MICS, 2010

Here, the issues of wide-ranging and varied data on the same aspect create disputes in the sanitation sector. This may be the outcome of bypassing the baseline definition of sanitation-related issues while varied and lack of information on the status of sanitation creates obstacles to effective planning and management. For instance, according to a government baseline survey conducted in September 2003, the national sanitation coverage reported only 33.21 percent (GoB, 2005), but during my field survey a DPHE official source stated that the coverage had risen to 90.56 percent in June 2009 (DPHE, 2009). Interestingly, at the same time a UNICEF official source stated that the current sanitation coverage of Bangladesh was 39.2 percent (MICS, 2007) rising to 54.1 percent in 2009 (MICS, 2010). In the slum areas only 8.5 percent of households are using improved sanitation facilities when the JMP standard is applied because a large proportion of the population shares a latrine. This proportion rises to 12 percent when the government standard is applied (MICS, 2010). Surprisingly, in the previously cited MICS report, the percentage of households using an improved sanitation facility was only 20.1 percent (MICS, 2007), indicating that the number of latrine users has declined recently. This is inconsistent with the DPHE, who argue that the sanitation coverage in the slum areas is continuously improving, although they are unable to provide any supporting evidence. Data with such different indicators always makes for confusion and possibly even hinders development pathways. Disturbingly, it is possible for

the data series based on hygienic latrines and sanitation coverage to be reliable but with conflicting results, as will be further discussed in section 8.4.4. The recent trend of sanitation coverage shows that the government will not be able to achieve its MDG target in 2015 as they can reach a maximum of 61 percent, as shown in Figure 1.4. Bangladesh will not achieve 100 percent sanitation coverage by 2013, a target set by the current government after the failure of its previous target in 2010 (MICS, 2010).

Figure 1.4: Trend in Sanitation Coverage 1990-2015



Source: MICS, 2010

Another point of concern is the authenticity and reliability of the published data, which is processed through a long course of action that reduces its reliability and applicability. Coverage at the local government level determines the national coverage, as data from all the union and municipality level as well as the Upazila and District level is aggregated. But there do not appear to be any checks on authenticity and there is widespread skepticism, as one of the NGO executive director explained:

> *"In a real sense, our statistics are very weak. The government strategy of meeting the target is just based on adding and counting of the supplied/distributed latrines. It always considers adding numbers but never subtracts. During the entire period we have experienced 'Sidr' and 'Aila'-like severe Cyclones, Tornadoes, Hurricanes, Floods and other natural disasters that damaged our latrine infrastructures. If we consider those events then our statistics may show the downward direction. Sometimes, we are updating the coverage without updating the number of households. Actually, we are now using a wrong database and if we consider the existing data then the planning and implementation will go wrong. The failure of 100 percent sanitation coverage by the year 2010 was a realistic example and another failure is waiting for us in 2013."*

Therefore, a validation of this data is highly appreciated through a baseline survey and monitoring through a third party organization to see the current sanitation situation of Bangladesh. Moreover, it is quite difficult to conduct a temporal analysis of sanitation related issues because the survey format changes very frequently over time. For this reason, Castro (2008) argues that the official data and statistics must be read with caution, and critical analysis suggests that unreliable data tends to obscure the facts. Various NGOs and stakeholder groups have been trying to motivate the government to carry out a baseline survey to understand the real sanitation scenario. At last, the government is preparing to conduct the necessary baseline survey to develop an extended sanitation database, which will enable the process of policy reformulation and will ultimately help in development planning in this sector.

1.4 Sanitation in Dhaka: Background and Contexts

The institutions of the sanitation sector in Bangladesh have taken shape over the last 150 years (Barkat et al, 2011) while municipalities in different urban centres have been carrying out functions related to public health since 1863 (SACOSAN III, 2008). In 1874, Nawab Abdul Goni introduced the water supply system in Chandnighat, Dhaka under the former Department of Public Health and Dhaka Municipal Committee (WASA, 1991). In 1958, Dhaka as the former provincial capital of East Pakistan received a grant from USAID to prepare a master plan and for its implementation the Dhaka Water Supply and Sewerage Authority (DWASA) came into existence in 1963. Prior to DWASA, Dhaka Municipality and DPHE was responsible for the operation and management of water and sewerage facilities. The modern sewerage system in Dhaka was constructed during the later part of the first quarter of the 20th century and it stretched from the North-Western to South-Eastern part of Old Dhaka and all of the sewage was collected and pumped out through a central sewerage pumping station via a force main into an outfall area of some 52 acres of low and marshy land (DWASA official source). DWASA currently have 881.02 km underground, 1500 km of surface sewerage network (Rahman, 2003a) and two treatment plants of which one is now partly operational and can treat only 0.12 million m^3, while the total sewage generated in Dhaka as estimated by DWASA is about 1.3 million m^3. The fact is that most of the sewage ends up in the low-lying areas and in different water bodies like lakes, canals and rivers that contaminate the whole city's ecology (Figure 1.5). The drainage congestion and inadequate pumping facility lengthens the flooding period in and around Dhaka city (Alam and Rabbani, 2007). Similarly, the demand for water in Dhaka is over 240 million gallons per day whereas DWASA is able to supply only 117.6 million gallons from both ground water (82 percent) and surface water (18 percent) sources (DWASA official source). A considerable amount of water is wasted in the low-quality and damaged piped network, illegal connections, tap-less street hydrants and so on. As a result, the water gets contaminated and the quality of water comes under question. In most of the areas the supply of water is scheduled twice a day subject to the availability of electricity. Citizens must build up their reserves in overhead water tanks to store water. It is noteworthy that all the general citizens of Dhaka city usually boil their water to purify them before drinking. However, due to overexploitation, ground water table is falling rapidly and the city is exposed to environmental hazards. In this situation, where the legal high & middle class residents, commercial and industrial connection holders are suffering from interrupted and

Figure 1.5: Photograph showing the blackish water of the river Buriganga

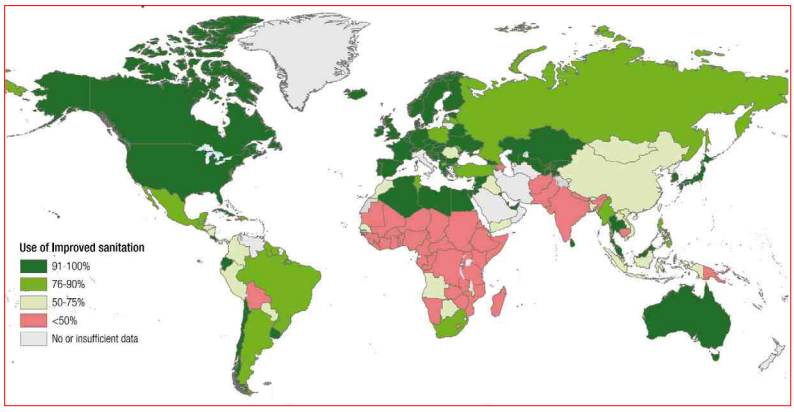
Source: Field Survey, 2010

impure water, it is obviously a matter of discourse whether the residents of illegal informal settlements should get similar services. As a result, and having no other alternatives, the poor people are rationally bound to practice unhygienic means of maintaining their livelihoods. Despite having these problems in the WatSan sector in Bangladesh, full-scale reform has not been possible. Although there are many positive achievements, the service providers are not particularly focused on reform. Brocklehurst (2009), the chief of UNICEF's Water, Sanitation and Hygiene (WASH) section gives an example of a World Bank-supported reform project in Dhaka in the mid to late 1990s that was closed down in 2002 due to a lack of investment and serious delays in disbursement. The World Bank attributed this to a lack of interest in the project by the Bangladeshi government. It is a matter of fact that the poor settlers in the world's major cities are somehow deprived, politicized and marginalized in terms of getting basic urban amenities, which is further discussed in the following sections.

1.5 Sanitation in World's Cities

A realization of the importance of sanitation was first awakened in the western world through Sir Edwin Chadwick's publication in 1842 (1965) entitled 'The Sanitary Condition of the Labouring Population of Great Britain'. In recent times, sanitation has received international attention as a human right; providing services to the poor is a major contemporary concern and it is widely understood that sanitation is a prerequisite for human dignity (Singh, 2005), and ensuring good health and economic benefits. The whole world is now under the umbrella of working to meet the MDGs in which goal seven is directly related to water and sanitation (Barkat et al, 2011). This specifically addresses two targets: 'to reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015; and to achieve significant improvement in the lives of at least 100 million slum dwellers by 2020 with a specific indicator on sanitation for slum dwellers' (UN-Habitat, 2003). Despite this global attention, some argue that the situation of some of the world's poorest countries means that they will not have this basic necessity for another 200 years (Morrison, 2011). Based on recent trends, numerous countries are still not on track (Murphy et al, 2009) including Bangladesh and, if this trend continues, the world will miss achieving the sanitation-related MDG. The situation is bad in some African, South & South-East Asian and Latin American countries, especially in the larger cities, where poor slum dwellers are the worst sufferers. Figure 1.6 shows the percentages of people using improved

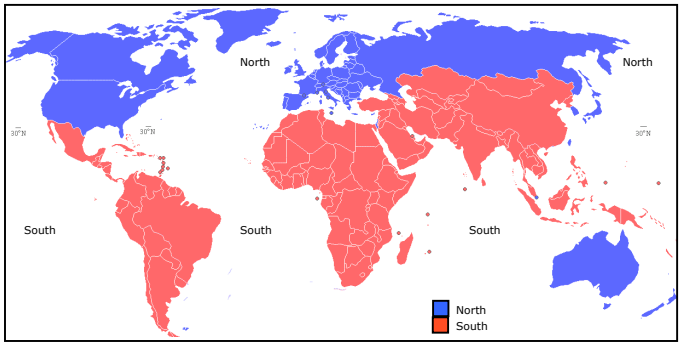
Figure 1.6: Worldwide use of improved sanitation facilities in 2008



Source: WHO and UNICEF, 2010

sanitation worldwide. It is estimated that nearly 60 percent of the world's population will make cities their home by the target year of 2015 (UN-Habitat, 2003). Approximately 3.2 billion people in the world today live in urban environments, and one in three urban dwellers live in slum conditions (UN, 2007). Most of the Africa's and Asia's urban population and much of Latin America and the Caribbean's urban population suffer with below standard and poor quality water and most Asian and African Cities have no sewers (WHO, 2005). In those that do, only a small proportion of the population is connected (UN-Habitat, 2003). The following sub sections explore some of the deprived regions that are experiencing similar WatSan related problems in what could be perceived as a North vs. South divide (Ould-Mey, 2003) (Figure 1.7).

Figure 1.7: The North-South divide



Source: Ould-Mey, 2003 (Figure modified by author)

1.5.1 Africa

The situation in Africa reveals the biggest challenge in meeting the MDG because this continent has the lowest WatSan coverage compared to other regions in the world (DFID, 2008; Sano, 2007). In Africa, diarrhoea is now the biggest killer of children (Black et al, 2010). It is well known that the Sub-Saharan Africa's urban population has the world's worst WatSan provision. For instance, sanitation in Nigeria gradually began to improve in the nineteen sixties after their independence but remained a luxury for many smaller towns. Even Lagos, the capital city, suffers from water scarcity and poor drainage and sewerage systems. People have adapted pit latrines and septic tank systems in most urban areas (Sridhar and Omishakin, 1985). Most often, the quality of water received by consumers is far below the prescribed international standards. Not only this, the open drains carry sullage or sewage and indiscriminate disposal of faeces and refuse is acute (Omishakin, 1986). The number of flush toilet users is low across Africa and many urban residents use the pail system. It was estimated that about 33.3 million litres of nightsoil was dumped into Lagos lagoon from January 1973 and March 1984 (Sridhar and Omishakin, 1985). The practice persists even today. However, in many African cities including Kibera, Nirobi, Accra, Kumasi, Gaborone, Kampala, Ouagadougou, Luanda and Addis Ababa there is significant evidence of open defecation (Hardoy et al, 2001a; UN-Habitat, 2003). Some research has found that the sanitation coverage in African cities seems to be progressing because most of the poor people in the slum areas use shared latrines which are counted as improved latrines but in

fact the overall condition of those latrines is unhygienic, low-cost, and temporary. Besides, an important factor contributing to the unsatisfactory sanitary conditions is the strong beliefs, traditions, and customs of different ethnic groups in Africa. As a result, the change process takes a considerable amount of time.

1.5.2 Latin America and the Caribbean

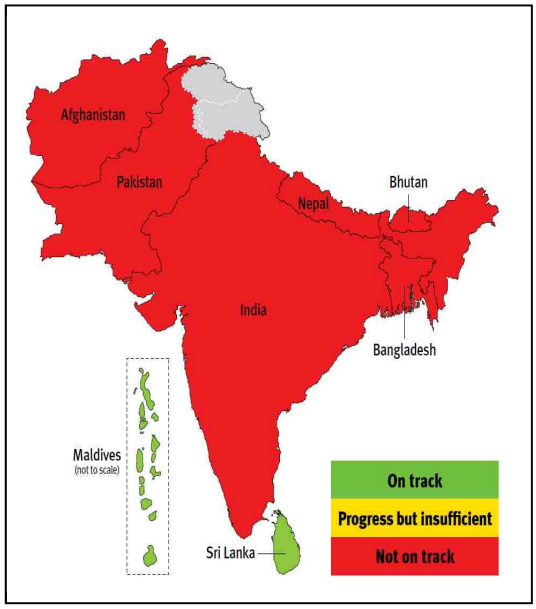
The disparity between urban and rural areas in the Latin America and Caribbean region is particularly apparent (WHO and UNICEF, 2010) and there is still a large part of the urban population who have improved sanitation who do not have connections to a sewerage system. More than one-third of the population use on-site sanitation (UN-Habitat, 2003). There are serious deficiencies in access to services, which disproportionately affect low-income groups among the 471 million urban population across the region, of whom 110 million people (23.5 percent) live in slums (UN-Habitat, 2010; UN-Habitat, 2008). The situation of some countries is even worse, such as Haiti, Nicaragua, Peru and the Dominican Republic, while most of the cities in this region face problems related to water quality, continuity and lack of sewerage network. Sao Paulo which is one of the megacities in the world experiencing unequal distribution of services because 'the better-off sections of the population received improved water systems first' (UN-Habitat, 2010a). In the past few decades, water supply and sanitation in Brazil have experienced a singular historical course, in which the notion of 'water supply and sanitation' has been progressively replaced by the concept of 'basic sanitation' (Heller, 2007). Besides, in most of the Mexican cities, a sewerage network was constructed and waste water treatment plants installed in the late 1990s; however the majority of households have still not yet been connected to the network and it is said that the cities in this region characterized by a range of problems (UN-Habitat, 2010) including large scale migration, land invasions, urban segregation and fragmentation, privatization and weak administration (Aguilar and Fuentes, 2007). However, in this region, Guatemala, Haiti, Nicaragua and Bolivia feature as having the highest proportions of slum households (UN-Habitat, 2008). But, the proportion of urban population living in slums in this region has been reduced from 33.7 percent in 1990 to 23.5 percent in 2010 (UN-Habitat, 2010) whereas still 13 million urban dwellers do not have access to water source and 62 million lack access to improved sanitation facilities. To reduce the extent of the problem some private companies are active in Latin America and Caribbean region. For instance, Brazil's WatSan-related private companies serve about 4 percent of the population (Castro, 2008). Arguably, it could be said that the progress of the WatSan sector in the Latin America and Caribbean region is at least progressive and might be able to meet the water and sanitation-related MDG goals.

1.5.3 Asia

In Asia, there are very large variations in the quality and extent of WatSan provision between nations and between cities. This is due to the unequal distribution of resources and services where most poor neighbourhoods are neglected by service providers. A high concentration of slum households also characterizes the urban areas of Southern Asia, owing to a lack of housing as well as widespread poverty and instability. In Bangladesh, endemic poverty is such that 71 per cent of urban households lack durable housing, sufficient living area, or improved sanitation. In India, 44 per cent of all urban households are classified as slums (UN-Habitat, 2008). About two-thirds of the population in South-Eastern Asia use an improved sanitation facilities but almost one in five practices open defecation. It is demonstrated that the practice of sharing a facility of an otherwise acceptable type is more prevalent in South-East Asian urban centres (UNICEF and WHO, 2008) while the whole region gained access to sanitation which is considered as 'on track' to meet the MDG targets. For instance, about 44 percent of the households in Vietnam have sanitary latrines (Wieneke, 2005) and 73 percent of urban households in Indonesia have access to a private toilet facility (WSP, 2011). A study by UNICEF and the WHO in 2008 also demonstrated that from 1990 to 2006 the urban population without improved sanitation in this region increased by 20 million people to 56 million and 134 million have a piped connection on the premises, which is up by 76 million. Amongst the South Asian countries, most water supply schemes are maintained and operated by the government (Nawab et al, 2006). For instance, the Pakistan government has been taking loans from international financial institutions to develop infrastructure in low-income urban settlements since the 1980s. The renowned Orangi Pilot Project was also established during this period to improve the informal settlements (OPP, 1995) or '*katchi abadis'* where a high proportion of Karachi's population live (Hasan, 2006). This development consists of sanitary latrines in the houses, underground lane sewers and collector sewers in the neighbourhood but, the general scenario of the main city Karachi is not good as eighty percent of the city's sewerage ends up in the natural drainage system without any treatment (Hasan, 2008). This scenario also exists in Dhaka and Mumbai. Three in four slums in Mumbai are dependent on public toilets and it is estimated that one out of twenty or about 420,000 people are compelled to defecate in open areas (WSP, 2006). Since 1995, the Slum Sanitation Programme (SSP) has been running although it is facing challenges related to users' contributions towards upfront payment. This kind of scenario also exists in Dhaka city where most of the government-provided public toilet blocks in the slums became unusable within a short time. A recent WaterAid discussion paper states that there is a scenario of failure towards meeting the MDG target for sanitation by the South Asian Countries where nearly one billion people live without access to 'adequate sanitation' (UN-Habitat, 2003) across the region (WaterAid, 2011), as outlined in Figure 1.8.

All the governments in the above regions are trying to mitigate the WatSan problems and are getting support from different sources to achieve the MDG. The associated stakeholders are trying to improve the situation by applying different strategies, techniques, approaches and technologies but there is now a widespread understanding in this sector that a unique solution to this problem is not possible as there are several interconnecting issues, including diverse local contexts. However, a remarkable thing observed while writing this section is that, although the official published data seems progressive and encouraging even in the deprived regions, once we consider only the slum areas then the real scenario becomes visible as the poor clusters are considerably affected due to inadequate and inappropriate WatSan services.

Figure 1.8: Progress towards meeting the MDG sanitation target in South Asia



Source: WaterAid, 2011

1.6 Ring Fence/Scope of this Research

Similar to these other developing countries, Bangladesh is experiencing a rapid increase in urban population (13.5 million in 1981, 22.9 in 1990, 37.3 in 2000, and 46.4 in 2005), especially since independence in 1971 (Chowdhury and Amin, 2006). It is often argued that this uncontrolled urbanization potentially distracts the existing technical and institutional capacity (Mwangi, 2000). In fact, institutional responsibilities are not ensured and maintained while at the same time people's rights are not heard and entertained (Allison, 2002). In consequence, Bangladesh is experiencing chronic failure in the development arena and the WatSan sector is one aspect. Since the scope and extent of the problem in this sector is wide and diverse, a purposeful and pragmatic stroke is necessary to clarify the ring-fence and/or the scope of this research. The following sub-sections are intended to cover relevant issues that ultimately shape the scope of this research.

1.6.1 Sanitation: Definition and Scope

Sanitation literally means the safe and sound handling and disposal of human excreta (Avvannavar and Mani, 2008) or an approach to improve and protect health and well being of the people. UN-Habitat (2003) defined 'adequate sanitation' as convenient and affordable system that eliminates contact with human excreta and other wastewater in the home and

neighbourhood. However, the prevention of water-borne diseases, faecal-oral transmission (Penn, 2005) and ensuring healthy living environment are known to be the prime objectives of having safe sanitation. In general, the visible challenges to sanitation lie firstly with its definition and secondly with the decision regarding the most important aspects of it as 'sanitation' is considered as a 'big idea' (WHO, 2008) which covers inter alia all that is framed in Box 1.2.

Box 1.2: Associated aspects of sanitation

- Safe collection, storage, treatment and disposal/re-use/ recycling of human excreta (faeces and urine);
- Management/re-use/recycling of solid wastes (rubbish);
- Drainage and disposal/re-use/recycling of household waste water (often referred to as sullage or grey water);
- Drainage of storm water;
- Treatment and disposal/re-use/recycling of sewage effluent;
- Collection and management of industrial waste products; and
- Management of hazardous wastes (including hospital wastes, and chemical/radioactive and other dangerous substances).

Source: WHO, 2008

Although sanitation worldwide remains a vital and wider development agenda, the scope of sanitation in this research has been limited only to address the personal and household, as well as communal, practices and management of human excreta, especially the handling and disposal of faecal related matters. To address and pinpoint this issue, the latrine options are considered as sanitation options or technologies. In Bangladesh, and as a Muslim dominated country, water is considered as integral to using the latrine as it is a prerequisite substance and part of purification rituals (Avvannavar and Mani, 2008) after defecation or even urination. For this reason, water related issues and data will be explored, analysed and presented in this research. As sanitation is always politicized and neglected worldwide, an attempt will be made to emphasize the sanitation issue alongside safe water and hygiene practices to accomplish an interrelated analysis.

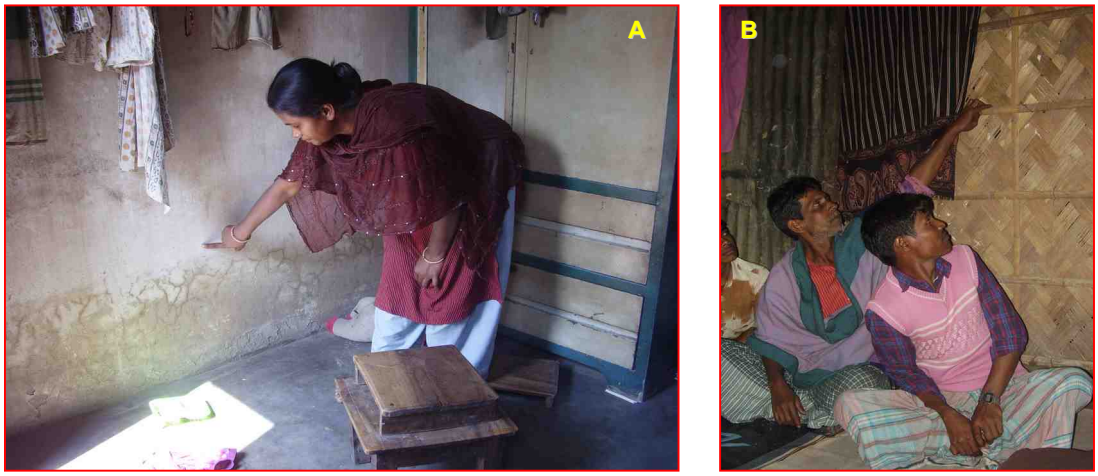
1.6.2 Dhaka City: Concentration of Poor and Poverty

Dhaka, the largest city of Bangladesh, comprises 34 percent of the overall national urban population and is unparalleled among other cities in terms of economic, social and political opportunities (CUS, NIPORT & Measure Evaluation, 2006). Since 1971, there has been a surge of migrant population from countryside to Dhaka city and the resultant demand for civic services has created an enormous pressure on the DCC (Siddiqui, 1999). This organization is usually characterized as a weakly administered, inadequately staffed, managerially and financially underprivileged organization commensurate to the size and character of the city (Islam, 1999). The city is nearly 1530 square kilometres in size (Choudhury, 2011) and, as stated before, the population is nearly 15 million, of whom 6 million live in around 5000 informal settlements (Royal, 2011). The Dhaka Metropolitan Area (DMA) is considered here as Dhaka city, including the whole of the DCC and adjoining areas

within the DMA having urban characteristics. This is because the informal settlements are not distributed uniformly throughout the city (Hossain, 2008) but rather are concentrated mostly on the fringes of the main DCC Area (Figure 1.2) on cheaper land (Mahbub and Islam, 1991).

Dhaka is also known as a city of poverty (Akbar et al, 2007) and the urbanization rate in Dhaka is over 2.5 percent (BBS, 2003), leading to expectation that its population will reach 16 million by 2015 (DMDP, 1997). Physical barriers limit the expansion of the city and progressively the city's built-up areas, which are already unplanned and congested, are densifying, while the fringe areas are basically in low-lying, flood-prone areas. The drainage congestion and inadequate pumping facilities lengthen the annual monsoon flooding period in and around Dhaka city (Alam and Rabbani, 2007) and the poor people are affected economically (Figure 1.9-A,B).

Figure 1.9-A,B: Photographs showing the flood levels in 2009 in two study areas



Source: Field Survey, 2010

In terms of socio-economic and environmental conditions, almost half of the inhabitants of Dhaka live under the national poverty line (CUS, 1996). It is widely acknowledged that slum growth is largely a manifestation of poverty, and that it is impossible to prevent slum settlements where poverty levels are high and the urban growth rate is rapid (Chowdhury and Amin, 2006). However, the demographic features also impact the condition of poverty amongst the residents of informal settlements. The average per capita annual income in Dhaka city is around taka[3] 13,000 (CUS, 1989), which is one of the lowest in the mega-cities of the world. More than half of the total population of Dhaka are classed as poor (Siddiqui et al, 2000 cited in Akbar et al, 2007) and the largest concentrations of the urban poor are in the informal settlements. About 40 percent of the total city's population is in the unproductive age groups of 0-14 and 60+, which indicates a high dependency burden on the working age population (Hossain, 2008), especially among the low-income groups in the city.

[3] The name of Bangladeshi currency is Taka. Currently, 1 British Pound is equivalent to 130 Bangladeshi Taka (average)- [http://www.oanda.com/currency/converter/- Accessed May 2012]

According to Islam (1996a) the urban poor are 'people who cannot afford to meet the basic needs requirements with their own incomes'. In the present study no attempt will be made to measure the extent of poverty of the residents of informal settlements but simply a visual impression has been taken through their individual appearance, housing condition, living conditions, household materials and so on. Although the percentage of extremely poor has recently decreased in Bangladesh, the rate of decline is comparatively lower in urban areas (BBS, 2002). But the recent pace of population growth and urbanization means that about 90 percent of the informal settlements have developed in the last three decades (Hossain, 2008; Rahman, 2005) and the nature of Dhaka's urbanization is such that half of population will live in those informal settlements within a decade (Habib, 2009).

In this thesis, both slums[4] and squatter[5] settlements are considered as informal settlements. Both types of settlements are known as '*Bastee'* in the Bengali language, which often translated as 'slum' (CUS NIPORT & Measure Evaluation, 2006) ignoring their basic differences in land tenure. Thus, the term 'informal settlement', 'slum' and 'squatter' have been used as a synonym of '*Bastee'* to recognize poor, marginalized, deprived, densely populated settlement with poor living environments. Regarding the poor status of these settlements, Hossain (2008) argues that the poverty of slum populations is an extension of the rural poverty of Bangladesh. They are excluded in the formal systems due to their lack of education and appropriate job-related training. However, the income levels through this informal sector are very limited and a high level of vulnerability exists in their day-to-day life. Therefore, it could be argued here that the situation of the poor people remains unchanged due to their only available options to get into the informal economic activities of the metropolitan economy and I had a number of respondents who had been living in slums for more than 30 years, proving the unchanging status of the city's poor.

[4] Slum: According to UN-Habitat, a slum is an area that combines to various extents the following characteristics-

- Inadequate access to safe water;
- Inadequate access to sanitation and other infrastructure;
- Poor structural quality of housing;
- Overcrowding;
- Insecure residential status (cited in NGO Forum, 2008).

The Centre for Urban Studies (CUS) in Bangladesh defines a slum as a settlement with a minimum of 10 households or a mess unit with a minimum of 25 members and having the following characteristics-

- Predominantly very poor housing;
- Very high population density and room crowding;
- Very poor environmental services, especially water and sanitation;
- Very low socio-economic status;
- Lack of security of tenure (cited in CUS, NIPORT & Measure Evaluation, 2006).

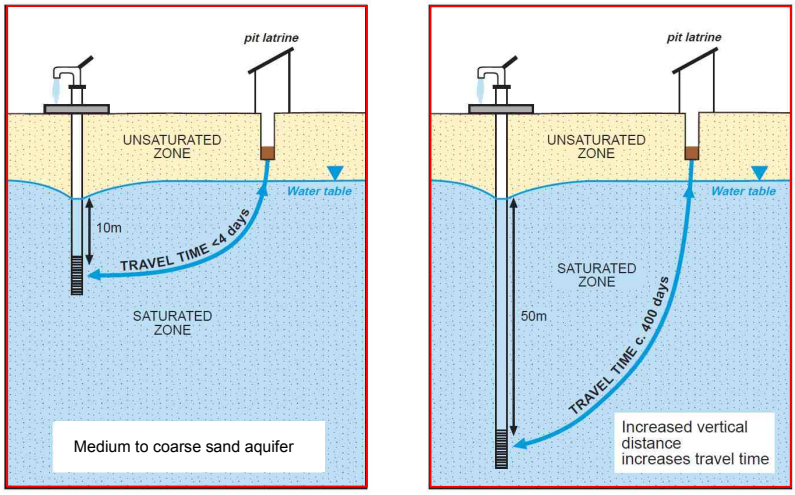
But the government's definition of slum, mentioned in the Slum Census, is settlements and areas of 5 or more households which generally grow very unsystematically and haphazardly in an unhealthy condition and atmospheres on government and private vacant land including all the above mentioned characteristics (BBS, 2011- Accessed 20 December 2011 through http://www.bbs.gov.bd/WebContent/About%20Us/concepts_defination.pdf).

[5] Squatter: considering the physical appearance and facilities, squatters are synonymous with slums. Slums and squatters can be differentiated by the status of their legal authorization of the land and/or property they occupy (Roy and Abdullah, 2005). A slum is somehow a legally authorized settlement whereas squatters live in an unauthorized settlement, but both are deprived of basic urban services including water and sanitation.

1.6.3 Inadequate Sanitation: Consequences, Risks and Vulnerabilities

The ultimate aim of sanitation is to ensure public health and wellbeing, which may also be acknowledged as a universal truth. It is obvious that poorly maintained, inadequate and inappropriate sanitation systems are the main reasons for outbreaks of diseases (ARGOSS, 2001; Rahman, 2003) including diarrhoea (Burton, 1999), Hepatitis A, Cholera, Typhoid and Shigella Dysentery, Intestinal helminths, Malaria and Trachoma (WHO, 2011). According to WaterAid UK[6], (2011) diarrhoea is the second largest killer of the children younger than five years (Bartram et al, 2005), claiming the lives of almost 4000 children (Black et al, 2010) per day worldwide, although this disease is preventable (Bartram et al, 2005). On-site sanitation systems such as all forms of pit latrines, septic systems, etc may in certain circumstances contribute to microbial and chemical contamination of the ground water (ARGOSS, 2001) that is used as a major source of drinking water. A relationship between depth of tubewell and the travel time of micro-organisms through the saturated zone is presented in Figure 1.10, showing the possible groundwater contamination scenario. Apart from disease, there is also a notable impact on the economy through medical expenses (UN-Habitat, 2003), while loss of income and productivity due to disease may push a poor family further into poverty (GoB, 2005; Islam, 2000, Jewitt, 2011a; McGranahan et al, 2001). Moreover, in developing countries, school attendance, especially among girls, is limited due to the lack of WatSan provision. In an environment where natural hazards are likely, the lack

Figure 1.10: Relationship between depth of tubewell and travel time of microorganisms.



Source: ARGOSS, 2001 (modified by author)

of 'adequate sanitation' (UN-Habitat, 2003) facilities make people more vulnerable than in normal circumstances and it is said that the number of people needing water and sanitation following a disaster are much higher than the number of people killed, injured, displaced or needing medical attention (PAHO, 2006). Whilst the absence and inadequacies of WatSan facilities are associated with high disease occurrences through pathogenic microorganisms, especially as a root cause of high infant mortality rates, it is important that the improvement of WatSan provision should be properly planned. However, it should be understood from the

[6] Available at http://www.wateraid.org/uk/what_we_do/the_need/ (Accessed December 2011)

outset that risks can be reduced or managed, but not eliminated and some risks, however small, will always remain (ARGOSS, 2001). All of these above issues are highly prevalent in Bangladesh whereas in major urban areas like Dhaka city the consequences, risks and vulnerabilities are not only affecting the poor people but the city's ecology is also contaminated in a broad spectrum. For instance, lowering of groundwater level is recently considered as one of the major risk factors in Dhaka and many researchers presuming that the situation may raise the possibility of major earthquake events. In this situation, we are experiencing the higher population growth rate in Dhaka than the pace of WatSan interventions (Bartram et al, 2005) which will significantly elevate possible risks and vulnerabilities. Here, in this research, I am not ignoring the impact or importance of public health due to poor sanitation as this particular research agenda is persisting in Bangladesh where an international organization called ICDDRB (International Centre of Diarrhoeal Disease Research in Bangladesh) is continuously contributing with updated knowledge and research findings. For this reason, I have tried to focus my study with a different perspective, where the key issues are mainly related to existing sanitation interventions, the role of GOs and NGOs, and the responses from the grassroots, particularly from urban informal settlements. This helps to reduce the gap of WatSan project intervention-related, policy-focused and development-oriented qualitative research. The next section describes the objectives that are designed to address the ultimate aim of this research.

1.7 Aim and Objectives

According to the DPHE progress report, the GoB has achieved 90.56 percent sanitation coverage in 2009 across the country, up from 33.21 percent in 2003 (DPHE, 2009); but the reliability of this data raises enormous debate. In line with this questionable data and diverse existing debates in this sector, it is a matter of concern that the level of water-related diseases continues to be high and WatSan-related problems are expected to worsen by 2020 as the number of people living in the informal settlements in the Dhaka city is expected to rise to 9 million (World Bank, 2008). To overcome this disastrous upcoming event, sanitation-related research especially programme-related and policy-focused investigations need to be explored. Therefore, this research aims to identify factors that facilitate or hinder the successful implementation of local sanitation programmes in urban informal settlements of Dhaka, Bangladesh. The specific objectives are:

a) **To map the existing project implementation strategies from benefactor organizations and responses from beneficiary groups in the informal settlements of Dhaka city.** This objective will enable the researcher to be familiar with different project implementation terminologies related to sanitation interventions. Official archives and field work investigations from different GOs and NGOs will be the source of information for mapping the providers and the technologies that are used in the informal settlements. This objective can potentially contribute to exploring the overall sanitation scenario in the informal settlements through the geographical, socio-

political and economical distribution of sanitation services in cities offered by different GOs and NGOs. Moreover, this will help to explore the motives of the organizations that choose to work in particular geographical settings/informal settlements, and so identify the city's over-served and under-served areas.

b) **To describe the dynamics of the 'social-technological-governance' systems through case studies of different sanitation project experiences.** Case studies, in this regard, will be helpful to explore the diverse 'social-technological-governance' systems that are currently functioning in different sanitation interventions in the informal settlements. I will identify geographical factors as well as social, technological, economic and political factors that exist in urban sanitation programmes. Moreover, the dynamics and attitude of both benefactors and beneficiaries will be explored here for qualitative analysis of their relationships and outcome.

c) **To compare these dynamics across different experiences (GO vs. NGO, successful vs. less successful, in similar contexts).** This objective is linked with the previous objective. However, the comparison will be based upon the case studies which will explicitly contribute to exploring the strengths, weaknesses, opportunities and threats in the sanitation sector. The comparison process, for instance, will enable an analysis of why one system works but another doesn't in similar circumstances. Moreover, this objective seeks to identify factors that facilitate or hamper the implementation of urban sanitation programmes, which is the central enquiry of this research.

d) **To identify policy and practice implications for government, NGO and local communities.** This objective will focus on the existing sanitation policy and its response by government and NGOs regarding sanitation intervention. It will help to identify and determine how and to what extent people are getting response/help from different sources at the local level and how these organizational responses contribute to changing their previous practices and livelihoods. This objective will also uncover the effects of power politics at different levels in the sanitation sector and determine how and to what extent the policies are influenced. Upon completion of the analysis of the dimensions of 'social-technological-governance' system across different GO-NGO-managed sanitation programmes, this objective will enable me to find the gap between the policy and practice. This approach will help to find the inherent policy weaknesses and enable me to develop strong recommendations for both 'short-term' and 'long-term' development planning interventions in the sanitation sector.

e) **To disseminate/feedback to communities of informal settlements involved in the research and to local and national government agencies as appropriate.** It is expected that one outcome of this research will be the identification of the factors/ knowledge framings that positively contribute in the sanitation sector. It is also assumed that dissemination of research outcomes across the grassroots to policy level will help to

formulate short- and long-term recommendations that can be explicitly put forward as a guideline to develop a strategically sound and sustainable sanitation policy.

1.8 Justification of this Research

In this section, I would like to disclose the reasons behind my work in the urban context. These are mainly associated with the extent of the urban problem, which in my opinion is relatively greater than in the rural areas. Despite having a declining trend in the rural ecological environment (Zhang, 2011) around the world, the rural areas in Bangladesh still maintain a pleasant social atmosphere, and have comparatively better natural and ecological strength, and benefit from the government's attention towards rural development which is absent in urban areas. The GoB is continuously promoting WatSan projects and activities through the DPHE in rural areas. Moreover, the prominent NGOs are also engaged with rural sanitation projects. The reality is that the rural poor have been getting both GO- and NGO-managed development projects but the urban poor, who reside in slums mainly as a result of different natural calamities, are not getting the government's attention because they are considered illegal settlers to the city's regime. The number and extent of these illegal settlements are so big that the limited number of urban-based NGOs are unable to extend their services to all of them, and the government's inattention is also restricting the fate of the urban poor.

Here, I am not claiming that I have a solution to the entire problem but this research will be helpful to understand the real scenario of the slums and, based on my research findings, I will make some recommendations that will help to aid the existing policy. Moreover, a large gap exists in the literature when it comes to the questions of urban sanitation options in low-income communities, such as 'how can they be improved or upgraded?', and 'what are the risks, problems and prospects?' Not only this, most of the western research on sanitation focuses on the water and off-site sewage treatment, ignoring the fact that sewerage serves such a small fraction of the whole population in developing countries (Rybczynski et al, 1982). In Bangladesh, sanitation-related research merely links to the health sector as research conducted on the effect of sanitation is always prioritized, while the underlying causes of poor sanitation and unsustainable project histories are never explored considering the realities on the ground. Moreover, the urban sanitation sector is always politicized due to the complexities in the planning, management, operation and maintenance as well as financial difficulties. Here, rapid urbanization is taking place within weak economic conditions creating pressure on housing, public services and utilities and the overall urban environment is getting worse day by day and it is estimated that, by 2035, more than half of Bangladesh's population will live in urban areas (UNICEF, 2011) and by 2025, nearly half of the urban population will be living in slums (Ahmed, 2006). In the fragility of expertise and with inadequate urban services, the WatSan situation will be uncontrollable if proper strategies are not evolved. In this situation, I think, the urban sanitation research needs to be considered as an immediate priority and thus my standpoint supports research on the urban sanitation sector that will address the slum sanitation agenda.

1.9 Organization of this Research

Study of sanitation in the informal settlements through the analysis and comparison of the dimensions of 'social-technological-governance' systems and most importantly an attempt towards policy recommendation are the main agendas of the present research to address the aims and objectives. In so doing, this thesis is structured into nine interrelated chapters. Following the introductory chapter with a thick description of the background, aim and objectives, the second chapter focuses on the research gap and reviews the relevant available literatures, sanitation related theoretical arguments and existing knowledge. The third chapter focuses on methodology, including the fieldwork planning, study areas and the procedure of data collection, processing, and data analysis. Chapter four is designed to describe the contexts of the study areas and features of GO-NGO managed projects. The following fifth, sixth and seventh chapters are the main empirical part of this research outlining and comparing the diverse social, technological and governance systems of the study areas respectively from the viewpoint of both benefactors and beneficiaries. The contents of these three chapters not only illustrate different GO-NGO provided sanitation interventions and the role of the associated parties but also the everyday realities, vulnerabilities as well as possibilities. This is accomplished with a thick description and I try to compare the diverse 'social-technological-governance' systems across the study areas and explore what works and why in the context of informal settlements that are entirely based on observed realities. Chapter eight is based on existing sanitation policy while an attempt is made to find the gaps between policy and practice considering the field realities and related issues that are presented in the previous three empirical chapters. The pitfalls, politics, critiques, current situation and future direction of GO-NGO managed sanitation interventions are outlined in this chapter along with possible remedial measures. Finally, the research outcome is carefully summarized in the concluding chapter and some recommendations and guidelines for further research are presented in chapter nine.

1.10 Conclusion

> *"Nobody could be found without access to a latrine but it is difficult to find any hygienic latrine"*

In an interview session, a top-level government official repeated the above quotation acknowledging the sufferings of the urban slum dwellers while at the same time he expressing his inability to extend government services to those low-income settlements. The aim, objective and possible research findings might be in track with his profound understanding and feelings; but this research has been conducted to demonstrate that the evolution of knowledge in WatSan sector is still persisting and requires full government support to enable a wider-scale reform. This research is not conducted to address anyone's feelings but simply it to explore the reality (as the government official quoted here) and to offer possible mitigating measures towards the overwhelming sanitation situation in the slum areas.

Throughout this introductory chapter, it has been reflected that the government has always faced serious challenges in urban sanitation (Barkat et al 2010; MICS, 2010), while public policy does not necessarily recognize the interrelationships between household and neighbourhood environmental problems in cities. Instead, citywide policy responses overlook fine-grained geographies of environmental and other risks in poor neighbourhoods (Rahman, Haughton and Jonas, 2010) and NGOs have had to come forward to deal with the issue. Martin et al (c2003) pointed out some gaps in sanitation policies that exist in the developing countries, which mainly lack gender, poverty, regional, sectoral, legal and institutional arrangements. The present research will try to consider the above-mentioned sanitation-related issues through investigation of 'social-technological-governance' systems and offer some guidelines for sustainable sanitation programmes, especially for urban informal settlements. Moreover, this qualitative piece of work conducted through a 'bottom-up approach' that has the potential to identify inherent policy weaknesses and factors that facilitate or hinder the successful implementation of sanitation programmes through the recognition of outcomes from empirical evidences. The analysis of 'social-technological-governance' systems in WatSan projects may offer a 'new direction' that could introduce some possibilities of tackling the slum sanitation agenda.

Chapter Two

Literature Review and Conceptual Framework

Chapter Two
Literature Review and Conceptual Framework

2.1 Introduction

> *"We don't have food in our tummy and you came here to talk about our shitting place. It sounds crazy and funny".*

The sentiment in this quotation is common and I had to carry out my field investigation in this type of paradoxical situation. A woman (aged 54) from one of the study areas argued with me when she came to know about my research. Generally, the people and the woman in particular were not blaming me but rather their fortune for being poor. Actually, they were happy with my presence because they could share their experiences and feelings with me concerning their bad sanitation situation. Likewise, the service provider organizations are not entirely blamed by the people because they recognize the fact that the government WatSan policy restricts the provision of even a minimum level of services to the illegal settlements. On the other hand, the service providers are not blaming the general people for the dreadful sanitation situation which potential a result of inadequate services. Here, my objective was not to apportion responsibility, especially where it is not achievable and while the possibility of safeguarding themselves are likely from both of the groups. Instead, I explored the factors that facilitate or hinder sanitation interventions. In accordance with the aim and objectives presented in the previous chapter, I attempt to identify those factors by comparing 'social-technological-governance' systems of the government and NGO-managed project areas that may eventually answer this question rationally. The analysis of 'social-technological-governance' system actually shapes the bodies of work that are discussed within this chapter. This central analytical agenda is introduced in this thesis considering the 'urban metabolism' concept, where an attempt has been made to illustrate whether the 'input' and 'output' mechanisms in the sanitation sector are well-balanced and properly managed that eventually results in project success. Since this thesis attempts to explore the factors that facilitate or hinder sanitation interventions, the well-recognized 'causal effect of sanitation' i.e. the global, regional and local dimensions of society, technology and governance related issues (Mehta et al, 2007) are discussed here from the perspective of the wider existing literature. Apart from a brief description on public health, the discussions related to the 'impacts of sanitation' are not presented in this chapter because the main analytical framework of this thesis is designed to find out the causes/reasons/factors that facilitate or hinder sanitation interventions. I briefly discussed public health issues because it is very

significant to relate sanitation-related hygiene, knowledge, neighbourhood environment and their link with public health while, it is also crucial to identify how the poor people perceive and tackle different diseases and whether this has any impact on the sanitation demand or overall outcome of different WatSan projects. This analytical framework and discussion is important to get an overall idea about the trend of sanitation interventions, their outcome, politics, people's participation and priorities, taboos, gender, technology and other related matters. These discussions not only help to link up global and local difference of sanitation related issues but also the bodies of work discussed within this chapter facilitate in identifying research gaps in the field of urban sanitation in Bangladesh which are outlined at the end of this chapter.

2.2 Sanitation: Linkage across Disciplines

Geography and Sanitation

Sanitation is one of the key indicators for measuring the development status of a particular place or country. The more developed a society, the more sanitation and vice versa (Singh, 2005). Simply having access to sanitation increases health, well-being and economic productivity, whereas inadequate sanitation impacts individuals, households, communities and countries (WHO, 2004). Therefore, 'sanitation' can be considered as a 'spatial' phenomenon, as it includes 'space' and relates with 'people' and their surrounding 'environment', all central themes of Geography. It is widely recognized that 'sanitation' is a concern of 'urban and regional planners' and 'infrastructure engineers'. They are responsible for building the necessary infrastructures but they are not always in a good position to consider contextual social issues (Murphy et al, 2009). Urban geographers are likely to consider urban processes as they relate to lived experiences and the production of cultural and spatial forms by describing, interpreting and analyzing sets of events, meanings, experiences, institutions and artifacts (Aitken, Mitchell and Staeheli, 2006). They also interpret not only how different issues interact over space, but also their interrelationships and functions, that propose systematic planning and improvements of urban vicinity considering the impact on urban ecology. Conversely, sanitation is one of the major agendas in the development arena worldwide and this research also seeks to identify economic, social and political processes, which result in a cumulative rise in the perceived standard of living for an increasing proportion of a population (Hodder, 2000). Not only this, sanitation also addresses environment and health issues and the present research tries to understand the relationship between sanitation and the natural/built environment in informal settlements. The theoretical argument of this research covers spatial experiences related to water and sanitation through the analysis of 'social-technological-governance' systems in several informal settlements within the urban landscape. Therefore, the project has potential for a rich contribution to geographies of urban development, environmental health/well-being, environmental risk transition (Smith and Ezatti, 2005) as well as similar fields beyond the discipline, including development studies, governance studies and public health.

2.3 Sanitation: Theory, Practice and the Issue of Generalization

The adaptation of the theories of social research to the developing world is not promising because the origins of these social theories are mostly in developed western societies. At the same time, information on water and sanitation in developing countries at the international level seems to be largely based in the North (Dietvorst, 1994). However, in the process of globalization, social theories about different urban issues have been considered from different regions as well as wealthier and poorer cities within the same field of analysis (Marcuse and van Kempen, 2000). Robinson (2006) presses the importance of 'ordinary' cities in contemporary urban studies in order to address the diverse urban experiences across cities of the global North and South. This kind of approach together with theoretical concerns in social research can contribute significantly to policy and practice. Theory provides a framework for critically understanding phenomena and a basis for considering how what is unknown might be organized (Silverman, 2005) and contributing to the process of generalization concerning conflicting thoughts. Denzin and Lincoln (2011, p.11) stated that "various 'isms' and philosophical theories and movements have crisscrossed sociological and educational discourses, from positivism to post-positivism, to analytic and linguistic philosophy, to hermeneutics, structuralism, post-structuralism, Marxism, feminism and current post-post versions of all of the above". Some have said that the logical positivists steered the social sciences on a rigorous course of self-destruction (Denzin and Lincoln, 2011, McKelvey, 2002). Silverman (2005) added that 'the discovery of new facts' is rarely an important or even challenging criterion in the assessment of most qualitative research and it seems that, 'facts' are undeniably important and are always subsidiary to theories. According to Goodman (1978), theories - similar to other forms of presenting empirical relations - are versions of the world whilst these versions undergo a continuous revision, evaluation, construction and reconstruction. According to this, theories are not (right or wrong) representations of given facts, but versions or perspectives through which the world is seen whereas Rigg (2007, p.15) argues that "theory is a simple statement of fact".

Theoretical considerations are important in the design of a generalized model for urban sanitation interventions. However, 'generalization' is certainly a difficult task, even if we conceptualize contemporary sanitation-related arguments. In reality, when we add the notion of 'informal settlements' and/or 'developing countries', then the situation seems unmanageable due to its local circumstances and diverse 'social-technological-governance' systems. For instance, the studied slums couldn't be generalized simply because of the dissimilar occupational status of people where the residents of GO- and NGO-managed slums are involved in formal and informal sector respectively. Despite this, different GOs and NGOs are always concerned about promoting and improving sanitation services to the urban poor in developing countries with the help of the local or international donor agencies. However, in the existing sanitation debates, the major concern is that a single approach or a unique technology is not appropriate in all instances, as there are varied socio-political as well as

environmental settings in the real world, including people's practices, which are known to be crucial in sanitation projects. Therefore, 'generalization' should be based upon considering the practicalities of local phenomena such as physical settings (location, geology, weather and climate, ground water level, etc.), socio-economic status, availability of land, settlement pattern, population density, political, environmental issues, and so on, which can be considered as internal settings of the informal settlements. Apart from this, some external inputs mainly 'technology' and the 'governance' should be taken into account to establish a generalized model for sanitation intervention. Regarding the inputs the following issues and associated options (Table 2.1) are widely exercised in the sanitation sector. It is worth choosing one option from each category to design an efficient and sustainable sanitation programme.

Table 2.1: Main issues and associated options in the sanitation sector

Issues	**Options**		
	Option 1	**Option 2**	**Option 3**
Technology	Onsite	Offsite	Other
Finance	Subsidy	Self-Help	Cost Recovery
Ownership	Private	Shared	Communal
Maintenance Scheme	Subsidy	Pay and Use	Monthly Scheme
Promoter	Government	NGO	Private Sector
Commencement of Service	Software	Hardware	Both
Programme Strategy	Supply Driven	Demand Driven	Participatory
Vision	Some for All	More for Some	More for Most

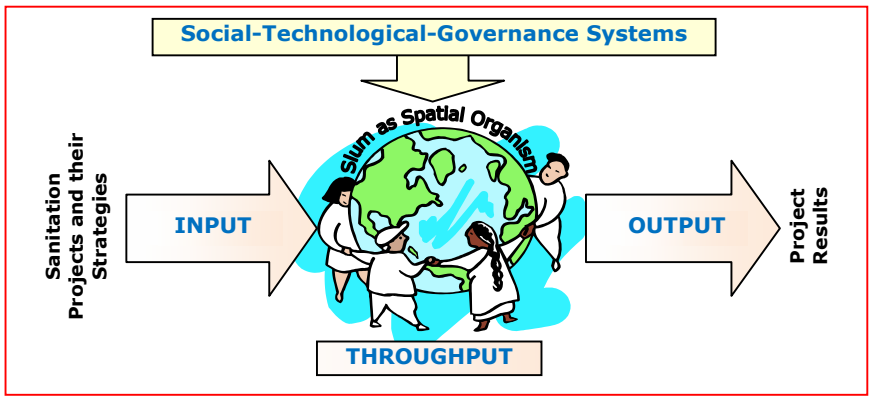
Apart from the above-mentioned issues and options (Table 2.1), the local contextual matters are important for sustainability of the programme. As stated earlier that the communities themselves are not homogeneous; there are rich and poor, the powerful and the powerless, the articulate and the silent, responsive and non-responsive, etc. A new system, which benefits a poor section of the community, can threaten old systems of community organization (Chauhan, 1983). Therefore, according to many, sanitation should be considered as a holistic issue in every spatial and social setting. Due to ignorance of the holistic approach and adaptation of a structured programme, the current sanitation target declared by the government of Bangladesh is likely to be unsuccessful. The severity of the so-called 'brown agenda' (Gandy, 2004a; Roy, 2009) issue in which 'sanitation' is one of the major components, will require a planning support system to tackle the problem in fast growing cities like Dhaka. In this regard, recently the Dhaka Metropolitan Development Planning Support System (DMDPSS) has been developed and piloted with the aim of providing local planners with a tool to construct alternative land-use planning scenarios and compare them using a set of sustainability criteria (Roy, 2009). Considering a holistic approach, this research will consider the 'social-technological-governance' issues, which will help to find the factors that facilitate or hinder the sanitation programmes in particular urban circumstances.

2.4 Theoretical Framework and Analytical Agenda

The Social-Technological-Governance Systems

Considering the scope, direction, areas of research and operationalization of some relevant terminologies in the previous chapter, it is necessary to illustrate the concept of a simplified 'input-throughput-output' model (Figure 2.1) that I have adopted as a background theme of this research. This model provokes basic questions related to water and sanitation such as 'what goes in?', 'how does it work?' and 'what comes out?' which also connects with the 'urban metabolism' concept. This strengthens the overall research outcomes through analyzing the linkage between steps and across study areas. Here, sanitation project interventions from GO and NGO is considered as input, project results as output and the informal settlements have been considered as spatial organisms where the entire 'social-technological-governance' system takes place. In this research the 'social-technological-governance' system is considered as a central analytical agenda while it is also recognized as the most influencing factor that impacts on different sanitation programmes around the world (Mehta et al, 2007).

Figure 2.1: Input-throughput-output model



This 'input-throughput-output' analysis will not only contribute to assessing the impacting factors in the sanitation sector but also offer new possibilities to assess WatSan projects through the analysis of 'social-technological-governance' systems that cover local contextual issues that are mostly ignored. The use of the 'social-technological-governance' system in this thesis offers an appropriate conceptual framework to explore the 'causes' of the dreadful sanitation situation in the urban slums of Dhaka. Conversely, the 'effect' of sanitation is not much associated with current analytical dimension whereas public health and environment related research globally persists and Bangladesh is not out of that list. Therefore, it is assumed that the 'social-technological-governance' framework will not only contribute to explore the facts that are impacting sanitation projects but also it will determine in what extent the local contextual issues are identified, administered and resolved. Sequentially, with an overview of the existing sanitation-related literatures, this chapter goes on to examine key issues related to the 'social-technological-governance' system that is evident locally and globally across different disciplines, emphasizing social, spatial and organizational trends of sanitation interventions and their impact. Including the description of existing

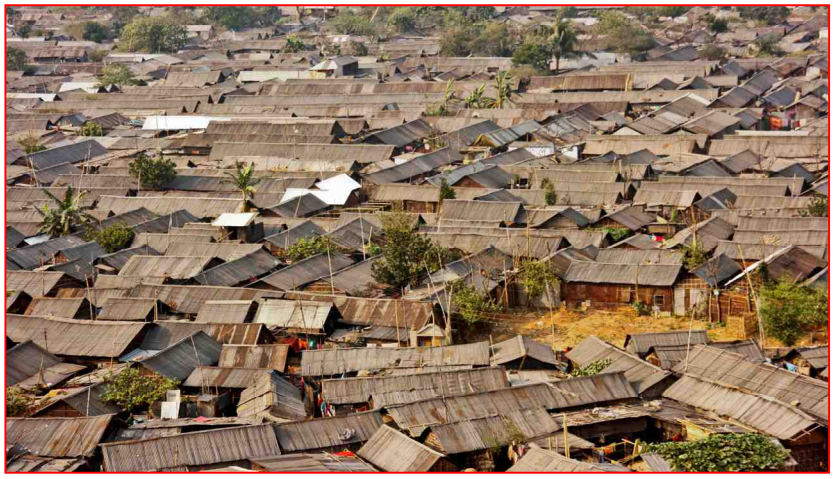
debates in the sanitation sector, the following sections are accumulated here to strengthen and highlight the issues related to the existing 'social-technological-governance' system that is widely visible in the local, regional and global WatSan sector.

2. 5 Social Dynamics and Sanitation: A Theoretical Discussion

2.5.1 The Setting

The informal settlements of Dhaka city are mostly illegal having no security of tenure and the people are experiencing some of the most difficult living conditions on earth. Squalor, sickness and infant/child deaths from preventable diseases are everyday realities for a mounting population without access to safe water and sanitation (Landon and Fairclough, 1998). It is recognized that many factors including geographical, environmental, political, economic, neighbourhood settings influence social dynamics of a particular area. Islam et al (1997) argue that the socio-economic conditions facing the urban poor are often harsher than those facing the poor in rural areas because of the dense urban living conditions. Most of the informal settlements are made of bamboo, straw, low quality wood and tin sheets (Figure 2.2). Usually, they comprise a single room for the whole family (Figure 2.3). According to a recent report, population density in those informal settlements ranges from 700 to 4,210 per acre and a minimum of four and maximum of ten people share a room (UNEP, 2006).

Figure 2.2: A visual impression of a slum in Dhaka



Source: Adnan, 2012 (http://photography.crowdsourced.travel/photo)

Figure 2.3:
A single room for all the family members

Source: Field Survey, 2010

It is the poverty that creates and elevates social, economic, health and environmental problems. Hossain (2008, p.22) identified that "the poor people maintain both kin and non-kin based social networks in the city's slums" (Caldwell et al, 2002); and "the social networking generally works as 'social capital' in the urban adaptations of poor migrants, who have limited access to the formal economic and social systems of the city" (Hossain, 2008, p.22; Hossain, 2005). These poor migrants contribute to various urban (in)formal sectors and their burdensome concentration not only increases inequality and social differentiation but also create an extra weight on the city authorities who are responsible to keep the city

clean. Ullah (2004) and Das (2003) identified that the rural migrants adapt quickly in the slum ecology as they are habituated with previous poor livelihoods in their districts of origin and they apply indigenous knowledges to solve and/or minimize the various social, economic and other problems they encounter. From the psychological point of view, they try to adjust themselves with their newly adopted behavioural practices to balance their needs from their surrounding community environment. They have a tendency to get material support from the state under the name of grants, relief, subsidies, aid, etc. Arguably, this kind of support creates barriers to their 'self-help' initiatives and these kinds of provision psychologically affect the poor communities and ultimately create barriers to the process of social construction. It is often argued that, "access to land, shelter and basic services, in addition to credit, education, better health, nutrition, and gender awareness, are essential for neighbourhood development but, access to these components for all poor households living particularly in a city is neither within the financial and institutional capacity of central or local governments, nor do poor households consider them affordable" (Ghafur, 2000). On the other hand, Islam et al (1997) identified that the GoB has adopted a policy of leaving most of the housing activities of the low-income groups and the poor to the informal sector and NGOs which is realistic but not really desirable. This ultimately worsens the whole scenario of metropolitan Dhaka where government has shifted its focus away from deprived poor neighbourhoods.

Another potential reason for overlooking the slum clusters from GOs and NGOs is due to the recognition of slums as crime zones and place for unsocial or antisocial activities. Confrontation and contestation among the residents is a regular phenomenon that hampers the surrounding social environment. In addition, there is social stigma against those living in slums because of common illegal activities such as drugs, prostitution, hijacks, robbery, and protection rackets. These attract strong social disapproval because they are against cultural norms, with the result that such communities become marginalized and Das (2003) supports Oscar Lewis's (1968) notion where he describes slum dwellers as deprived and disorganized. He also pointed out that the slum dwellers have a 'design of living' in which they adapt themselves and get a readymade set of solutions for their problems. But the matter of fact that while attempting to solve their own problem the poor people are creating new problems in the overall urban spaces. For instance, the building of unhygienic latrines and their use contaminates the environment and deteriorates urban living conditions (Islam et al, 1997). It is a matter of fact that lack of knowledge about sanitation technology and associated health benefits always hinders the adoption of sanitary latrines. The stench and state of urban poor communities are often used by municipal and city authorities as convenient reasons for continuing to disregard them, and for continually attempting to obliterate them from the urban scene through evictions, or sometimes by simply building a physical wall to hide them (Figure 2.4). So, the slum residents are living in the city areas but they are often socially and politically marginalized and are not recognized as citizens in this so-called civilized urban society. On the other hand, the poor people are also not aware of or exercise their citizenship rights. Even the politicians use these settlements as secure 'vote banks' (Chaplin, 2011a) or 'vote brokers' (Ayee and Crook, 2003; Calabrese, 2008) but the rewards are not quite

Figure 2.4-A,B,C,D: Road and walls are acting as physical barriers to hide slum areas

Source: Field Survey, 2010

certain. Here, McFarlane (2008) added that, in the domain of citizenship, slum populations remain outside of the sphere of citizenship and rights and are living without any inherent moral claim on the state. It is evident in Mumbai, there has been a systematic programme of slum clearance as the Municipal Government evicted 167000 people from their homes in the city's slums in 1998 (Emmel and D'Souza, 1999). This fundamental attack on the human rights of many of poor citizens has been legalized to achieve the political leaders' vision of developing a modern city in the global economy.

2.5.2 Knowledge, Realities and Taboos

Arguably, it is understood that poor people have a satisfactory basic knowledge about sanitation, hygiene and its relation to health and well-being but people's socio-economic and neighbourhood environment reduces their power to act and encourages them to think of themselves as victims of fate and poverty. It is absolutely vital to provide basic hygiene education prior to any sanitation projects but it seems that the GO-NGOs, while adding an extra layer to people's existing knowledge, are not keen to identify why their efforts are falling through. Nawab et al (2006) identified one of the reasons as taboo (Black and Fawcett, 2008; Jewitt, 2011; Jewitt, 2011a), for instance it is still unthinkable for women to talk about latrines and hygiene with men - it would be a matter of disgrace. Jewitt (2011) identified deeply embedded taboos surrounding human faeces resulting from a lack of effective excrement management systems in many parts of the Indian subcontinent. For instance, among the Muslim community, people generally do not like to share a household's private matters with outsiders as they think WatSan-related activities are private. Among the older generations, it is widely visible that they prefer open defecation. For them an in-house latrine is similar to bringing closer the untouchable and impure excreta into the home (Nawab et al, 2006). They feel at ease while defecating under the open sky in nature, where they escape the smell with no fear of being disturbed by others knocking on their door. But this is a gendered issue because women still fear being disturbed in the open even in darkness and for them defecation is always a troublesome job. Their first priority is privacy and there is little awareness and concern about health and hygiene (Nawab et al, 2006) which raises the issue of 'knowledge, attitude and practice (KAP)'.

'Knowledge, attitude and practice (KAP)'- based studies have been used widely for over 40 years by GOs, NGOs, donors and development partners in different areas including water and

sanitation (Eckman and Walker, 2008). This is an evidence-based, comprehensive model (Mahamud, 2005) to collect information regarding the knowledge, attitude and practice that determine a community's priorities, beliefs and cultural practices (Naylor, c2011). In contrast, Stanton et al (1987) raised the question about the quality of data generated through questionnaire-based KAP studies as they suggested that questionnaires should not be used as proxy for direct observation of hygiene practices. Despite this claim, it is argued that the nature of KAP study is highly focused and mostly designed for a particular region or culture and topic. "KAP studies can offer us the result on how individuals or groups feel about specific things, what they know, and how they act" (Naylor, c2011, p.2). Through the analysis of 'social-technological-governance' systems, this research tends to explore all the above-mentioned issues that are known as the core ingredients of KAP study. However, considering this broad and comprehensive idea about knowledge, attitude and practice some argue that it takes time to consolidate the changes of behaviour whereas more follow up is suggested for further improvement after any WatSan project intervention (Mission East and KIRDARC, 2009), which is also associated with the 'software' issue. Makau and Opiyo (2007) indicate that local context and traditions heavily mandate decision making in personal as well as at the community level. A possible reason is also identified by the Mission East and KIRDARC regarding sanitation-related practices when they evaluated that in beneficiaries' groups or communities people feel less empowered by the lack of WatSan facilities. It is also suggested that sufficient water supply can be an important motivating factor in improving the frequency and quality of hygiene behaviour (Mission East and KIRDARC, 2009; Vivas et al, 2010; Levison et al, 2011) that may aid different sanitation interventions.

As a Muslim-dominated country, different hygiene-related behaviour, rules and existing knowledge govern the lives of people in Bangladesh. Dealing with the needs for water and sanitation in the urban informal settlements, is stressful and time-consuming for women. Theirs is the labour of water collection and the burden of health problems related to inadequacies in provision of water and sanitation in the household and neighbourhood falls on them (Marlin et al, 2012). For women, inadequate access is a source of shame, physical discomfort and insecurity. Exposing oneself in the open, especially during menstruation, affects women's dignity, and sense of self-worth (RGNDWM, 2003; Saxena and Prakash, 2008, Voorden and Eales, 2002). Everybody, especially women need water even after urination for cleansing purpose, which is common in Muslim cultures (Nawab et al, 2006). The Islamic religion requires of a person all possible cleaning including anal cleansing as part of purification rituals for praying (Avvannavar and Mani, 2008). Even the latrines are built in a North-South direction in Bangladesh to avoid facing Mecca. Generally, people use a bucketful of water after defecation as Bangladeshis express disgust at the thought of only using/wiping with dry toilet paper, which anyway is too expensive. Considering this issue, coupled with the general lack of knowledge about hygiene, the poor inevitably experience different types of waterborne diseases in their everyday lives. Hygiene behaviours are particularly difficult to change as they relate to daily activities. They are shared by the whole community and they form part of the culture and traditions of the community. For instance, apart from modern medicine, people often prefer some other systems of medicine such as

'*Ayurveda'*, '*Siddha'*, '*Unani'*, '*Homeopathy'*, '*Kabiraji'* and '*Jhar-Fuk*', as these are regarded as economical treatment solutions and are traditional (Figure 2.5-A,B). From these treatment options, poor people eventually get some confidence in a sense that they could treat themselves with minimal cost. These kinds of realities, taboos and existing knowledge together with other social, political and economical factors, influence people's participation to a great extent.

Figure 2.5-A,B: Photographs showing advertisement for local yellow-fever treatment through *'Jhar-Fuk'* and *'Kabirazi'*

Source: Field Survey, 2010

Source: https://centre.icddrb.org/news/ (Accessed December, 2010)

2.5.3 Sanitation and People's Participation

The literatures on community culture suggest that people's responses and participation in development projects are mixed, as some are motivated and some are not that usually influences the community environment. Generally, people's participation depends on different interconnecting as well as specific issues such as whether the infrastructure is built for public or private use; or in terms of benefits and so on (Stein, 2004). Ironically, it is true that many development projects are not large enough and are not designed for the whole community within a settlement, creating conflict between beneficiaries and non-beneficiaries. In this context, exploitation of sanitation systems by the non-beneficiary groups is often evident. It is also argued that, a 'lack of civic sense' is relatively low among the slum dwellers (Singh, 2005), especially among the men, as some prefer to urinate against the toilet wall rather than go inside the toilet. Motivational campaigns may act as a driving force to expand hygiene education but a lack of willingness to join in is one of the main constraints. It is also arguable whether hygiene education alone can change hygiene behaviour, as people may not be interested to join such formal educational programmes; and it is also necessary to develop a certain level of infrastructure facilities like the provision of water points, latrine superstructure and healthy living environments to put them on the right track. Besides, the fear of slum eviction, poverty, the nature of the project, fear of a formal system, residential status and knowledge also obstruct people's participation. In addition, a strong socio-political issue impedes satisfactory community participation often recognized as 'power-relations' by the development partners. More about this issue is described under section 2.7. Here, Verweij and Dawson (2007) argue that community

participation is necessary to support development initiatives because their joint participation might contribute to public health, which will improve the situation. For instance, vaccination projects mounted by the public health department across Bangladesh has remarkably changed the scenario of Diphtheria, Polio and Whooping-cough. It is also necessary to make a link between sanitation and Disability Adjusted Life Years (DALYs) (Smith and Ezatti, 2005) to support a specific group of vulnerable people. However, there is still a need to use public health measures to impact more directly the underlying determinants of the water-borne disease burden (Lopez et al, 2006) in the urban informal settlements.

Another straightforward notion is the absence of 'tenure security' that is recognized as a major problem (HI, 2011; Mitlin, 2003; Syagga et al, 2001) and cause of non-participation in sanitation provision, while it sets out that the security of tenure or official status and documentation to live in a settlement is an essential component for the improvement of the livelihood of lower-income groups (UN-Habitat, 2003; WaterAid, 2001; Werlin, 1999). In 2001, an estimated 924 million people in the developing countries were living in urban slum areas without tenure security (UN-Habitat, 2003b), which leads to an increased threat of eviction (DiNino et al, 2006). The importance of tenure in promoting investment by residents of informal settlements has long been recognized (Agbola and Agunbiade, 2009; Baharoglu, 2002; Boonyabancha, 2009; CUE, 2010; DiNino et al, 2006; Toomey, 2010; Uzun and Colak, 2007) but the NGOs in Bangladesh are still implementing their projects in those slum areas even those settlements are under the risk of eviction (WaterAid, 2001). In this context, people's participation often came under threat due to the nature of dwelling as temporary occupation of land makes their mind unsettled and focusing on a particular issue is understood as a waste of time, effort and money. For instance, repeated eviction wears away at the household economy. When houses are demolished, money is usually spent rebuilding elsewhere or in the same place. Emmel and D'Souza (1999) identified that money spent to buy house-building materials necessarily means less money to feed their family. They also pointed out that the governments of developing countries like Bangladesh are ignoring the problem of the poor of the city and this kind of state attitude often results non-participation by the community.

In Bangladesh, most public service providers consider lack of tenure as an excuse for not providing infrastructure services to informal settlements and this illegal status prohibits them from enjoying their rights as urban citizens (Syagga et al, 2001). Agbola and Agunbiade (2009, p.103) identified that "the tenure status in the slums of Lagos had a major impact on poverty and overall environmental quality since the threat of eviction fosters a negative attitude among residents towards improving their environment". In a somewhat similar vein, the inhabitants of Morogoro in Tanzania have been issued with 'short-term' two-year residence permits, which does not actively encourage the residents to invest (HI, 2011). FAO (2002) identified that failure to consider land tenure implications in any intervention is likely to result in unanticipated outcomes and may lead to it not generating an improvement. Conversely, tenure security encourages the poor people in improving their living conditions and provides them with a sense of security (Baharoglu, 2002). But this is always not the

case whereas land title documents in Pakistan are worthless and does not guarantee tenure security and some other signals from the public authorities enable the poor to have sufficient confidence about their tenure status (cited in Baharoglu, 2002; Balamir and Payne, 2001). Handzic (2010) placed greater emphasis on infrastructure and the improvement of the living conditions rather than legalization of land tenure arguing that it will not help the poor people due to taxes and other service fees. Some argue that, "individual tenure usually means that the better off eventually replace the poor and collective land tenure helps protect people during the vulnerable transition period from being informal squatters to being formal land and housing owners" (Boonyabancha, 2009, p.323). However, FAO (2002) identified that the security of land tenure helps to improve environmental conditions and promotes gender equity, resolve local conflicts, facilitate economic development and may result fundamental shifts in the local power structure as well as helps to tackle the physical, social and cultural isolation faced by a significant portion of city dwellers in developing countries (SEHAB, c2004). It is suggested by many concerns that "in scaling up tenure security, the problem must be considered at a policy (Balamir and Payne, 2001; FAO, 2002) rather than a project level" (Baharoglu, 2002, p.22). A community based participatory enumeration process seems to improve trust between local residents and the state which also reduces the risk of eviction and provide some protections against bulldozed their neighbourhood (Arputham, 2012; GLTN, 2010; Patel and Baptist, 2012; Patel et al, 2012; Muller and Mbanga, 2012; Payne, 2005). FAO (2002) recommends that the state should involve local communities and local governments in the administration and management of land and other common resources. "It is also important to know to what extent are different tenure arrangements able to equip local authorities to respond increasing demand for shelter and land, in addition to providing existing informal settlements with secure tenure" (Baharoglu, 2002, p.4). He also argues that, both tenure and regulatory reforms are needed: tenure reforms to improve tenure security for existing informal settlements, and regulatory reforms to facilitate access to legal alternatives for the future, making the growth of unauthorized settlements less necessary.

In recent decades, community-based resource management has gained attention from parishioners and researchers (Tyler, 2006 cited in Sun 2007) which is closely related to community participation. It is recognized that self-restraint, active participation (Singh and Ram, 1997; Griffin, 1999 cited in Stedman et al, 2009) and local institution building (Adhikari, 2001) is essential for community-based resource management, while Sun (2007) argues that those institutions are embedded in local socio-cultural context and evolve with local economic and political dynamics. Apart from the local and political context, the issue of exploitation (Adhikari, 2001) and carelessness raises the metaphor of the 'tragedy of the commons' (Bromley and Cernea, 1989; Hardin, 1968). However, property right arrangements determine the way people manage their resources such as public-private facility while Werlin (1999) argues that the WatSan situation will not be resolved until residents have their own private sanitary facilities. In densely populated areas, privatization may responsible for the degradation of existing public facilities (Iyenger, 1989 cited in Adhikari, 2001) but many suggest that the community-based resource management may

promote a degree of equity if the right approach is used (Kellert et al, 2000; Nurse et al, 2004).

Conversely, IRC (2006) demonstrated that, the PSTC's community-based management systems in Bangladesh brought significant changes in power relationships between slum dwellers, landlords, water utility and city authorities where the benefactor organization use '5R Approach' (Relations with the community, Root level organization development, Resource person development, Resource center development and Rights based communication with official bodies and NGOs). Here, Marlin et al (2012) added that women's contribution make the community-based solution of WatSan management sustainable and effective. They identified that women are managers of sanitation and water resources for their families and communities in spite of the barriers that women regularly face when it comes to land tenure, access to water, resource control and affordability of privatized resources, participation and capacity which play influential roles in community-based management. This role provides them with management skills as well as a better understanding of political processes and strategies to ensure good governance (Marlin et al, 2012). Apart from the women's contribution, Sun (2007) identified that local contextual issues such as poor awareness, ineffective local institutions and general lack of capacity of the residents to manage their affairs is found to be critical in collective/participatory management (Chopra et al, 1989) of community-based resources. Some argue that unbalanced power relations among different stakeholders, bureaucratization, low level of transparency and accountability often decrease trust among the residents that pose strong significant threats to community-based resource management practice and further expansion (Sun, 2007). He also argues that "the intra-community divergence and the lack of sufficient sensitivity toward social and gender issues caused trouble for the communities, at times increased inequity between community members, and also sometimes created conflicts in the community" (Sun, 2007, p.230). The above-mentioned issues including the intra- and inter-community conflicts, power structure, resentment and different disagreements affect community participation in different development initiatives by GOs, NGOs and other parties. But, a different scenario came from Tamil Nadu, India where community-based 'self-help' groups play a significant role in community-based sanitation management while D'Souza et al (2009) recommend that sanitation could be an entry point for a more integrated approach to the provision of waste disposal, water, drainage, education and hygiene practices.

2.5.4 Sanitation, Hygiene and Public Health

Sanitation and hygiene both are interrelated whilst hygiene normally refers to practices associated with ensuring good health, cleanliness and is considered as one of the determinants of public health. This concept originated some two hundred years ago in Europe and the United States when it was understood that disease outbreaks were associated with poverty and poor sanitary conditions (Raeburn and Macfarlane, 2003). However, public health is not determined only by poor sanitation or poverty; rather different

'social determinants of health' (Frankish et al, 2007 cited in Siswanto and Sopacua, 2011) such as living place, income, genetics, educational status, gender, culture and social relationships are also responsible. WHO (2003) explains that the middle classes will have worse health outcomes than those of a higher social stratum. McMichael and Beaglehole (2003, p.2) added that "social and material inequalities within a society generate health inequalities"; and human ecology acts as a determinant of public health. Sometimes, the consequences of poor sanitation i.e. diseases and death in most cases are attributed to 'the will of God' where poor people find themselves helpless. Nawab et al (2006) argued that hygiene education, empowering the local people and effective government policies could help change the place of sanitation in the hierarchy of needs which is further illustrated in section 2.10.

In the nineteenth century, the public health movement was primarily directed at controlling filth, odour and contagion, based as it was upon the miasmic theory of disease and illness due to unhygienic behaviour. More recently, public health has come to be thought of as concerned with addressing determinants of health across a population, rather than advocating changes in individual hygienic behaviour. Nevertheless, a general lack of 'knowledge' about hygiene often leads to malnutrition, acute disease syndrome, chronic disease and finally to raised mortality. According to the government statistics (2005) diarrhoea is regarded as a major killer disease in Bangladesh and about 110,000 children under-five die of diarrhoeal disease every year mostly due to inadequate sanitation. It is thought that one in four deaths of under-five children is caused by diarrhoea. An average child in Bangladesh suffers 3-4 episodes of diarrhoeal disease every year (GoB, 2005). But, there is no government initiative by the public health department to disseminate this message to the poor communities. The investment in 'software' and/or hygiene education is undetectable/invisible as well as unmeasurable and thus, organizations show a lethargic 'attitude' to adopting this activity. Peal et al (2010) link 'software' with human behaviour and interaction, and they illustrated this a culturally and socially sensitive issue; that may associated with people's 'knowledge', 'attitude' and 'practice' that I discussed earlier. They also argue that it is a very complex issue that related to human behaviour while they understood that "hygiene education alone is not the answer" (Peal et al, 2010, p.5) to change people's 'practice' but it is more related to enlighten people about the health benefits of maintaining hygiene.

In the developing world and among the poor communities, the knowledge regarding different sanitation behaviour is not up to a standard level which affects the attitude and practice. Moreover, government programmes tend to visualize their activities through providing infrastructure or 'hardware' rather than hygiene education or 'software', which ultimately is narrowing the development pathways. NGOs on the other hand, especially those reflecting the views of donor agencies, see hygiene education or 'software' as an appealing concept. But the extent of hygiene education and the meaning of hygiene behaviour are often not clear, as most programmes consider only hand washing and the use of shoes/sandals during defecation. An ICDDRB study on 51 slum communities in Dhaka demonstrated that an

educational intervention is able to alter certain personal hygienic practices of the community inhabitants and can result in a marked reduction of diarrhoeal disease (Barreto et al, 2007; Khan and Shahidullah, 1982; Stanton et al, 1987). Similarly, Butala et al (2010) claim from their study on a slum-upgrading project in Ahmedabad, India, a significant decline in waterborne illness incidence and mosquito related illnesses. Moreover, Barreto et al (2007) also found their two longitudinal studies in Brazil, which were carried out before and after the sanitation intervention, demonstrated that diarrhoea prevalence could be reduced by 21 percent on average and that the reduction is higher in the high-risk areas. These findings contradict those who claim that there appears to be little prospect of further reducing diarrhoea morbidity rates by investing further in sanitation (Sastry and Burgard, 2005; Barreto et al, 2007). Here, Khan (1987) documented that the communal latrines in urban slums have no impact on the reduction of diarrhoea and the prevalence of parasites in the environment. He suggested that communal latrines alone couldn't solve this problem whilst it is necessary to educate the communities about the use of communal latrines and the safe disposal of all excreta. He pointed out that the movement of people, consumption of food from outside the area, and the occurrence of rain and dust storms may also help transmit parasites from one place to another. However, sanitation experts and researchers around the world recognize that 'software' should be provided first before any 'hardware' installation (Kar, 2003; PSTC, 2005). They also believe that expenditures on 'software' activities have a significant influence on performance, replicability, and potential for scaling-up (WSP, 2005) and lack of it in a programme may bring unexpected and unsuccessful results. Here, Peal et al (2010) argue that the 'software' approach will be sustainable when they successfully manage to match the 'expert' knowledge with the 'indigenous' knowledge; and whole activities need to be carefully planned, monitored and evaluated (WSP, 2005).

Another straightforward understanding is that public health interventions are always (or perhaps normally) government interventions (Petersen and Lupton, 1996; Verweij and Dawson, 2007; Watters, 1994) and people may think of it as a citizenship right but they often don't know how to reach the public health facilities. There is a vast discrepancy present in access to health care and public health initiatives between developed and developing nations (John and White, 2003). In the developing world, public health infrastructures are still forming and modern medicine has been contributing to the minimization of risks to public health since early 19th century. But the poor people can hardly afford this expensive means of treatment and instead often use traditional medicine. Floor (2004) argues that religious acts, ritualistic and traditionalistic phenomena often cause a burden on public health. For Bapat and Agarwal (2003), inadequate toilets or having to wait in long queues to use filthy toilets carry health risks and are sources of anxiety. As a result, the prevalence of various waterborne diseases, compounded with the poor health of millions of slum people, is very common, especially amongst women and children.

It has been observed that even though "policy analysis is an established discipline in the industrialized world ... its application to developing countries has been limited" and "the health sector in particular appears to have been neglected" (Walt and Gilson, 1994, p.353).

McGranahan et al (2001) point out that the governments of many developing countries tend to align their public health policies and priorities to the interests of the advanced nations. Here, Evans (2004) argues that developing countries should devise 'locally sensitive' strategies and adapt the approaches used by the industrialized countries to their own particular situations. Data inadequacies are part of the problem (Watters, 1994) in countries like Bangladesh, and the lack of reliable data on vital events including births, deaths, and the incidence of diseases, makes it virtually impossible to quantify the effect of public health (UN-Habitat, 2003). Theoretically, the urban poor have equal access to the public health facilities in Bangladeshi cities (Fariduddin and Khan, 1996) but the privatization of healthcare systems and a focus on high-tech medicine rather than basic prevention through appropriate sanitation technologies have led to growing inequalities (Beaglehole, 2003; Griffiths and Hunter, c2007) in the urban sector.

2.6 Sanitation Technology and Sustainability: A Central Discourse

'Technology' is the most questionable issue in the discourse of urban sanitation as a wide range of technologies are now in operation globally. In the existing technological debate, conventional sewerage systems or 'flush and discharge' systems are considered as an 'anti-poor' technology (Paterson, Mara and Curtis, 2007), because they are neither an affordable nor environmentally sustainable way of dealing with the sanitary crisis in developing countries (Jewitt, 2011; Pathak, 2006; Singh, 2005; Katukiza et al, 2010). It is argued that a condominial sewerage system is technically feasible and economically appropriate for urban informal settlements and comparable with conventional systems (Katukiza et al, 2012; Mara, 2012; Paterson, Mara and Curtis, 2007). It has been successful in Latin America, and in the 'Orangi Project' in Pakistan, and is becoming increasingly common across Asia. But in the context of Dhaka city this option might not be appropriate as lane-wise housing with linear pattern dwellings is not present. In Dhaka city's slums, houses are built in a haphazard and unplanned way and the local experts suggest that the installation of lane-sewers is not possible in such conditions. Alternatives include 'on-site' sanitation systems like different types of pit latrines and septic tanks. Considering this situation, some local sanitation experts from the NGOs argue that the twin-pit technology could be the most appropriate option for the slum areas because it can handle large populations and needs less water to function. After investigating 'Kulsiteck project' in Bangladesh, Hoque et al (1994) concluded that improved WatSan provision is not helpful if not used properly whilst households were facilitated by structured 'twin-pit' latrines in this project. The problem is that the users did not understand the principle or purpose behind the design and the functioning conditions of these alternating pit latrines; as the users de-sludged indiscriminately and contaminating the environment. Conversely, Singh (2005) and Pathak (1999) contrasted a sanitation movement in India and drew attention in terms of impact by providing the same 'twin-pit' technology across the country. This "'Sulabh' Sanitation Movement is based on experience and morality, combining an appropriate technology and demand for social change, drawing upon 'Gandhian' ideology" (Singh, 2005). A relatively new concept of 'ecological sanitation'

(ecosan) that emerged in early 1990s (Black and Fawcett, 2008; Terrefe and Edstrom, 2007) has been shown to be economically feasible and environmentally sustainable (Langergraber and Muellegger, 2005) in some contexts. This ecosan system together with a urine diverting (UD) latrine aims to close local nutrient and water cycles that may benefit the agricultural sector. Despite this fact, a study in Pakistan revealed that the communities were strongly opposed to the ecosan technologies (Nawab et al, 2006), whilst the study underlines the importance of incorporating socio-cultural preferences (Dyalchand, Khale and Vasudevan, 2011) and religious influences (Das, 2003) in the planning of improved sanitation. The main problematic issue is user practices: Bangladeshies are mostly 'washers' not 'wipers' and the ecosan and UD technology supports a context where users are 'wipers'. These technologies are often regarded as complex systems while local service providers especially sanitation project-related NGOs believe that a simple form of sanitation technology may efficiently switch people's current unhygienic practices (Hoque et al, 1994). Here, Black and Fawcett (2008, p.132) argue that "without hygiene education and demand cultivation, no toilet device, wet, dry or any combination thereof, will enjoy rapid take-up".

Another concern is the disposal of human excreta, which is regarded as one of the most basic of urban services, usually seen as the responsibility of governments (Allison, 2002); but this has been affected badly by budgetary limits. Conventional sewerage systems are not only expensive, but they also require a level of water supply (DFID, 2012; Mara, 2012; Postnote, 2002) that is often not available in Dhaka. Also conventional sewerage seemingly is not affordable for either the government or the individual slum households (Paterson, Mara and Curtis, 2007; Katukiza et al, 2010). This has led to the adoption of low-cost onsite technologies, which are not only cheaper to construct (DFID, 2012) but also require less water to function and suitable for rural and poor urban areas (Mara, 2012; Postnote, 2002; Tremolet et al, 2010). Regrettably, Sinnatamby (1990) put emphasis on house density, where he argues that the sewer network can demonstrate lower the cost per plot serviced as the density of settlement increases and become cheaper than onsite sanitation facilities. Apart from the onsite-offsite debate (Howard et al, c2004), some additional issues, like size of the superstructure, number of chambers, depth of the pits, water point, construction materials, geological settings, etc., are also important for the sustainability of the system. Moreover, latrine pans are the most preferable option in Bangladesh as everybody uses a bucket full of water for anal cleansing and flushing (Figure 2.6). A water point adjacent to

Figure 2.6: Preferable latrine and urinal options in Bangladesh

Source: Field Survey, 2010

the superstructure may influence people to maintain hygiene but in most of the cases the water points are either absent or out of order in those settlements. Moreover, some other influential factors such as the technical, logistical and economic complexities are considerably obstructing the pathways of WatSan-related development.

In Bangladesh, different onsite sanitation systems, like pit latrines, twin-pit latrines, septic tanks, cluster latrines, sanitation blocks, etc. have been adopted in different GO- and NGO-managed sanitation programmes. In addition, different types of unhygienic hanging latrines are widely used by the slum dwellers where GO and NGO programmes have not yet reached. The innovation and adaptation of appropriate sanitation technology that can support high-density populations in urban informal settlements is a growing concern worldwide. Akbar et al (2007) formulated a model to minimize the water problems in the informal settlements but consequently they don't claim this model as a complete solution as it can partially aid the urban poor and may be applicable to those cities where there is little or no problem with the availability of such services. Here, Murphy et al (2009) argue that the appropriate technology is just a fraction of the solution in achieving sustainable and safe access to water and sanitation worldwide while, Mehta et al (2007) argue that technologies are known to be produced by social processes. Likewise, Monstadt (2009) believes that "the formation of these environmental infrastructure problems and the development of socio-technical innovations and environmental solutions are geographically concentrated in the urban landscape; and, ironically, the ecological sustainability of these infrastructures is highly interrelated with urban sustainability". Here, I would argue that there is no unique technology that can solve the entire sanitation problem in the informal settlements because the social, physical, economic and other contexts of those settlements are different. In the discourse of sanitation, the technology always remains at the centre of all analyses; most of the users as well as some experts used to blame technology (Holden, 2008; Frenierre and Szyliowicz, 2008) as the most vital and determining factor of project failures but my standpoint is different as I think that project failure does not merely depend on technological setbacks and several social and governance-related dimensions are most likely to impact the technology and obstruct the efficiency and performance of a certain technology.

2.7 Governance: Global, State and Local

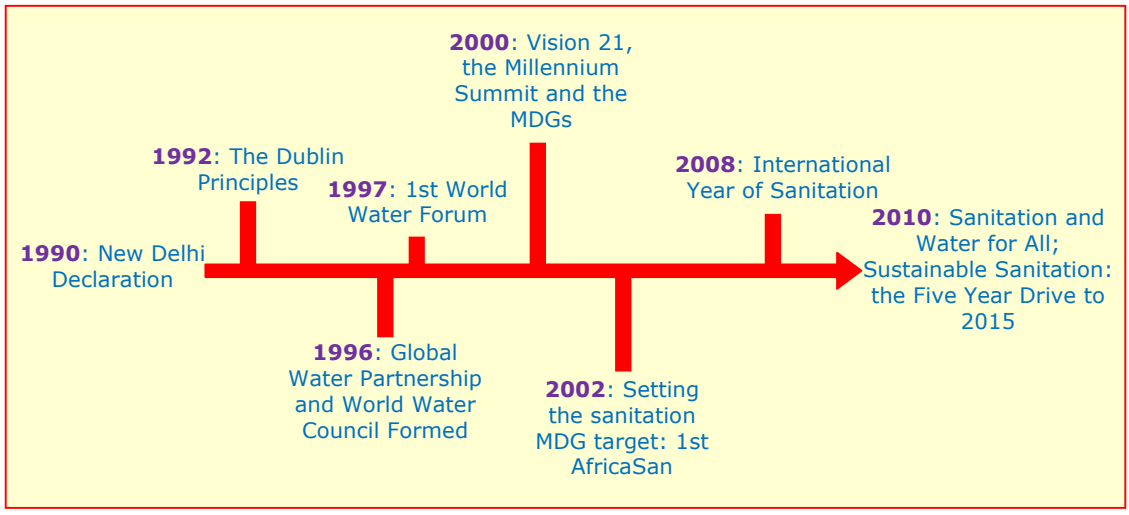
Governance as a theory is still growing in the domain of public administration. Due to its varying nature, recently it has been under debate as a theory and practice among the practitioners and international aid agencies. According to Landell-Mills and Serageldin (1991) governance refers here to an issue of effectiveness, performance and quality of the political and administrative system, which denotes how people are ruled, and how the affairs of a state are administered and regulated. "Governance refers to a nation's system of politics and how this functions, in relation to public administration and law" (Hussain, 2003, p.6). Good governance both at the community and institutional level is important and may act as a driving force to implement sanitation programmes. Conversely, governance failure merely

obstructs the development pathways while 'bad governance' is sometimes blamed on 'cultural failings' and the lack of a 'civic sense' (Singh, 2005). Here, Gandy (2004, p.181) explains "the spatial problematics of the disease burden in the informal settlements became more explicitly an issue of urban governance, often leading to institutional reform". The following sections present WatSan-related concerns and dilemmas that are practised worldwide and evident in regional, national and local level programmes.

2.7.1 Global Attention

Sanitation-related global attention has been paid through inauguration of different platforms such as the MDG seven that I mentioned in the introductory chapter (section 1.5). This goal seven is not the only agenda taken from a wider platform but many global consultations on safe water and sanitation have been carried out to tackle this problem, such as the UN declaration 1981-1990 of the 'International Decade of Water Supply and Sanitation', the New Delhi Statement of 1990, the Dublin Principles in 1992 and other significant initiatives were specifically arranged (Figure 2.7) to develop pathways and identify politics in the WatSan

Figure 2.7: Global framework for action in the water and sanitation sector



Source: WSSCC, 2000 cited in Lane, 2012 (Figure modified by author)

sector (Ghosh, 2012; Kacker and Joshi, 2012) that helped to set a collective framework for action. From those initiatives, it is understood that much of the water target is likely to be met but substantial progress is required in sanitation (IDS, 2011; UN, 2008). This may be due to less attention given to sanitation (Castro, 2008; Tayler and Scott, 2005; Lane, 2012), but all the above-mentioned global consultations (Figure 2.7) created a platform for sanitation whereas different local and global initiatives made this sector progressive and Lane (2012) argues that water and sanitation is now recognised as a fundamental human right. However, many of the pathways that were set out in 1990 have proven difficult to follow whilst the 'Washington Consensus' shifts the development trend from 'top-down supply-driven' to more 'bottom-up demand-driven' strategies (IDS, 2011). Apart from these

wider platforms, some concepts and ideas have been developed to tackle the sanitation problems in developing countries, such as CLTS (community-led total sanitation), cost recovery, participatory method, etc. In all of the above-mentioned global and local ideas, concepts and projects employed technology as a tool of success. But the global politics to choose appropriate sanitation technology for slum areas are still undecided and not even generalized. This may be due to a hidden political ecology and political economy that often help to secure the stakeholder/actors' political and institutional strategies, missions, visions and ideologies that are briefly discussed in the following (2.7.4 and 2.7.5) sections. Nevertheless, it seems that the post-MDG world is likely to be very complex in proposing new development pathways. It should be noted that, in comparison with other development sectors, the WatSan sector has been seriously neglected, by both national governments and donor agencies (Dietvorst, 1994) in terms of investment and priority. In this situation, IDS (2011) raises questions on- 'what will happen in the near future as we approach Rio +20 in 2012 and the MDG target date in 2015?' IDS demonstrated that the World is going to miss the targets but understanding from past and current strategies and assessing possible alternatives will be positive inputs to making successful upcoming choices that are gender sensitive and pro-poor.

2.7.2 National Initiatives

In response to the MDG and the World Summit on Sustainable Development (WSSD), a lot of advocacy drives were made by the WSP-World Bank, UNICEF and WSSCC-B (Water Supply and Sanitation Collaborative Council-Bangladesh) for the adoption of total sanitation programmes at the national level through GO-NGO partnerships. In line with the spirit of the MDG and WSSD, an initial target of sanitation for all by 2015 was set by the GoB. Later, the GoB was enthusiastic about the total sanitation concept and set the highly ambitious target of 'sanitation for all' by 2010 (DAM Report, 2005; GoB, 2005), which was unsuccessful as the pace of sanitization and the state of accountability of related institutions were found to be not satisfactory. They initiated the concept of 'latrinization' to replace the idea of 'sanitization' that is further analyzed in chapter eight. In the view of many observers, this is a violation of current sanitation strategy and obstructs the attainment of sustainable sanitation interventions across the country. The present government revised this target again and they put another unrealistic target, i.e. 'access to a latrine for every households by the year 2013'. This target apparently declared to minimize government effort and didn't reflect matters related to users' convenience and state of the infrastructure, which notably overlooked the 'power of governance' in sanitation projects that is obvious and worldwide recognized to meet the targets.

Regarding the hierarchy of governance, Konteh (2009, p.77) argues that "the formulation and implementation of sanitation and health policy can be better ensured by a decentralized governance system which places the people at the community level at the centre of every stage of the process". But CPD (2001) says, the functioning of local government (LG) units is

under the strict administrative control and supervision of the public bureaucracy and the close political control of the national government/party in power. In Bangladesh, LG has been used to provide political legitimacy to the regimes that usurped state powers through unconstitutional means (CPD, 2001). In consequence, LG remained weak and ineffective as representative units of local governance and it can be labelled as a mere extension of the national government (Yilmaz, Beris and Serrano-Berthet, 2008), with guided and limited local participation (CPD, 2001; Hussain, 2003). Currently, responsibility for sanitation is divided among a number of ministries, based on their involvement in urban affairs, housing and public services, rural development, environmental protection and local government administration. "The coordination between different agencies and conflicting power relations often leads to a confusing mix of institutional activities, sometimes resulting in overlapping authorities or in a situation where no organization seems to have clearly defined responsibilities, thereby resulting in mistrust, or even conflicting directives" (Elledge et al, 2002, p.45; Elledge, 2003, p.21). "Bangladesh has succumbed to political indiscretion, corruption and bureaucratic intemperance, which have severely diminished the capacity of the state to perform at a preferred level" (Zafarullah and Rahman, 2008, p.749). Moreover, the political leaders hardly show their faces after gaining political support from the community (Mitlin and Satterthwaite, 2004), which always disheartens the poor people. The existing legal and regulatory framework is a means of bureaucratization, where the NGO affairs bureau of the government of Bangladesh oversees different NGO-managed development projects, giving chances to spoil this sector by corruption. However, "corruption is not merely limited to the bureaucracy; politicians, businessmen, professionals and military personnel are also involved" (Zafarullah and Rahman, 2008, p.746). The lack of accountability and transparency of Dhaka city's urban government also makes this sector corrupt and inefficient; and it is hardly possible to measure the extent of the corruption and inefficiency of these institutions. Zafarullah and Rahman (2008, p.746) strongly argue that, "A class of extremely rich people dominating politics and business has emerged and their dishonest activities overrun the realm of government, with the common people unwittingly paying the price".

On the other hand, the types of intervention and approaches adopted by the NGOs have been lauded as being much more innovative, effective and people-oriented (Seraj and Sadeque, 2005), mitigating the penetration of power relations to the grass-roots level. But the extent of NGO-led interventions is inadequate as the bigger organizations shy away from urban sanitation projects. This may due to informal settlements lacking legal legitimacy, and the constant risk of slum eviction which therefore hinders investment (Rahman, 2006a). Moreover, the relation between NGOs and their funding agencies is one of inequality, where the power rests with the funding agency, which can impose conditions for turning on the money tap (Hilhorst, 2003).

2.7.3 Local Responses and Actions

Nowadays, community participation is regarded as a foundation of infrastructure projects, which is also crucial in all aspects of urban development (Petersen, 1996). The concept of 'community' has frequently been associated with social cohesion and a readiness to participate (Werna et al, 1998). But the reality in Dhaka is of the formation of control groups inside the communities that often hinder the community participation process. For instance, the unequal distribution of the state-owned infrastructure projects within the city creates conflict among neighbours. In addition, unethical power practices by politicized or non-politicized musclemen or 'mastaan[7]' groups often victimize the organizational actors and the residents. These groups use violence or threats to demand material support in the name of social services or cooperatives or other purposes, which in turn then obstruct the facilitators' further access to the community. So, community participation is desirable but it is fundamental to understand the problems associated with it as Cooke and Kothari (2002) describes participation as 'a new tyranny' or unjust exercise of power. Two types of power structure generally exist in the slum that identified by local NGOs. One is institutional power which is recognized and appreciated by the community and the other is illegitimate power without any social approval also known as 'infra-power'. Hansen and Verkaaik (2009) described this 'infra-power' as mobile, tactical, evanescent and morally ambivalent dynamics of power that have no predictable ontology of its own and this power often applied to maximize benefits of the associated 'big men'. Local service provider organizations took several initiatives to solve this 'power relations' problem and one of the strategies of the WatSan-related actors are to 'adapt the antagonist as advisors' to gain control over them through giving them 'position', not 'power'.

Apart from this crucial power relations problem in the slum, the response rate from the grassroots is seemingly not remarkable due to presence of various types of people and their diverse previous practices. Therefore, a typical sanitation programme is not applicable in all instances as generalization is apparently not possible in those diverse settings. Despite this fact, some unique strategy such as formation and working through community based organizations, motivational campaigns, hardware installation, inclusion of women, considering people's voices, etc., have been in operation as effective measures towards sanitation interventions (DSK, 2010). Consequently, some NGOs have come forward with many ideas and working strategies developed from previous project experience and they believe 'people will get involved when they feel that they will benefit'. Apart from this straightforward notion of organizational and community responses towards improved sanitation, some insight into invisible mechanisms, such as 'political economy' (Harris et al, 2011; Kar, 2003; Krause, 2007; Solo, 1999; WSP, 2011a; WSP, 2011b) and 'political ecology' (Jordhus-Lier 2010; Keil, 2005; Larson, 2010; McFarlane and Rutherford, 2008; Veron, 2010; Zimmer, 2010), might influence the sanitation interventions that often determine overall governance in the WatSan sector.

[7] Musclemen are being called as *mastaans* who are actually unemployed and disgruntled youths and used mostly by rowdy politicians and other powerful people in the city.

2.7.4 Political Economy

To reach the sanitation goal and aim beyond it to 'sanitation for all', a new political economy around on-site sanitation has been suggested from sanitation experts and donor agencies worldwide. According to the WSP (2011a, p.6) "The political economy of sanitation refers to the social, political and economic processes and actors that determine the extent and nature of sanitation investment and service provision. Therefore, identifying and addressing different actors' interest is crucial to understand and manage the political economy of sanitation". However, the UN Water Task Force (2008) suggests that entrepreneurship around low-cost sanitation needs to be encouraged. To some extent this conception provoked a huge debate saying that the low-cost technology is not sustainable due to less service life. This is a straightforward message but inclusion of political and sectoral institutions are essential for the provision of WatSan services (Krause, 2009) and efficient in message dissemination. By way of example, the Ethiopian government has made remarkable progress by placing sanitation issues high on the political agenda with the help of local institutions (Newborne, 2008). But, globally, sanitation is regarded as an unfavourable issue for politicians (Paterson, Mara and Curtis, 2007). They see few votes in campaigning for more latrines, while funding agencies argue that they have to follow national government priorities (Bruijne et al, 2007; Chaplin, 1999). In fact, the development of urban infrastructure is always a highly political issue (McFarlane and Rutherford, 2008) while Swyngedouw (2006) argues that power relations shape particular social and political configurations and environments. But the culture of governance in the global South including Bangladesh doesn't shape the socio-political configurations that are widely practised in the global North. It is argued that, political economy emphasizes both 'economic behaviour' in the political process and 'political behaviour' in the marketplace (Alt and Alesina, 1996; Krause, 2007), which is always profitable for the service providers. In general, "the task of building and managing municipal water supplies and sewers has been assigned to publicly funded authorities" (Black and Fawcett, 2008, p.7), whereas the private sector has been 'demand responsive' (Solo, 1999) and always reluctant to extend their services to poorer areas especially if this requires a large investment (Hardoy and Satterthwaite, 1995). Hardoy and Schusterman (2000) focused on privatized provision in contemporary infrastructural politics in Argentina and argued that the absence of appropriate social policies/models is one of the causes of failure to extend services to the urban poor while, for instance, they are very efficient in doing business differently through managing public toilets in Delhi (Nijssen, 2007). In addition, an NGO-led participatory development approach in Bangladesh played a remarkable role in expanding sanitation coverage by integrating WatSan programmes with income-generating schemes through credit support, skill training, adult literacy, health education and so on (Hadi, 2000; Hadi and Nath, 1996). This scheme helped to raise their literacy level and financial capacity, and has improved consciousness towards their social and material well-being (Hadi, 2000, p.333). Here, Kar (2003) argues that the subsidy approach has built-in self-defeating elements, which prevented total community sanitation (UNICEF, 2003), and he recommends the exploration of radically different methods, without subsidy and based on facilitation, in order to catalyze community self-help (Newborne, 2008). But

the general understanding of political economy of the cities in the global South is that "the people of informal settlements are stereotyped as filthy citizens, and their poverty is used as an excuse for not providing them with basic services in the belief that they will not be able or willing to pay" (Calaguas and Roaf, 2001, p.4). But Akbar et al (2007) pointed out that most of the urban poor are already paying higher rates for water than middle and high-income communities. It is also true that the market-led pricing mechanism for services in the slum areas is almost non-existent; a tiny amount of services are given in a welfarist way (made possible by donors' assistance), and this is inadequate in relation to community development (Ghafur, 2000).

Keeping all these issues in mind, Jeffery Sachs (2007) criticised the World Bank's inattention to infrastructure development and argued that the bank always forces poorer countries to privatise basic infrastructure rather than helping them to invest. The justification of privatisation is usually that of weak local government and lack of capital. But the question is how can local government regulate private firms and how can they guarantee service levels? Based on the evidence, the high price and often poor quality of vendor services also suggests problems with privatisation (Hardoy and Satterthwaite, 1995). In Bangladesh some public water provider staff do not like to provide water to informal settlements because this would obstruct their extra income through bribes (Akbar et al, 2007). Despite some improvements in the sanitation sector since the 1970s, such corruption impacts service delivery at the local level and is often regarded as a problem of governance (Ahmed, c2000). The multi-stakeholder partnership approach might be a solution to the entire sanitation problem whereas the WSP (2011a) argues that the political economy analysis may offer sustainable partnership arrangements.

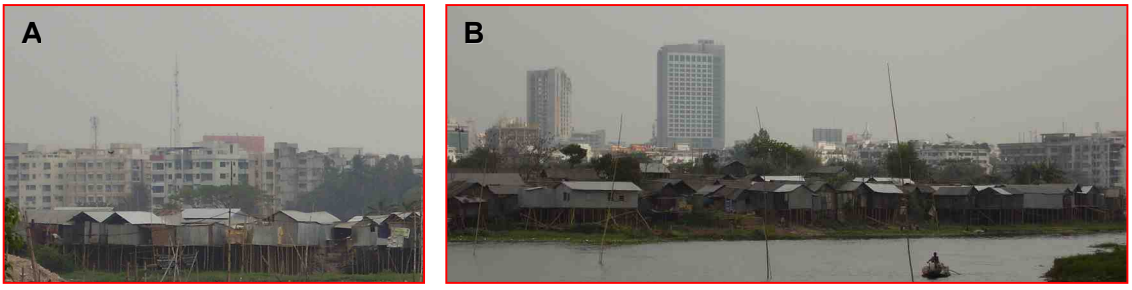
The New Delhi statement 1990 was one of the first global declarations that aimed to improve access to water and sanitation (Figure 2.7) through the concept 'some for all' (Ghosh, 2012; IDS, 2011; Kacker and Joshi, 2012; Lane, 2012; Walnycki, 2011). After this declaration a new political economy under a new concept came through the Dublin principles in 1992 where neo-liberal reforms were advocated such as privatization and water treatment was seen as an economic good. However, a recent concept, 'more for most', has emerged which is also under vigorous debate. Here, I would partially support one of the existing concepts of political economy, 'more for some', i.e. more investment in some selected projects may offer long-term sustainability by ensuring strong 'social-technological-governance' systems.

2.7.5 Political Ecology

Political ecology as an analytical framework for the study of urban infrastructures requires paying more attention to the character of socio-technical systems, local understandings (Derman and Ferguson, 2000) and their inherently ambivalent and long-lasting impact on the shaping of cities and their socio-ecological environment (Monstadt, 2009). Monstadt also argues that, studies in urban political ecology are not yet systematically linked to debates on

urban governance and have so far rarely suggested policy and institutional reforms for optimizing the urban metabolism. Here, the concept of 'political' yields insights into power (Derman and Ferguson, 2000) or urban governance while the interrelation, interaction and sustaining environment between different actors or agencies is referred to as 'ecology'. It could be argued that the changes in the existing relation between different actors or agencies may influence the overall 'political economy'. For instance, Gandy (2008) argues that, once the colonial city has been captured by middle class society, the political agenda has diverted from the universal provision of basic services to make themselves the principal beneficiaries of municipal infrastructure (Baud and Nainan, 2008). It is their voice that dominates concern about the environment and clean neighbourhoods. The hygienists from nineteenth century thought the possibilities of using human excreta as a superior source of manure that will keep their city clean (Gandy, 2004). Despite this understanding, the concept of using the excreta didn't sustained in the private realm of the city. Gandy also argues that the physical fabric of a city is recognized as a contested arena at the heart of urban political debates. Focusing on the concept of 'bourgeois environmentalism', McFarlane (2008a) and Gandy (2008) explain the moral fibre of a middle class society of an Indian city that is comparable with the megacity Dhaka. Capitalist urbanization and later state formation within city areas are evident in Dhaka city, ignoring particular social classes and making infrastructure services fragmented, unequal and politicized (Figure 2.8). It is evident that

Figure 2.8: Photographs showing the unequal development of urban spaces



Source: Field Survey, 2010

most of the money from the Annual Development Programme (ADP) goes to construct infrastructure like storm water drainage, sewerage network and different maintenance activities to facilitate specific societal groups. Likewise, international development assistance in the WatSan sector through local or national government departments often does not reach the urban poor (Islam et al, 1997) and thus the formal water supply to the urban poor in Dhaka city remains very limited. Apart from the middle class domination in the infrastructure sector, it is also arguable that the current political ecology is the main constraint for effective and sustainable service delivery to the slum dwellers. Political ecology can allow us to understand the decisions that communities and institutions take about their surrounding environment in the context of their political environment, economic condition and societal regulations. In the context of Dhaka city, the unequal relations among societies and class affect the natural environment and through the analysis of political ecology, it is possible to enlighten policy makers and organizations about the complexities of the surrounding environment, programmes and development, and thereby contribute to better governance.

Governance framework analysis is important way to identify the complexity of the sanitation provision process (Allison, 2002); therefore the present research is intended to analyze the governance systems to refer to 'patterns of service', 'patterns of interaction' and 'patterns of participation' in sanitation projects.

WatSan infrastructure has always been critical in the promotion of urban sustainability and its modernization holds an important key to solving socio-ecological problems (Monstadt, 2009). Many argue that urban spaces are important geographical organisms where resources consumed and discharged are often known as the urban metabolism (Gandy, 2004a; Monstadt, 2009; Swyngedouw, 2004) or processes that have become increasingly dependent on the smooth functioning of the infrastructure within the city. The urban metabolism is a very compelling way of understanding urban socio-natures that should be considered by anyone interested in studying, explaining, and changing our contemporary cities (Heynen et al, 2006). The notion of urban metabolism offers researchers not only in urban political ecology but also those in urban geography and more generally a useful framework for analyzing the complex socio-natures that constitute cities. It is argued, "the uncontrolled acceleration of the urban metabolism may lead to a new dimension of socio-ecological risk" (Monstadt, 2009, p.1926). Here, Swyngedouw (2006a) explains urban metabolism as an effective solution for qualitative changes in cities and can reveal socio-ecological assemblages. In this context, Monstadt (2009) explains that the infrastructures are shaped by the societies and the study of the relationship between cities, technology and ecology in the contemporary societies are important to reshape urban infrastructures. Here, Chowdhury and Amin (2006) suggest the inauguration of environmental assessment (EA) programme that could effectively smoothen the process of 'input-throughput-output' mechanism that could improve the WatSan situation in slum areas. Monstadt (2009, p.1937) also believes that "the studies of urban political ecology provide valuable analytical concepts and empirical insights to help explain the urban metabolism and the urban production of nature through economic, political, and cultural processes and power relations in cities". But, the political notions among the relevant donor agencies do not explicitly suggest or consider EA for projects when the main purpose of funding is poverty eradication, promoting education or improving child and maternal health through safe water and sanitation. Here, the proper balance between 'input mechanism' and 'expectation of output' seems inconsistent or sometimes illogical, which dematerializes the concept of urban metabolism.

2.8 Women and Sanitation

The gender-aspect is an important issue in urban sanitation interventions, but the feminist literature on urban planning would suggest that the response needs to be much more radical than simply being gender-sensitive. Avvannavar and Mani (2008, p.2) consider sanitation as gender dependent and they argue that "the physiological requirements of women and children being different from those of men". Also, different social, religious acts and neighbourhood environment determine women's approach to take care of their unavoidable

primal urge which is generally connected with privacy and safety. It is evident that many women from the poor neighbourhoods of South Africa cannot visit the commonly shared pit latrines without fear of being raped (Avvannavar and Mani, 2008). Burra et al (2003) added, community involvement and poor women in particular need to be involved in the planning process to grow a sense of ownership that provides concern towards safety and maintenance needs. Moreover, women's involvement will ensure their needs and priorities, as they are the main water users and overseers of sanitation facilities (Jordan and Wagner, 1993; Mahbub, 2011; Mehta, 2011). Many researches found that women prefer the latrines to be built indoors where their safety and privacy will likely be ensured (Drangert, 2004). NGOs worldwide have played a significant role in bringing women into sanitation projects (Hobson, 2000) and have shifted the focus to the poorest with planned interventions at the 'grass-roots' level (Uphoff, 1993), with the capability of making close relationships with the community (Hoque et al, 1994; Seraj and Sadeque, 2005) and involving local government institutions (Kar, 2003). Learning from the South African example, where 'site-and-service' provision has been made in informal settlements, and the lack of consultation with women resulted in the location of latrines at some distance from the house that completely ignored the risks to women, particularly at night.

Nowadays, there are some links with the participatory approach that NGOs are using. They are involving poor women in the planning process (Murphy et al, 2009) and operation and maintenance of the sanitation systems which is recognized as an important priority for urban governance. In some sanitation projects, the organizational actors include aspects of feminist ideology and take into account the traditions of lower class society to solve some of the decisive issues. Jaquette (1982, p.268) argues that "the little modernization theory says about women reflects the general liberal assumptions about development: that it is a linear, cumulative process and that it is expansionist and diffusionist". According to an optimistic point of view, those contemporary infrastructural programmes that are structured as women-centered may function rationally and I would make this argument based on likelihood, personal experience and the existing urban lower-class community culture.

2.9 Service Provisions and Existing Debates

The sanitary crisis in Dhaka is not a new phenomenon and the absence of a fully functional water and sewer network can be attributed to a number of factors that can be addressed through contemporary debates on urban sanitation such as 'onsite' vs. 'offsite', 'subsidy' vs. 'self-help', 'private' vs. 'communal', 'pay and use' vs. 'monthly scheme', 'government' vs. 'NGOs'/'private sector', 'software' vs. 'hardware', 'demand-driven' vs. 'supply-driven', etc., and "some of these have their origin in early nineteenth century British debates about cultures of poverty and the need for self-help instead of reliance upon the state" (Singh, 2005).

Over time, public latrines have been regarded as the only possible sanitation solution in the context of urban informal settlements (Diamant, 1984; PSTC, 2005; Schuringa and Kodo, 1997). But the failure of public latrine projects is also evident, due to poor operation and maintenance (Calaguas and Roaf, 2001). Conversely, private options are less feasible in the contemporary spatial setting of urban informal settlements (Rahman, 2006a). Iwugo (1979) indicated that public latrines should only be considered for institutions or where special cultural conditions apply. Another difficult question surrounding public facilities is that of privacy and lack of commitment by individual users to keep them clean. In that case, shared latrines with a 'lock' and 'key' system were found to be feasible in both Asia and Africa (Hanchett et al, 2003; Iwugo, 1979). However, in the Indian context, Burra et al (2003) argue that 'pay' & 'use' could be a viable system in public places like bus stops or railway stations but that they are not suitable for informal settlements. Nevertheless, a 'hardware' support together with 'cost recovery' and 'community participation' approach was successful in one of the biggest informal settlements in Dhaka (Rahman, 2006), Kampala (Nilsson, 2006) and some cities of the developing world. Davis et al (2008) got evidence from Hyderabad, India which illustrates that a substantial proportion of poor urban residents indicated their interest in, and ability to repay (Hasan, 2008), small loans for WatSan improvements. Whereas, McFarlane (2008, p.105) suggests that "there may be a requirement for full subsidies in areas that clearly cannot afford to spare the money".

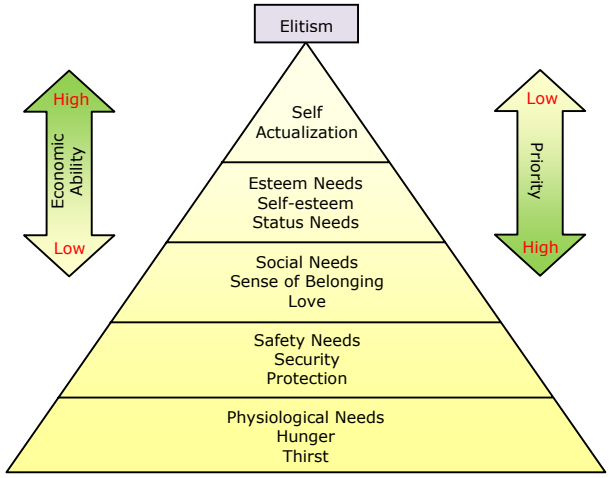
It has been argued from the viewpoint of service provision that a 'demand-driven' approach would be more effective for sanitation intervention than a purely 'supply-driven' approach (Hadi, 2000; Tsiagbey, 2004; UNB, 2003), which leads to over-provision of infrastructure, creating costly and unsustainable schemes, and results in the waste of resources and failure of projects (PSTC, 2005). Goldblatt (1999) argues that assessments of the effective demand by communities for urban services could contribute to an assessment of the relative viability of different approaches to the provision of urban services (Altaf and Hughes 1994). But the problem is no proven demand has ever been recorded from the community side and even if it exists they often do not know how, when or whom to talk to. Considering local contextual issues, it is evident that the maintainers, local CBOs or those who run CBOs, are making an undeclared profit from toilet blocks through the 'pay' and 'use' systems (McFarlane, 2008). Hence, neither the government toilet blocks nor the private or charity toilet blocks properly serve slum inhabitants. The corporation model results in early deterioration and disuse, and the 'pay & use' approach is perhaps far beyond the reach of the urban poor. McFarlane (2008, p.100) has argued that "the variation in the geography of informal settlements is vast" and he suggests a more flexible approach to policy infrastructure, technical infrastructure and cost recovery in urban sanitation interventions.

2.10 Sanitation: People's Priority and Position in the Development Sector

The reason for sanitation not being a top priority of the poor and middle-income people is understood by Rosenquist (2005) in his 'A Psychosocial Analysis of the Human-Sanitation Nexus' and Maslow's theory of 'hierarchy of needs' (Maslow, 1970). According to Rosenquist

(2005), humans invent ways to deny some needs and natural processes like death and excretions (Nawab et al, 2006). He explains that "the denial of need may be due both to overestimation of risk associated with sanitation at a personal level, and therefore people avoid talking about excreta, and underestimation of risk at society level where people do not worry about pollution from excrement" (Rosenquist, 2005, p.342). It could also be explained through the environmental risk transition framework (Smith and Ezzati, 2005) that indicates "a tendency for societies to sweep environmental health problems out of the house and into the community" (p.295). On the other hand, Maslow's theory demonstrated that "the people not having access to improved sanitation in developing countries may be engaged and worried about meeting 'physiological needs' and seldom think about other higher needs, where people were much more concerned about meeting the food, water, shelter and security needs" (Nawab et al, 2006, p.244) (Figure 2.9). Sanitation for them is at the top of the Maslow's hierarchy and thus at the bottom of the list of their own priorities (Nawab et al, 2006). However, it is found that the household members prefer to have a cell phone for communication, TV for entertainment (UN-Habitat, 2003) and weapons for safety (Nawab et al, 2006) than a latrine for defecation. Here, the 'safety needs' are preferred to the 'physiological needs'.

Figure 2.9: An interpretation of Maslow's hierarchy of needs, represented as a pyramid



Source: Maslow, 1954
(Modified by author)

Apart from this personal and societal understanding, institutions also have their own ideology often associated with political economy and political ecology. Even if water and sanitation are always close, the sanitation sector has not been gaining much attention (ADA, 2008) whilst the water sector has always been prioritized at all levels (Castro, 2008; Eawag, 2005; Tayler and Scott, 2005). In many countries, sanitation remains a political and institutional 'orphan' (UN-Water, 2009) while, chief water executive Brocklehurst of UNICEF commented that sanitation is 'less sexy' than water supply which requires more integration, investment, greater political will on behalf of government. Moreover, it is also crucial that sanitation-related financial flows are mostly one-way whereas water sector investments are recoverable and/or profitable as water is considered an 'economic good' (Dublin Principle, 1992). But it is

widely recognized that as long as sanitation is ignored, it will remain a dirty issue, literally; and thus, politicians need to start talking about shit and emphasize this sector by putting sanitation on top of their political agenda.

2.11 Research Gap

Geographers worldwide have made a remarkable contribution to the WatSan sector research focusing both rural and urban contexts. Many of them have concentrated on spatial, socio-political, economical, governance and health-related issues. But in Bangladesh, geographical research on sanitation is limited, as most has been carried out on exploratory basis or considered as a small ingredient of the whole research. For instance, based on a base-line survey, Islam et al (1997) focused on urban poverty agendas and urbanization in Bangladesh where they linked sanitation-related issues with urban poverty. They also demonstrated that the incidence of urban poverty resulting from rapid urban growth is visibly indicated by the proliferation of squatter and slum settlements, especially in metropolitan areas where overall conditions including WatSan services are worse than those in rural areas. However, from the above review and discussion of sanitation-related literature, it seems that most research in the sanitation field is quantitative and that qualitative research is missing. The extent to which the latter could be effective in offering sustainable solutions in this sector is further described in the next chapter.

Sanitation is considered a sub-sub sector of the health sector in Bangladesh. It is well-known to all that bad public health among the urban poor is an overwhelming situation and that they are the worst sufferers from the wretched WatSan conditions. Despite this, there has been relatively less effort given to exploring the reasons and possible solutions of the situation. Moreover, little attention has been paid to analyzing the fundamental principles, discourses and practices of public health from an epistemological position, and students of public health have given a low priority to the exploration of its social and cultural dimensions (Petersen and Lupton, 1996). However, studies particularly in the WatSan field in Bangladesh are mainly characterized as donor- or NGO-centric project reports and analyses, policy documents and some individual exploratory-based research. Here, Monstadt (2009) cited several researches concerning the relationship between utility markets, policy instruments, institutions, technological innovations and so on, where he tried to establish that most of the debate is limited to these issues but there is very limited research that relates all these issues with their spatial context. Particularly, the issues of technological developments and their impact on urban sustainability and the vital governance issues have remained underexposed. On the other hand, scholars in urban political ecology have more recently started to examine critically how economic, political, and cultural processes in cities shape, and are shaped by, the urban metabolism and ecological conditions (Gandy, 2004; Kaika and Swyngedouw, 2000). This approach originates from an interdisciplinary mix of neo-Marxist ideas in urban geography and political economy that not only focus on the importance of the economy but also recognize other inequalities that exist in society.

Therefore, there is a considerable research gap in the urban sanitation sector where a potential contribution could be made through offering a clear imprint of complex 'social-technological-governance' systems of poor, deprived settlements while they are struggling with managing their infrastructures or where the aid-giving services are inadequate or non-existent. Considering this gap, the present thesis tries to identify insight mechanisms and positive and negative factors within the sector that facilitates or hinders sanitation interventions respectively. Therefore, the gaps are mainly spatial, methodological and policy oriented ideas that may solve entire problems. Following the next methodology chapter, this research will further analyze the complex 'social-technological-governance' system of the study areas, which is presented according to the experience of my field investigation.

2.12 Conclusion

Throughout this chapter and with the review of relevant literatures, I have tried to encompass the local and global WatSan related concerns and some of the critical issues that are widely visible in managing relevant projects in the developing countries. I considered Dhaka, the capital city of Bangladesh, that currently has a 6 million slum population with inadequate and inappropriate WatSan facilities that are a major source of social, economic and environmental effects. Until recently, several attempts have been made to provide infrastructure services to those slums. But the extent of the services is unsatisfactory due to resource constraints and a worrying concentration of slums that contaminates the city ecology (Mabud, 2008) on a broad-spectrum. In consequence, the trend of development ventures through benefactors (i.e. public, private and non-profit organizations) is not only disappointing but questionable due to disastrous project histories. The complex social dynamics of these slums, together with inappropriate or inadequate facilities, and an incompetent governance system, obstruct the pace of WatSan interventions. However, some NGOs have come forward with 'tailor-made' working strategies developed from previous project experience. In most instances, the poor slum-dwellers appreciated the concept of 'participation' but the dynamics of 'social-technological-governance' systems of the slum areas often obstructs successful sanitation interventions. Following the next methodological description, an attempt will be made to compare and analyze these vibrant dynamics in the government- and NGO-managed slums where 'successful' and 'less-successful' WatSan projects have been considered in each category to uncover the factors that facilitate or hinder WatSan interventions in the informal urban settlements.

Chapter Three

Data and Methodology

Chapter Three
Data and Methodology

3.1 Introduction

Most of the world's governments and international agencies committed themselves in the early 1990s to the MDGs to halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation. UN-Habitat (2003) ended up with a paradox that more sophisticated data was required to plan the improvement of the poor quality of WatSan provision in developing countries. Over the last two decades in Bangladesh, a good number of WatSan-related studies have been undertaken by various donors and government agencies (LGD, 2005). Methodologically these studies were mostly based on representative samples of the population and secondary data but these were unable to offer sustainable solutions because the authenticity of those data raises questions. Low-quality and unreliable data makes this sector ordinary and not progressive. However, most of the research in the WatSan field was conducted on an exploratory basis. Since those studies illustrate the current situation, they don't address the key issues that need to be resolved. Despite this ongoing researches and development activities, most of the people in low-income urban settlements have been suffering with inadequate WatSan facilities; and even when they have been provided with the facilities, the infrastructure often collapses within a short-time. Usually, the sanitation project interventions in the urban informal settlements of Bangladesh have been unsustainable so far due to the complex dynamics of 'social-technological-governance' systems and unproductive project planning and implementation. This present research aims to identify the current sanitation situation in the informal settlements of Dhaka city by analyzing those complex dynamics and the role of the government, NGOs and people at the grassroots. Different qualitative techniques and participatory methods have been adopted to explore the voices of ordinary people regarding their needs, priorities, sufferings, and problems, as well as to identify key issues that facilitate and hinder sanitation interventions. Considering the appalling history of achievements and contexts in the WatSan sector in Bangladesh, I will use qualitative methodology and bottom-up analytical framework to uncover key issues and fill the gap in WatSan sector research.

This chapter is organized into several interrelated sections that are systematized to provide the sources of data and the methods for analyzing those data which is also outlined in Annex

I. The following section is developed to provide an argument about the procedure of the selection of study areas. The methodological approach is outlined in the next few sections, where I try to incorporate the approaches to study area selection, ethical issues, field survey planning, qualitative data collection procedures, sampling procedures, data analysis methods, challenges and opportunities, etc. Finally, I will finish with brief concluding remarks.

3.2 Approaches to Study Area Selection

In Dhaka city, NGOs usually carry out WatSan programmes and they target different government recognized, legalized and established slums. In the present research, the methods of choosing the study areas were mainly based upon qualitative criteria, i.e. by purposive sampling rather than a statistical approach. These were initially based on the conceptual framework that was presented in the preceding chapter. I was limited, though, because there are no ongoing state-inspired sanitation programme in Dhaka and this reduced my options. It is important to mention here that my study sample site selection was designed to analyze the 'social-technological-governance' systems over the study areas by comparing 'successful' and 'less-successful' WatSan projects implemented by GO and NGO.

In the first instance, considering the existence of WatSan projects, I categorized the slums into two sections: Government-recognized established slums and non-recognized illegal slums. Then, I explored relevant GOs and NGOs working in the sanitation sector. While selecting these organizations, I had to visit their offices to study their project sites and to familiarize myself with the context of each site. I chose organizations that were implementing their project entirely by themselves without the inclusion of other organizations, so that the social, technological and governance systems could be evaluated. This was because the inclusion of several parties within a settlement eventually increases the influence of externalities that may hamper specific research investigation. In this regard I chose slums from peripheral locations because most of the inner city slums were facilitated by several parties. Throughout this appraisal I used only one GO, Dhaka City Corporation (DCC), and one NGO, namely the Dushtha Shasthya Kendra (DSK), that between them address the theoretical contexts and objectives of my research. A reconnaissance survey was also carried out for the final choice of study site selection through visiting the projects. Those settlements were considered as study areas if similar project strategies had been implemented by each of the selected GO/NGO service providers.

Secondly, considering the objectives of the research, I selected the study areas on the basis of 'successful' and 'less-successful' sanitation programmes. Here, the degree of success was determined by the length of successful operation of the sanitation infrastructures by the beneficiaries and the benefactors. Here, more than and less than three years of successful operation of sanitation interventions has been regarded as 'successful' and 'less-successful' respectively. Several sanitation experts, including some representatives from the service

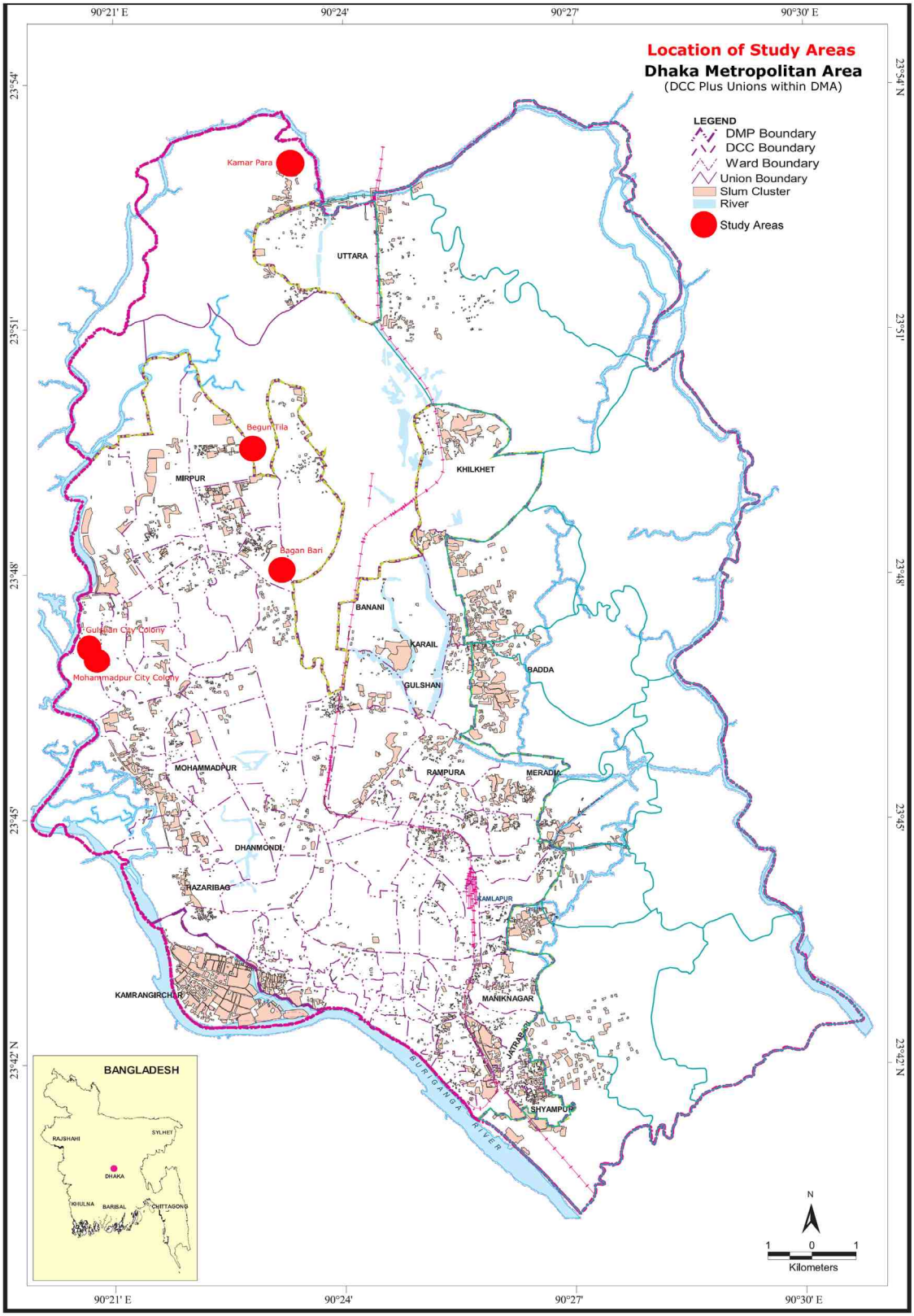
provider organizations, suggest that three years is an ideal time for evaluation of sanitation projects. People certainly face the experience related to operation, maintenance, positive and negative consequences (such as cost, satisfaction level, robustness of infrastructure, community response/participation, pit emptying, etc) related to their infrastructures, which can potentially determine the degree of success. Therefore, the informal settlements receiving GO/NGO support for 3-5 years were taken into consideration, enabling me to evaluate and compare the existing sanitation practices of the communities, organizational activities, governance, state of the infrastructures and other related issues.

Finally, two GO-managed and two NGO-managed sanitation projects in informal settlements have been considered: in each category one successful and one less-successful. The overall aim of the study area selection enabled me to focus not only on the community experiences but also on organizational attitudes in the community and existing sanitation programmes. Apart from the above four categories of informal settlements, I chose another informal settlement that receives no WatSan intervention from any source. This study area eventually works as a representative and controlled study site that symbolizes the general WatSan baseline scenario as well as sanitation practices and habits among the residents of urban slums.

Apart from the above, ease of access, security, and people's participation were other essential components for the selection of my study areas. During a reconnaissance survey in one GO-managed slum I felt helpless while talking to the residents about their WatSan conditions. Initially, they participated cordially but after some time the conversation became unmanageable due to too many people getting involved. Several debates were raised within a short space of time; nothing was potentially informative and at times people were offensive. Considering the situation, I gave thanks to them for their time and information and left that place. As I intended to apply several qualitative data collection methods, it was essential to build a responsive and friendly relationship with my targeted groups, which would last until the end of my data collection. Therefore, convenient locations as well as responsive organizations and communities were selected where I felt that the fieldwork activities would be manageable.

My study site selection raised several issues, at times resembling Miles and Huberman's (1994) discussion of the feasibility of selecting study areas and the relationship between sampling strategy and conceptual framework and Wainwright's (1997) concept about the need for reconnaissance surveys. Here, I can certainly state that my selection strategy for the study areas was unbiased and based upon sampling criteria where the above-mentioned steps and issues have been carefully considered. I sought to align with Jorgensen's (1989) concept of 'representativeness' but rather focused on theoretical sampling that best suited my research investigation. The selected study areas (Figure 3.1) and their theoretical characteristics that I developed in this research are framed in Table 3.1 and Figure 3.2 whereas the description of study areas and the project features is outlined in the next chapter.

Figure 3.1: Location of study areas in Dhaka city

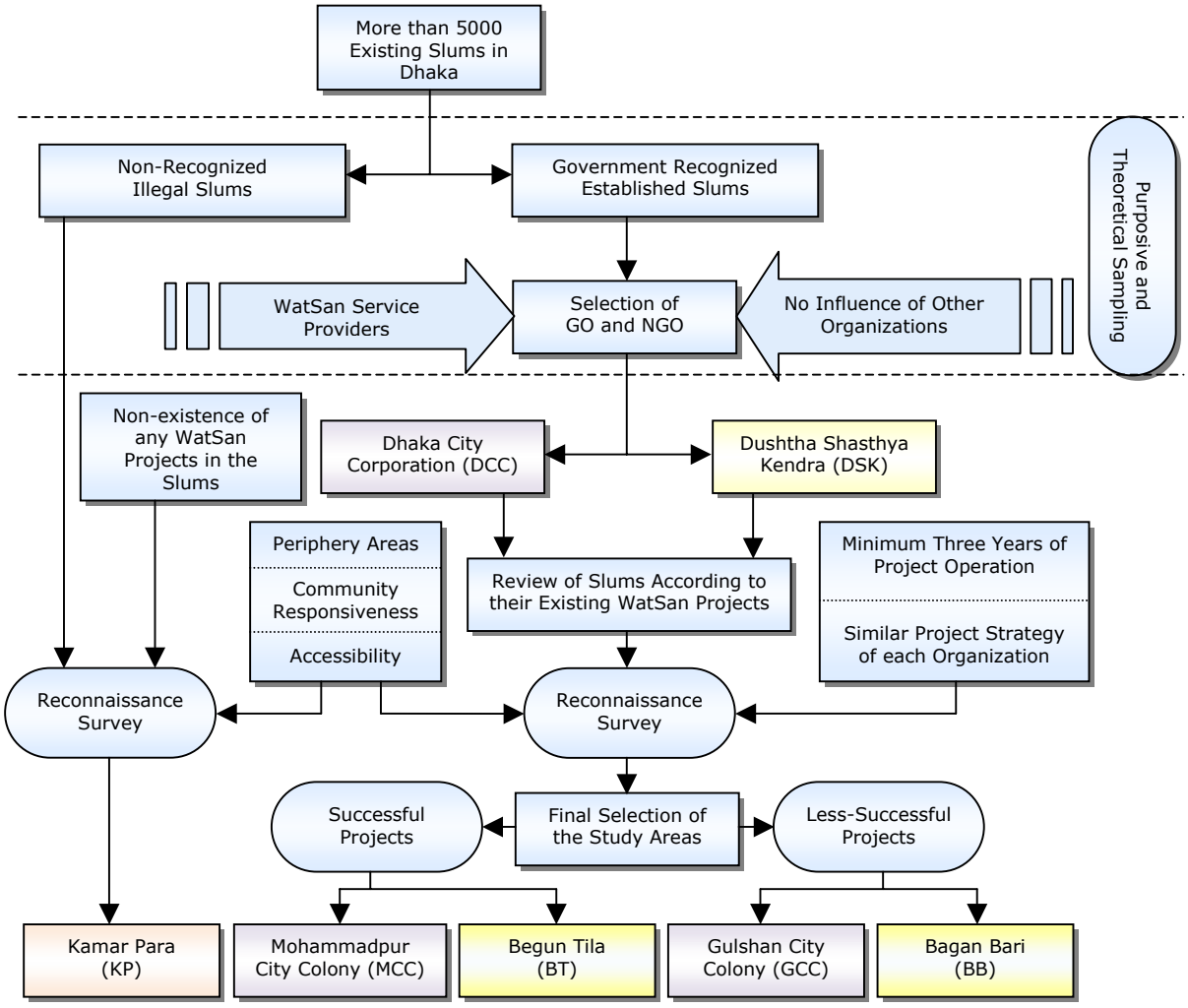


Source: CUS, NIPORT and Measure Evaluation, 2006 (Modified by author)

Table 3.1: Name of the service provider organizations, study areas and their theoretical characteristics.

Service Providers	Successful Project Locations	Less-Successful Project Locations
Government Organization (Dhaka City Corporation: DCC)	Mohammadpur City Colony (MCC)	Gulshan City Colony (GCC)
Non-government Organization (Dushtha Shasthya Kendra: DSK)	Begun Tila (BT)	Bagan Bari (BB)
No Service Provider	Kamar Para (KP)	

Figure 3.2: Process of selection of the study areas



3.3 Methodological Approaches: Quantitative vs. Qualitative

In social research, methodologies have been defined very broadly, such as qualitative or quantitative. Social researchers usually prefer to adopt a qualitative methodology while exploring people's life histories or everyday behaviour (Flick, 1998; Silverman, 2005). Here, Silverman (2005) does not deny the potential of quantitative methods, as sometimes they may be more appropriate to address the research problem. But to him a purely quantitative

logic will simply rule out the study of many interesting phenomena relating to what people actually do in their day-to-day lives, whether in homes, offices or other public and private places. Qualitative methods can be used to develop interrelated concepts, theories (Strauss and Corbin, 1990) and to explore vital areas about which little is known, like people's behaviours, emotions, feelings, and experiences in their daily lives (Stern, 1980). Here, Bryman (1996) argues that research matures from fieldwork and data analysis through the use of proper techniques. Therefore, an appropriate methodology is vital for a research that refers to the choices we make about cases to study, methods of data gathering, forms of data analysis, etc., in planning and executing research (Silverman, 2005). Exploring these issues with a qualitative methodology may be similar to a purely pragmatic argument of 'horses for courses' in which the research problem defines the most appropriate method. The most important thing about choosing a methodology is what we are trying to find out. However, qualitative research designs tend to work with a relatively small number of samples with a wider scope of finding 'detail' or 'deeper' understanding of social phenomena than would be obtained from purely quantitative data (Silverman, 2005). Besides, the qualitative research process goes by a variety of different labels while the researcher approaches the world with a set of ideas, a framework (theory, ontology) that specifies a set of questions (epistemology) that he or she then examines in specific ways (methodology, analysis) and collects empirical materials bearing on the question and then analyzes and writes about them (Denzin and Lincoln, 2000).

It is evident that qualitative research faces some academic and disciplinary resistance and this illustrates the politics embedded in this field of discourse. The essential features of qualitative research are the correct choice of appropriate methods and theories; the recognition and analysis of different perspectives; the researchers' reflections on their research as part of the process of knowledge production (Flick, 1998); and the variety of approaches and methods of collecting empirical materials describe routine and problematic moments and meanings in individuals' lives. But sometimes, qualitative research is said to be unscientific, or only exploratory, or subjective and based upon a journalistic approach (Denzin, 1997; Huber, 1995). Some quantitative scholars have relegated qualitative research to a subordinate status in the scientific arena (Denzin and Lincoln, 2008). Despite this critical scientific disagreement, social-scientists adopt qualitative methodology to explore the phenomena with broad and naturalistic analysis (Nelson et al, 1992). Throughout the 20th century, qualitative research played an important and distinguished role in various disciplines within the social-sciences having specific relevance to the study of social relations, owing to the fact of the pluralisation of life worlds (Flick, 1998) that also examines the complex social world, especially meanings and behaviours in a social context (Powell and Single, 1996; Rich and Ginsburg, 1999). Methodology in social research refers to the techniques and epistemological presuppositions that contribute to how information is identified, collected and analyzed in relation to a specific research problem (Innes, 2001). Therefore, a detailed description of adopted methodology from data collection to data analysis is outlined in the following sections.

3.4 Qualitative Methodology

Despite having numerous qualitative-quantitative discourses, a qualitative methodology has been adopted to carry out this research. It is widely understood that, qualitative research is a field of inquiry that crosscuts disciplines, fields and subject matters (Denzin and Lincoln, 2008) while this research attempts to explore various 'social-technological-governance' systems in urban low-income settlements within institutional frameworks. The word 'qualitative' implies an emphasis on the qualities of entities and on processes and meanings that are not experimentally examined or measured in terms of quantity, amount, intensity, or frequency (Denzin and Lincoln, 2000). Here, it is also necessary to answer why I chose this methodology and in what ways these methods are relevant to this research. As it mentioned in the earlier chapters regarding the aim and objectives; this research has an intention to find out the everyday realities related to sanitation in urban slums, which are mostly social phenomena and not suitable for quantification. Here, Hassan (2009, p.22) stated that "qualitative research is especially useful to uncover and understand what lies behind the success and sustainability of sanitation coverage". Qualitative methodology can obtain in-depth information from the target group, which can exemplify 'better meanings of the circumstances' or 'definitions of the situation' (Powell and Single, 1996; Rich and Ginsburg, 1999; Wainwright, 1997), rather than the 'quantification' (Strauss and Corbin, 1998). Qualitative research consists of a set of interpretive, material practices that make the world visible through a series of representations, including field-notes, interviews, conversations, focus-group discussions, photographs, recordings, and memos to the self. This methodological approach can be considered as an interpretive naturalistic approach to the world as the researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them (Denzin and Lincoln, 2000). However, in relation to WatSan research, Winch et al (2000) strongly argue that the qualitative research can provide information to help select appropriate technology and design effective communication strategies, which is vital in the context of urban areas.

In Bangladesh, several organizations, e.g. ICDDRB, WSP-World Bank, UNICEF, WaterAID, NGO Forum, ITN-BUET and individual researchers e.g. Hanchett et al (2011) and Ahmed (2008), have tried to explore the sanitation situation through quantitative methodologies but the presence of qualitative research has been deficient and I would argue that it is essential to discover possible determining factors in the WatSan sector through qualitative approach. Quantitative methodology is unable to find out the intimate practices of vulnerable people that can't be quantified. Moreover, most of the research studies particularly those of a quantitative slant, are unable to describe risk behaviour (Rhodes, 1995; Smith and Ezzati, 2005). Qualitative data can be summarized as information which is based on speech, text or observation and which is made available to analysis in textual rather than numerical form (Punch, 1998). In geography, qualitative methodologies span a wide range of empirical work and different philosophical and epistemological foundations (Dwyer and Limb, 2001). Through this qualitative inquiry, an attempt has been made to explore the factors that

facilitate or hinder the progress of sanitation interventions in the urban informal settlements of Dhaka city. This research also considers some basic quantitative data, which has been collected through different published and unpublished secondary sources to obtain sanitation-related fundamental information like coverage, types and number of latrines, water points, served and unserved areas, etc. Qualitative research is inherently multi-method in focus (Flick, 2002) and can combine several qualitative methods but it can also mean combining qualitative and quantitative methods (Jick, 1983). So, in this sanitation research, I am not using the term 'triangulation', as I intend to use such secondary quantitative information as supporting material for qualitative analysis, which may add rigour, breadth, complexity, richness and depth to my inquiries. Emphasis on qualitative enquiry is important here because qualitative data are mostly missing for sanitation-related debates and generally quantitative data are present in the government statistics only on the number of toilets, the number of people lacking sanitation, the number of people with/without water/sewerage connections, and so on. We have access to these aggregate data but there are no qualitative data on how people actually experience sanitation.

3.5 Gaining Community Trust: My Positionality and Ethical Issues

In qualitative research, the question of how to gain access to the field is more crucial than in quantitative research. For example, open interviews require that the interviewed person and the researcher get more closely involved than would be necessary for simply handing over a questionnaire (Flick, 1998). Here, I think, recording of everyday conversations is linked to a degree of understanding and trustworthiness between the interviewer and interviewee. I presented myself as a native speaker and I think, researchers and their communicative competencies are the main 'instrument' of collecting data and of cognition. In this regard, I played a neutral role in the field and in their contacts, which was extremely helpful in gaining community trust. My primary identity/positionality in the field was that of an individual researcher. I always tried to be transparent to my respondents; and at the beginning, I told them about my doctoral research and my motives for choosing their settlement and assured them about the anonymity of the respondents and the content of their responses. The residents, in most cases, liked my transparent attitude and that resulted in cordial participation with my research team.

Sanitation-related information is regarded as a sensitive issue in Bangladesh and this research was conducted in accordance with the ethical guidelines set by the Geography Department of Durham University. This is an open statement that my research did not negatively impinge on my respondents from any ethical or moral point of view. I took permission from interviewees, and I respected their privacy and secrecy during the fieldwork. In the field, I observed that some people were more irritated and embarrassed by mere observation than by my temporary participation in their daily life, whereas others had problems with the disturbance created by my presence in their domain because their perception was that I couldn't solve their problems. Despite this, I followed Sidaway's (1992)

guidelines not to make any false promises and I notified people clearly that they were unlikely to see any immediate benefit from the research but I wanted to share the findings with different actors in the WatSan field with the aim of helping in the future. When introducing the research, I made it clear to respondents that this was academic research and was in no way linked to the government or any NGO. My respondents were fully aware of my role in the research, and I did not hide my identity as a Ph.D student of Durham University, UK and a teacher at Jahangirnagar University, Dhaka. I had to disclose both of my identities because it helped me to get much closer to the respondents. In the context of Bangladesh, teaching is considered as a noble profession and the respondents participated with me very cordially and closely when they knew my both identities. The respondents felt secure once they knew that I am a teacher as well as a student of a foreign university and not representing any media or government organization. This is because they have a constant fear of reporters and specifically government officials who may stand against their community in ways that could even end up with eviction. Concerned GO-NGO field officials introduced me to the community (Figure 3.3) which helped in initial ice-breaking. Despite this introduction, some respondents were suspicious about my identity, which I clarified instantly showing my identity to gain trust. While collecting data, some of the respondents also tried to assess my trustworthiness and I had to remain always careful whether the respondents were telling the truth. In time respondents came to view me as trustworthy and then eagerly expressed their feelings After this initial introduction, I joined several informal discussions with the people in several places to make them familiar with my face, which helped me during my next visit to this community, and I found them hospitable and caring. Sometimes they didn't even allow me to pay for the tea that I took with them but I always repaid them through giving some useful gifts at some other time of my field survey. The respondents from GCC told me that

Figure 3.3: Field official's role in initial introducing session

Source: Field Survey, 2010

> *"You are our respectable guest in this community and we are hosts and we will entertain you when you are in our area. We believe you, because you didn't hide anything. You told us about your inability to provide water and sanitation infrastructure. We liked your truthfulness as we are used to getting fake hopes quite often. Actually, you gained our trust and in this respect we are here to help you."*

During the data collection, they were informed that I am going to investigate/study both institutional contribution and community practices regarding the GO-NGO provided existing sanitation interventions. According to my expectation, my positionality allowed the people to share their experiences enthusiastically and they did not stress only the negative side of organizational activities; this was because they were also informed that I was also investigating their practices. It was ethically significant that I did not conceal my researcher's identity and my stance was as 'an intelligent, sympathetic and non-judgemental listener'.

Data were collected individually or in pairs and considering gender and religious issues in mind - whichever arrangement was appropriate locally for covering social issues in the least obtrusive manner. More about this issue is illustrated in section 3.6.4.

Another potential issue was the economic loss of the respondents who spent time with me rather than their work. I frankly discussed this with them and sometimes I had to negotiate some compensation for them and offered food/drinks to them during the interviews and focus-group discussions (FGDs). Likewise, I gave gifts to all the respondents who participated in the in-depth interviews and distributed food to all of the FGD participants (Figure 3.4). I sought help and cooperation from different GO-NGOs working in the informal settlements, and I expressed my thanks to the GO-NGO officials and accordingly

Figure 3.4: Refreshments served during FGD sessions

Source: Field Survey, 2010

acknowledged them in my thesis. During the field survey, I did not quote anything from my respondents without their consent and I informed the community about the findings that I got from the field survey. Besides, I have changed the respondents' names in this thesis so that other parties will not recognize them.

Finally, upon completion of this research, I will provide my research summary and findings to different allied GO-NGOs and will disseminate my findings to the academic arena by contributing to academic journals and to the public through newspapers and magazines in due course. Finally, I hope that the research will eventually lead to a better understanding of the contemporary status of sanitation in the slums of Dhaka city and the findings as well as the recommendations may eventually offer some guidelines for reformulation of sanitation policy in Bangladesh.

3.6 Field Survey Plan

Several issues have been considered while planning the field survey in Dhaka. However, my focus was entirely two-dimensional; firstly, on GO- and NGO-managed WatSan projects, their strategies and roles and secondly, the role of grassroots people in those selected GO-NGO managed slums. I approached the two settings individually to explore their different dimensions of institutional and social data respectively. Relevant data were collected mainly from direct observation, in-depth interviews and focus-group discussions and various secondary sources (e.g. official archive, reports, newspaper articles, organizational

publications, etc.) were also considered to get supporting data related to qualitative analysis. The fact is that secondary information in the sanitation sector is mostly unrealistic, unreliable and it is doubtful that the overall sanitation coverage data of Bangladesh can be interpreted with confidence. For instance, several data sets exist to demonstrate sanitation coverage and the variation of those data are neither meaningful nor desirable. Due to this type of doubtful and inconsistent quantitative information, I decided to collect my own 'first-hand' qualitative data through ethnographic methodologies to obtain social and institutional information directly from justifiable and legitimate sources. During the planning of the field survey, I considered the following issues in order to maximize the quality of the field data from the institutional and study area sources.

3.6.1 Survey Methods

In qualitative research, ethnographic methods of data collection which are also called 'ethnomethodologies' are recognized as one of the fundamental methods for exploring everyday lives of the people (Garfinkel, 2003; Have, 2004). This method enables researchers to study a particular culture and their understanding of the role of a particular issue in their cultural framework. Ethnography has two distinctive aspects in its approach to the study of social life. First, it uses different techniques to observe social life in natural settings in which people live (Francis and Hester, 2004) and, second, it contextualizes information through a holistic approach. Therefore, my survey in Dhaka was mainly conducted through ethnography and other related qualitative and quantitative methods. Regarding qualitative data, participant observation, informal discussions, in-depth interviews and focus-group discussions (FGDs) were used to obtain information from the study areas that are discussed separately in later sections. I employed eight individual in-depth interviews at the start and two FGDs at the end in each slum. I assumed that there might be a possibility of bias if I completed the FGD sessions first. Information may disseminate very quickly after FGD sessions whereas there is a lesser likelihood of information dissemination from individual interview sessions regarding what my questions were and what answers they gave. It is worth mentioning here that the in-depth interviews and focus-group discussions in each slum were conducted on two consecutive days. Moreover, participant observation was done prior to other data collection techniques, as well as simultaneously with other methods and during data analysis and this frequent use of participation observation data throughout the study enabled me to verify collected data and so minimize error.

The planned qualitative method also included direct field observations, oral and written narratives, text, audio recording/sounds, and visual methods. Using more than one method in data collection enriches and adds perspective in study subjects. Apart from this, I attended several round table discussion (RTD) sessions and carried out several in-depth interviews with the key sectoral actors to obtain both qualitative and quantitative information from GO-NGO sources to get institutional secondary information. Moreover, a number of formal and informal approaches were adopted for this research. Before going to the field to

collect the relevant information, content design of interviews, FGD, formal and informal discussion topics, dialogues were developed and tested through a pilot survey to ensure its applicability, appropriateness and relevance. While on fieldwork, I contacted my supervisors on a regular basis to get feedback from them about my fieldwork activities.

3.6.2 Sampling Procedures and Selecting Suitable Respondents

In qualitative research, the relevant or 'sampleable' units are often seen as theoretically defined. Usually, qualitative research is less concerned with generalization to large populations than in understanding what is going on in specific settings (Silverman, 2005). Sampling issues in qualitative research involve the selection of subjects, locations, groups and situations to be observed or interviewed (Bouma and Ling, 2004). As mentioned earlier, this sanitation research was not aimed at statistical representativeness as I wanted to ensure the inclusion of different groups of slum residents, particularly water and sanitation users, to gather a range of information related to their day-to-day experiences. In this study, I took an approach akin to a convenient, flexible and dialectical method of sampling data.

According to the theoretical background of this research, I chose five study areas for the in-depth assessment of sanitation interventions together with the role of different stakeholders, including ordinary people. Here, I had to develop a systematic sampling frame to address and compare the related issues in a similar way. Therefore, I developed a similar sampling frame for all the study areas and tried to include similar types of respondents so that a comparison of diverse 'social-technological-governance' systems could be focused properly. Initially, I chose the slum residents considering their age, sex, social status and disability. To do this, I communicated with my initial contacts, i.e. GO-NGO representatives, community gatekeepers/key informants to find suitable respondents for my study. I adopted mixed techniques and I considered purposive, snowball and quota sampling methods simultaneously with each other for a better result. The detail about the respondents, interviewer and other survey-related information is presented in Annex II.

Firstly, theoretical sampling was used to maximize opportunities to compare events, incidents, or happenings to determine how a category varies in terms of its properties and dimensions. Purposive and theoretical sampling are often treated as synonyms (Silverman, 2005), which is important while exploring new or uncharted areas because it enables the researcher to choose those avenues of sampling that can bring the greatest theoretical returns (Strauss and Corbin, 1998). Initially, the purposive sampling allowed me to choose a case that illustrates the issue or process in which I was interested. Moreover, it helped me to select groups or categories for my study on the basis of their relevance to the research questions, theoretical position (Punch, 1998) and, most importantly, the explanation or account which is going to be developed. Mason (1996) also added that theoretical/purposive sampling is a set of procedures where the researcher manipulates their analysis, theory and sampling activities interactively during the research process, to a much greater extent than

in statistical sampling. Further to this point, Gobo (2004) argues that theoretical sampling cannot be planned before embarking on a study. In this research, specific sampling decisions evolved during the research process despite having my pre-structured but flexible standpoint. The term 'theoretical sampling' is generally associated with Glaser and Strauss's (1967) thesis on the discovery of grounded theory, but its logic and practice has become part of a tradition of qualitative research (Finch and Mason, 1999). Theoretical sampling is a methodologically bold suggestion (Dey, 2004) and involves a search for validity of findings, rather than representativeness of study population (Finch and Mason, 1999; Bryman, 1988). Qualitative researchers do not seriously consider sampling issues, arguing that the most theoretically significant and important studies in field research were based on opportunistic samples. This argument however, leads to the idea that thinking about the issue of sampling is a waste of time (Gobo, 2004) but in social research, one should look at the social significance of samples instead of a statistical logic.

Secondly, a quota sampling method was used to choose several sub categories of the respondents such as men, women, adolescents, adults, elderly, disability, social position, etc. For instance, for the in-depth interviews I chose one respondent from each of the following categories i.e. adolescent girl, adult woman, old woman, adult man, old man, disable man/woman, male/female community leader and male/female key informant/gatekeeper in each slum. Similarly, for the FGDs, I chose participants categorically to cover professions, minority groups, vulnerable, discriminated and advantaged groups, together with different age, sex, social status and disabled categories. This was done in order to understand the mixed state of behaviours, practice, responses, opinions, coping strategies and exposures to risk, and to understand the overall similarities and differences of their sanitation practices and experiences while living in slum areas.

And finally, snowball sampling is a kind of respondent-driven sampling which takes networks into consideration for building the number of suitable respondents and participants. Snowball sampling was adopted to choose the respondents considering their ability to talk about WatSan related practices. The thing is, a random or other sampling technique may not be appropriate because some persons are not good at sharing their experiences in front of a stranger. Brannen (1988) stated there should be no fear on either side and it is vital to ensure trust between interviewer and interviewee. Here, snowball/network sampling effectively enabled me to search desired respondents through initial contacts in each slum (Kitchin and Tate, 2000; Bryman, 2004). Besides, while selecting the respondents I always discussed with initial contacts so that I got the right person who can enlighten the real WatSan scenario of their neighbourhood. Using the snowball sampling technique and with the help of those initial contacts, I managed to develop sociable relationships with selected slum residents. The GO-NGO field representatives, community leaders and mainly the gatekeepers usually helped me to identify suitable respondents and participants for interviews and FGDs respectively. Some thought that the success of this technique depends largely on the initial contacts and connections that I resolved cautiously. However, this technique was used to

identify the most informative, cooperative, efficient and pertinent respondents. Table 3.2 briefly explains the cause behind my choice for adopting these methods in this research.

Table 3.2: Sampling methods in this research and reason for choosing those methods.

Sampling Method	Reason for choosing this method
Theoretical Sampling	Maximize the opportunities. Stay focused to developed conceptual framework. Compare the 'social-technological-governance' system across the study areas.
Quota Sampling	Involving different groups of people in this study. Maximize categorical information. To add perspectives in the information.
Snowball Sampling	To find the next potential respondent. Minimize the effort of searching respondents. Maximize the quality of information.

At the organizational level, I tried to select interviewees regardless of hierarchies (from executive director to field representative) to understand from 'top-level' decision making circumstances to 'bottom-level' field realities, including their state of governance, transparency and accountability. Apart from the service provider organizations, I selected several target groups as potential sources of information, for instance local influential persons, politicians, journalists, field workers, other relevant GO and NGO personnel, representatives from different donor agencies, policy planners, academicians, researchers, WatSan experts, and so on (Figure 3.5). They were selected through their engagement and relevance in urban sanitation sectors that are not sampleable. However, the concerned GO-NGO officials' help eventually enhanced the speed of my research investigation. But there might be questions about this official involvement in using the initial contacts/gatekeepers/key informants for the selection of interviewee and FGD participants.

Figure 3.5: Interview sessions with different target groups

Source: Field Survey, 2010

Here I could certainly claim that, even if I took the GO-NGO's direct help, they had no influence on choosing my interviewees and FGD participants; rather they helped me as my pathfinder towards the doorstep of potential respondents. In point of fact, I chose research samples entirely considering my theoretical stance that could best suit my research purpose. The data collection methods and adopted sampling strategies from both GO-NGO and study area sources are outlined in Table 3.3.

Table 3.3: Data collection methods and adopted sampling strategies.

Study Area Source				Data Collection and Selection Techniques	GO-NGO Source			
Relevance	Theoretical Sampling	Quota Sampling	Snowball Sampling		Snowball Sampling	Quota Sampling	Theoretical Sampling	Relevance
√	√	√		Study Area and GO-NGO Selection		√	√	
√			√	Informal Discussion	√			√
√				Participant Observation				
√	√	√	√	In-depth Interview	√	√	√	√
√	√	√	√	Focus-group Discussion				
				Round-table Discussion				√
				Horizontal Learning Session				√

3.6.3 Survey Language and Settings

Ethnography pays particular attention to language as data, because both social value and cultural meanings are created and exchanged largely through the medium of language. All of the discussions with the slum dwellers, GO-NGO personnel and other actors in the WatSan sector were in the local '*Bengali'* language and were semi-structured and open-ended interviews. As an official language and due to the convenience, understandability, clarity of responses and expressiveness, I choose my native '*Bengali'* as the survey language. Besides, I always tried to let the respondents pick the venue for the interviews or discussions for their convenience. I tried to spend the whole day in each slum to cover all the in-depth interviews to restrict the bias from previously interviewed respondents. In that case, I tried to manage and negotiate with the respondents about a convenient time to work and I scheduled all the in-depth interview sessions prior to my date of investigation. Similarly, I interviewed related GO-NGO personnel at times scheduled prior to each meeting.

3.6.4 Formation of Research Team

Water and sanitation issues are very sensitive in the context of Bangladesh because women are basically engaged in collecting water and managing the sanitation infrastructure. Sanitation-related activities are typically private, therefore, the selection of interviewees and interviewers was planned very carefully. Female and male research assistants were appointed to interview the women and men respectively (Figure 3.6). This technique was successful in gaining covert information especially from the female respondents. To conduct the field survey efficiently, a research team was formulated with 1 male and 1 female

university post-graduate students from the 'Geography & Environment' discipline where I was a principle investigator. The research assistants had prior knowledge of qualitative data collection and they received a week of intensive training before the actual fieldwork. They were given an interview guide including key questions to be asked, which was designed considering the conceptual framework and objectives of this research.

Figure 3.6: (Fe)male research assistants interviewing (Fe)male respondents respectively

Source: Field Survey, 2010

3.6.5 Data Capturing and Documentation Technique

Capturing data in qualitative field investigation is mostly troublesome because it is difficult to note all the information during an ongoing session. To reduce this difficulty and to capture the verbal expressions and body-language of the respondents, most of the interviews and discussion conversations were recorded on a digital voice-recorder after gaining permission from them. I tried to use this device for some very pragmatic reasons, as I wanted to interact with the interviewee and not to spend a lot of time, head-down, writing. Also, the voice recorders provided me and my research assistants with a more detailed record of each verbal interaction than any amount of note taking or reflection could offer. After the fieldwork, the recorded data was transcribed and documented thematically in English to draw out the main themes and sub-themes for detailed analysis. It has to be noted that after informing the participants about the purpose of the recording, the interviewers were requested to forget about the voice-recorder and that the conversation should take place 'naturally' - even at awkward points. I found the voice-recorder was always a topic of conversation before the main interview session but all the respondents accepted my assurances of anonymity and convenience of data collection. Sometimes we had to turn off the recorder when the respondent asked us to do so. Flick (2002) preferred a machine of discrete size and I used a digital voice-recorder which was small in comparison to normal tape-recorders and convenient to carry and use. During the fieldwork in the slums with my two assistants, we used to write and update notes individually in our own research diaries regarding the ongoing research process in order to increase the comparability of the empirical proceedings and focus on the individual notes. We used to write a brief description with the notes whenever lulls occurred, or as soon thereafter as possible. Sometimes, I had to take notes during the in-depth interview sessions where recording was in progress because the voice-recorder couldn't record the interviewee's impressions, emotions, gestures and body languages. Here, Flick (2002) believes that the production of reality in texts starts with the taking of field notes. Moreover, as a form of visual representation I took

photographs to record and represent different ways of social life, often called the 'mirror with a memory'. The photographs took me into the everyday world to hold and analyse contemporary social images and scenarios related to water and sanitation. Here, Douglas Harper (2008) wisely commented on digital ethnographers who use this visual material for their research see it as a genuine form and source of data (Denzin, 1989) because these types of data usually recall memories, reflect realities and tell the truth (Flick, 2002).

3.6.6 Personal Safety

Approaching informal settlements in Dhaka city is conceivably a security concern for strangers. Before conducting the final field survey, I used to spend a whole day (2-3 times) together-with my research assistants in each slum to familiarize myself with the setting. Prior to this, I spent an additional (4-5) days in each slum alone for necessary ice breaking activities and to conduct other data collection method e.g. observation, informal discussion, taking notes, photographs, etc. The detail about the time that I spent in each slum is outlined in Annex II. I maintained a 'to-do-list' for our visit in the selected slums, which was settled with the residents prior to the scheduled date. Considering this, I had to take several security measures. Firstly, I took representatives from the concerned GO-NGO that works in that community to gain access and to minimize hassle associated with managing the community. This was also done to minimize the risk and personal security as most of the slums of Dhaka are considered as crime hot spots. Secondly, I communicated with the local police just before I entered into my study areas and they provided contact numbers for any emergency situation. However, it is important to mention here that the concerned GO-NGO field representatives and their assigned local influential persons (community gatekeepers) were contacted to increase the accessibility of research team, local support, risk minimization and to avoid unexpected situations like physical assault, mugging, stealing, hijacking, etc. These contacts were made just to minimize the risk and I was always mindful not to compromise the survey result that may occur from the influence of those influential persons. Therefore, I chose the respondents entirely from the theoretical perspective that I developed before conducting the survey.

3.6.7 Pilot Survey

Before going to the field to collect the relevant information, I conducted a pilot survey in a slum to check the effectiveness of the semi-structured in-depth interview schedule and the FGD themes. I talked with the people using the interview schedule and FGD themes to obtain the necessary information. After conducting this pilot survey, I did some necessary corrections and updated the previously designed interview schedule and FGD themes for my final field survey. These activities were finalized and completed in December 2009.

3.7 Data Collection Procedures

3.7.1 Participant Observation

Participant observation is a qualitative method with roots in ethnographic research. Crang and Cook (2007) explain that at the beginning of a research project, participant observation is used to facilitate and develop positive relationships among researchers and key informants, stakeholders and gate-keepers, whose assistance and approval are needed in community settings. Data collected through participant observation is applied in the field to improve the design of other methods, such as in-depth interviews and FGDs. For instance, they help to ensure the cultural relevance and appropriateness of in-depth interviews and FGD. Participant observation data were useful in determining whom to consider for the study and how best to recruit them; for instance, selecting key informants, stakeholders and gate-keepers who may be good sources of information and may facilitate the researcher's access to a particular inquiry.

During my field survey, I participated with the slum dwellers in informal discussions and also in formal meetings with their facilitators. According to Gold's (1958) distinctive typology of participants, I performed as an 'observer-as-participant'. I used to stay the whole day in the community I was visiting to observe them closely. I used to play board games with them, pray in their mosque, took food in their local hotels/tea-stalls, and visited their latrines and water points. I even attended their social events that came up during my fieldwork. This 'free and frank' mixing helped me to gather different dimensions of information. Apart from observation, I also participated in different informal discussions at different points, such as at tea stalls, restaurants, community centres, schools, grocery shops, etc. (Figure 3.7). The participant observation method helped to simplify my understanding about the current state of sanitation, hygiene practices, problems, risks, coping strategies and so on. It also helped me to gather different dimensions of social data as well as organizational activities, motives and unseen realities.

Figure 3.7: Participant observation through informal discussions

Source: Field Survey, 2010

In observing public places, I considered the 'gendered nature of fieldwork' (Adler and Adler, 1994) and for this reason, I took mixed gender teams in observation, in-depth interview and focus group discussions in my field survey. During the observation, I tried to observe how participants act and how these actions express intentions, group feelings or states of social

relations. Not only this, I always asked myself about 'how I felt', 'what I thought', 'what I was reminded of', 'why they.....', 'how they.....', 'who.....', and these questions provided a vivid understanding of the observational experience.

3.7.2 In-depth Interviews

A considerable number of in-depth interviews (8 interviews per slum) were arranged to get a greater depth of understanding of the existing sanitation situation of the study areas. In qualitative research, interviewing is a highly personal process where meanings are created through personal interaction (Chen & Hinton, 1999; Holstein & Gubrium, 1995). It is ".....a social relationship.....a short term, secondary social interaction between two strangers with the explicit purpose of one person obtaining specific information from the other" (Neuman, 1994). According to Hassan (2009) an in-depth interview is an open-ended, discovery-oriented method that is well suited for describing the sanitation processes, the existing sanitation situation and the monitoring system. He also argues that in-depth interviews with different respondents having a flexible interview approach can lead to increased insights into people's thoughts, feelings, and behaviours. My semi-structured and open-ended questions during the interviews permitted the respondents to talk at length, which enabled a long discussion about their sanitation-related experiences. Apart from the grassroots level, some fifteen GO-NGO personnel and officials of national and international agencies were also interviewed (Box 3.1) to gather official records and secondary information to elicit their

Box 3.1: List of in-depth interview sessions held with GO, NGO and other actors

In-depth interview with the GO, NGO, Donor and other actors:

- Total number of in-depth interview	: 15
- Interviewer	: Myself
- Role of the interviewer	: Interviewer, principal investigator and non-judgmental listener.
- Duration of each interview session	: 30-60 minutes

Number of Interview with different target group:

- With GO personnel	: 1 (DWASA), 2 (DPHE), 2 (DCC)
- With NGO personnel	: 5 (DSK), 1 (UST)
- With Donor personnel	: 1 (UNICEF), 1 (WaterAID), 1 (UNDP)
- With local expert and researcher	: 1 (NGO Forum)

views about sanitation issues, including their working strategies, opportunities, threats, targets, policy responses, and so on (Figure 3.8). These informants were selected from the relevant GOs-NGOs and international agencies such as DPHE, DCC, DWASA, LGED, DSK, NGO Forum, UNICEF, UST, WaterAid, ICDDRB, and other relevant agencies. It has to be noted that the selected official respondents for the in-depth interview were mostly top-level officials who are well informed about contemporary sanitation issues. The purpose behind these interviews was to explore the gap between the official data and field situations. Here I encouraged the respondents to talk intensely about their point of view, feelings and perspectives about sanitation situation in the informal settlements of Dhaka city. In some cases, I obtained permission from relevant head offices for accessing their regional offices and stakeholders at the local level. During the interview, I found the respondents did not always speak as individuals. In this regard, Gubrium and Holstein (2002) noted that the

interviewees sometimes talk as individuals, at other points they talk as members of 'broader' collectives and here, I have considered such statements as collective voices or group responses. Some 40 in-depth interviews were conducted with slum dwellers (8 interview per slum) and 15 interviews with personnel from GO-NGOs (Annex II and Box 3.1).

Figure 3.8: In-depth Interview sessions with slum residents and GO-NGO personnel

Source: Field Survey, 2010

The contents of in-depth interviews with the slum dwellers (Annex IV) and GO-NGO personnel (Annex V) were helpful to uncover a greater depth of understanding of hidden issues regarding social cohesion, technological appropriateness and different dimensions of governance-related information. Crang and Cook (2007) stated that conversation through in-depth interview is the key to social research. The respondents usually answered the questions simply and tried to add a story from their experiences and their day-to-day sufferings. At this point, and if I thought it was relevant, I tried to develop and ask a new set of instant questions related to the respondents' previous comments. Otherwise, I changed the conversation topic, asking some general question to get back on track again. During the interview, I tried to assess the validity, authenticity and truthfulness of the information they provided by asking the same question at different points during the interview. Moreover, I tried to crosscheck the information, asking the same question to other respondents about the same general issue. In case of any inconsistency, I tried to find the cause of their statement, asking some relevant extra general questions to get their opinion in this regard.

In some occasions, when I asked participants to talk about social problems or governance-related issues and facts, a few were worried about disclosing their name and requested me to mark this as confidential. In these situations, I gave further assurances about the anonymity and confidentiality of their statements. I attended all the interview sessions conducted by my research assistants to observe their discussion and I tried to act as a facilitator and moderator in those conversations. If it was necessary I assisted my research assistants for few minutes to facilitate the conversation process or to minimize any problem that occurred. In all the interview sessions, an interviewee was first asked some general

questions about his/her own sanitation practices and afterwards detailed questions were asked concerning relevant sanitation issues. In general, I found most of the respondents eager to talk in detail. I think my early relaxed and general questions made them feel comfortable to talk. Whenever possible, I preferably went to the respondent's house for this conversation, which allowed them to feel relaxed and I also got some time to observe their house, especially WatSan-related aspects like water storage, presence of soap/ash, water availability, cleanliness, odour, distance from latrine, surrounding environment, etc. After the conversation I asked them to comment on the entire interview session. In this aspect, most of them said that the interview was like a normal conversation and not difficult for them. They were comfortable with the questions and I found them relaxed and flexible in answering them.

3.7.3 Focus-Group Discussion (FGD)

A focus-group is a form of qualitative data collection in which a group of people are asked about their perceptions, opinions, beliefs, choices and attitudes towards a product, service, concept, idea, etc. (Henderson, 2009). In the social sciences and urban planning, the focus-group technique allows the interviewer to study people in a more natural setting than a one-to-one interview. Focus-groups have a high apparent validity, as the information comes through the discussion of several participants which might be dependable. Another purpose behind conducting the FGD was to get group responses or multiple individual statements where it extracts a negotiation of meanings of phenomena through intra and inter-personal debates (Cook and Crang, 1995; Machaghten and Myers, 2004). Moreover, the FGDs were used to compare the responses that I got from the one-to-one interview to cross check the information. Macnaghten and Myers (2004) stated that the FGD works well with some categories of participants. Here, I conducted two FGD sessions having a separate male and female group in each of the selected study areas (Figure 3.9) to address different themes and to get segregated information and realities. This approach was particularly suitable to get the women's views in an unbiased manner because sanitation related practices are a bit embarrassing for the women and they will not be so responsive when they are in the same discussion with their male counterparts or relatives or even in front of other family members.

During the FGDs I asked questions in an interactive group setting, where participants were free to talk with other participants and I acted as an observer, a moderator and a principal investigator. My two research assistants also acted as observers and took their notes according to their own perspectives during the FGD. Later we (the whole research team) discussed the findings from the FGD and set a conclusion. As a moderator, I was responsible for facilitating and guiding individual or group discussions while the observers recorded the activities and conversation. Most of the discussions were held in the afternoon after lunch, which was a convenient time for the female participants and at around 16:00 hours for the male participants. As stated earlier, I did not aim for a representative sample of the population and I tried to recruit separate male and female groups that covered different age

Figure 3.9: Male (A,B,C,D) and Female (E,F,G,H) FGD sessions in the study areas

Source: Field Survey, 2010

groups, income levels, professions, social status, disability, etc. This purposive sampling strategy at this point enriched the investigation and I got a mutually agreed opinion from a wide-range of community groups from each FGD session. Conversely, I found a drawback of conducting FGD where reliability of information came under threat. People often speak differently to maintain their position in society, where they might be vulnerable in exposing any problematic but truthful statement. However, this became one of the findings where people didn't participate truthfully and those unreliable data were removed when I compared the information with data collected from other sources.

The FGD method was adopted in this research to address community experiences since investigation of sanitation related issues proved to be problematic due to the complex social and behavioural pattern of slum residents. In preparing for the focus-groups, I considered the questions to be asked, participants, venues, how to organize the sessions, etc. In addition, several techniques were adopted, such as asking questions, showing photographs,

telling stories, interpretation of different themes, etc. to extract in-depth collective information on related issues. There were approximately 12-20 persons attending each FGD session and they lasted 1-1$^1/_2$ hours. The FGD sessions were arranged in a neutral space within the slum such as community centres, training centres or schools to avoid bias and the concerned GO-NGO field representatives helped me to set up the sessions. A total of 8 FGDs were conducted in the government and NGO managed study areas but it was not possible to conduct any in the unmanaged slum. The key topics that were discussed in the FGDs can be found in Annex VI.

3.7.4 Round Table Discussions (RTD)

Apart from the above-mentioned ethnographic methods, a round-table discussion (RTD) is a meaningful indoor method of data collection that was adopted to gather different organizational and policy-related information from a diverse range of participants, including voices from the grassroots. Here, I wasn't able to organize an RTD but I had the opportunity to attend three RTD-sessions organized by the GO-NGO collaborators. I will explain the reason why I couldn't arrange the RTDs in the 'challenges during the fieldwork' section later in this chapter. Among these three RTDs, one was basically a horizontal learning programme (Figure 3.10-A), which was a peer-to-peer learning process that was initiated in Bangladesh

Figure 3.10 (A,B,C): Round table discussion sessions

Source: Field Survey, 2010

by the local government institutions in 2007 (Hassan, 2009). Through this session, the GO-NGO personnel and representatives discussed key issues related to the WatSan situation in the slums that was helpful to uncover the organizational hidden facts such as their activities, strengths, weaknesses, opportunities and threats. This peer-to-peer debate excavated some unexposed realities in the urban sanitation sector that I point out in chapter eight. The other RTD sessions were organized by the NGO peer group to discuss problems and prospects of urban sanitation and other related issues, where the majority of participants were slum residents (Figure 3.10-B,C). This session sought to identify the grassroots experience related to sanitation in the slum areas. In addition, both of the RTD sessions were organized with the presence of representatives from related GOs, NGOs, international agencies, donor organizations, some members of civil society and politicians. These were helpful for my research as they discussed and addressed policy guidelines, gaps, strategies, key problems and possible solutions in the urban sanitation sector. The topics that were discussed in these two RTD-sessions and horizontal learning sessions are outlined in Annex VII.

3.8 Methods of Data Analysis

Data analysis is the process of bringing order, structure and meaning to the mass of collected data (Marshall and Rossman, 1995). This section presents my analytical methods. The collected qualitative and quantitative data analysed using different suitable approaches in different chapters throughout the thesis. Various types of statistical information are used here as support of qualitative data while describing relevant WatSan related issues. Tabular and graphical representation is not prioritized, while the analysis of data is entirely based on qualitative methods, which recognizes the primacy of the subject of inquiry (Rich and Ginsburg, 1999) and is based on the interpretation of text, verbal information and observations. However, collected data are analysed and compared qualitatively by thick description. This mode of qualitative data analysis has been used to uncover and understand what lies behind the slow progress of sanitation intervention and social concerns of which little is known; for instance, the intricate details of phenomena that are difficult to convey with quantitative methods (Strauss and Corbin, 1998). Qualitative research generates detailed and valid data from multiple forms of evidence that permit the formulation of new hypothesis or theories and suggest further study or practice (Eisner, 1991; Strauss and Corbin, 1990).

The analysis of data consists of four linked processes (Silverman, 1993): data reduction, data display, conclusion and verification. Before analyzing the data from various sources like observation, in-depth interview, FGD, I documented and edited my data in the first instance. In the case of interview audio recording data, an important part of this editing process is to transcribe them. For observations, I always documented all actions and interactions. I made an effort to enrich the contextual statements or activities during my entire data collection period. Therefore, I started my work reading materials from beginning to end which is suggested by many qualitative researchers (Corbin and Strauss, 2008). Research diaries, field notes, contextual issues, and notes on data collection techniques and procedures helped me to enrich my documentation and this is the basis of this final analysis. Here, I followed Flick's (2002) strategy regarding the process of documenting the data, which comprises mainly three steps: recording the data, editing the data (transcription) and constructing a 'new' reality in and by the produced text. My methodological approaches for data analysis, which are adopted in this research, are outlined in the following sub-sections.

3.8.1 Transcription

After my field survey, I transcribed all the recorded conversation and translated all the contents of the conversations in English. In this way, I had to repeatedly listen to the conversations, and so generate, check and refine my analytical hunches whilst simultaneously producing a textual version of the interaction that was ultimately used in data analysis. Here, I ignored repeated words and statements, broken-off words and back channel utterances (uh-huh, mm, hmm). I put additional words to express their shyness, sorrow,

silences, anger, gestures and postures that I noticed during the interviews. During the transcription, I tried to describe my feeling while I interacted with the respondents. Uncertain and inaudible passages have been indicated and I omitted pauses, overlaps, stresses, volume, pace or intonation, except in conventional punctuation. These conventions saved transcription time and make the transcripts shorter and readable for analysis.

3.8.2 Ethnographic Representation

Ethnography starts from the theoretical position of describing social realities and their making while it aims at developing theories (Flick, 2002). Ethnographic representation concentrates on the 'textual construction of reality'. Harvey (1990) refers to this analysis as a process of 'pile building'. In this research, the ethnographic data has firstly been considered, identifying common themes and relations, which were coded to construct key themes, make sequential argument and enable illustrative analysis. Here, I interpreted ground realities 'through the eyes' (Kitchin and Tate, 2000) of the respondents that eventually reinforce the concept of ethnography. In this research, some accounts of observation, in-depth interview and FGD data were interpreted, analyzed, explained and compiled through ethnographic representation. The main reason for employing all those data collection techniques is that they enabled me to cross check results obtained from those sources, including field-notes, research diaries and so on. The purpose of ethnography is to become a part of the situation being studied in order to feel what it is like for the people in that situation (Sanday, 1983). In other words, the aim of ethnographic fieldwork and data analysis was to uncover and explicate the ways in which people in particular work settings come to understand, account for, take action, and otherwise manage their day-to-day situation (Maanen, 1979). However, ethnographic studies provide elements for ethnological texts that study societies one after the other and make a systematic comparison between them (Baszanger and Dodier, 1998) which is the central issue of this research. For instance, I observed closely what people said to each other and at what they remained silent about. This type of ethnographic description allows me to explain the issues that are recognizable as features of persons' everyday lives and social worlds that are presented under the dimensions of 'social-technological-governance' system in the fifth, sixth and seventh chapters respectively.

3.8.3 Qualitative Content Analysis

Qualitative content analysis is adopted in this research to analyze textual materials. Flick (1998) stated that content analysis is useful for qualitative data analysis because it does not have any interest in the source of the material that may range from media products to observation, interviews and FGD data. A range of textual data, i.e. transcribed field data, published and unpublished official and non-official data, were interpreted and analyzed in this study. The textual data covers different policy documents, strategy papers, monitoring

and evaluation-related papers and other relevant sanitation-related documents. This technique of data analysis is adopted to reduce the large amount of textual data through identifying potential concepts. The interpretations of these concepts were useful to analyze these documents critically and link with the current state of affairs in the sanitation sector. Simultaneously, through the analysis I aimed at reconstructing the structure of the text to address my research questions.

3.8.4 Narrative Approach

The narrative approach to data analysis is "a valuable tool for geographers and others who are striving to interpret the 'in place' experiences of different individuals and groups, and how they understand and attach meaning to situated experiences, and produce the places in which their experiences occur" (Wiles et al, 2005). Besides, the narrative approach refers to the process of understanding human motivations, perceptions and behaviour by interpreting the stories people tell of themselves and their experiences (Atkinson, 1998; Riessman, 1993; Bryman, 2004). This approach is used to discover regularities (Mishler, 1995), cultural ambiguities, levels of people's understanding, experiences, behaviours, activities, meaning of events (Elliott, 2006; Squire et al, 2008), and so on. Generally, in this thesis, in-depth interview data were analyzed with thick description, which is based on the individual's speech (Flick, 2002; Ratcliff, 1999), stories or narratives (Bruner, 2006) and interpreted to get a scenario of their everyday lives and realities. I was always reflexive about the ways in which narratives are told in their normal social setting. Moreover, narrative analysis is important here because it performs systematic and/or purposive analysis (Atkinson and Delamont, 2006), which is an integral part of this research. Besides, it has a direct link with ethnographic understandings, which is one of the major components of current methodology. This narrative approach eventually enriches the quality of those data, while Denzin and Lincoln (2008) advocate that 'rich' descriptions of the social world are valuable in qualitative research.

Moreover, 'discourse analysis' is also adopted here as a supporting analytical tool as relevant data from the field only provide 'partial' and 'situated' knowledge (Crush, 1991) that are based on the respondents' rhetoric and my interpretation. Hepburn and Potter (2007) stated that discourse analysis is constructive in a sense that versions of the world, of events and actions, and of people's phenomenological worlds, are built and stabilized, and it enabled me to verify those data and to avoid confusion. It is a general term for a number of approaches to analyze written, spoken, signed language use or any significant semiotic event. Some argue that it focuses not only within the language captured from the respondents but also considers 'beyond the sentence boundary' often known as 'text linguistics' (Beaugrande, 2011). This analysis is useful to analyze data from different sources that were merged together while it allows transcripts of talk, transcripts of interviews or documents of some kind (Potter, 1997). It does not offer a solution to a specific problem but it is considered as one of the major developments in qualitative research, starting as it does from the

assumption that there are discourses at all levels, including individuals' account (Gee et al, 1992). During the fieldwork, I found some respondents were very vibrant and some were silent while answering the same question. In some instances, the same individual speaks differently in different contexts and this technique addresses hidden and concrete problems (Ratcliff, 1999). These situations, together with other major debates on sanitation (as discussed in the previous chapter), are represented through narrative and discourse analysis. Here, I link the issues and debates with my field data that helps to make this research informative, constructive, trustworthy and works as an empirical simplification of field data.

3.8.5 Grounded Theory Approach

The grounded theory (GT) method offers rich possibilities for advancing qualitative research (Charmaz, 2005). It was developed by Glaser and Strauss in 1960 (Glaser and Strauss, 1967). GT is known as a kind of reverse engineered hypothesis that conceived as a way of generating theory through research data rather than testing ideas formulated in advance of data collection and analysis (Dey, 2007). "The GT approach is a qualitative research method of data analysis that uses a systematic set of procedures to develop an inductively derived theory about a phenomenon" (Dey, 2004; Strauss and Corbin, 1998). It is recognized as a 'method of discovery' (Charmaz, 2005; Fielding, 1993) and this approach gives preference to the data and the field under study as against theoretical assumptions (Flick, 1998; Punch, 1998).

The GT approach was extensively used in this research for analyzing qualitative information and the goal of GT is to develop a new concept that is compatible with the urban water and sanitation issues. In this thesis, the field data, especially the in-depth interview and FGD data, were analysed through the grounded theory approach and based on the 'coding' and 'constant comparison' techniques. This process interprets and links empirical data very closely to identifying various themes. Charmaz (2005) advocates that GT enables the researcher to remain close to her/his studied worlds and develops an integrated set of theoretical concepts from the empirical materials. The GT approach helped me to identify and explain the key aspects, i.e. the contexts, problems and possible solutions in the urban sanitation sector that are especially evident in the low-income settlements. Here, an attempt is made systematically to analyze the diverse 'social-technological-governance' systems of the study areas to identify the most significant concepts and categories. Traditional deductive methodologies may not be appropriate to address this diverse social and institutional environment, whereas grounded theory offers a set of flexible analytic guidelines that enable researchers to focus from the data collection and building of inductive middle-range theories through data analysis and conceptual development (Charmaz, 2005). In other words, the collected empirical evidence or data produce 'brand-new' theories or concepts through inductive analytical process. In this case, the possibility of existing theoretical bias is a less-likely because the theory is the end product of most GT-driven researches. This principle of openness implies that the theoretical structuring of the issue under study is

postponed until the structuring of the issue under study by the researcher has emerged (Flick, 1998). Since GT is drawn from data, it is likely to offer insights, enhance understanding, and provide a meaningful guide to action (Strauss and Corbin, 1990).

Analytical Elements of GT

The model of the process in GT research mainly includes the following aspects: 'theoretical sampling', 'coding' and 'writing the theory'. This approach strongly focuses on the interpretation of data no matter how they were collected; and the question of which method to use for collecting data becomes minor (Flick, 1998). But here in this study, I tried to maintain all relevant data collection methods that I explained earlier including theoretical sampling, whereby an attempt has been made to sample incidents, people or units on the basis of their potential contribution to the development and the construction of theories. However, after data collection, all the data has been transcribed line-by-line, coded and structured categorically to link concepts. This empirical evidence is useful to identify those categories and concepts that emerge from the text (Ryan and Bernard, 2000) that ultimately build relationships between them. While dealing with the GT approach, I had to consider the following coding and categorizing (Stern, 1980) techniques to analyze my data, which enables me to reduce data by dividing it into key concepts and categories (Miles and Huberman, 1994).

Open Coding

This is the initial stage of data analysis through GT approach (Kerlin, 1998). Open coding helps me to develop preliminary concepts, ideas, events, acts, etc. It is a process of 'breaking down, examining, comparing, conceptualizing and categorizing' data (Flick, 2002; Strauss and Corbin, 1990), which is an initial but central process by which theories are built (Strauss and Corbin, 1998). At this stage, I developed initial concepts based on my research questions, field data and expected themes.

Axial Coding

Axial coding involves 'a set of procedures whereby data are put back together in new ways after open coding by making some connections between categories' (Flick, 2002; Punch, 1998; Strauss and Corbin, 1990). This stage refers to the process of developing the main categories and understanding the relationships between the categories. This development is necessary for finding core categories, which is finalized in the next step.

Selective Coding

Selective coding involves 'selecting the core category, systematically relating it to other categories, and filling in categories that need further refinement and development' (Flick, 2002; Pandit, 1996; Strauss and Corbin, 1990) until 'data saturation' occurs. Kerlin (1998) stated that saturation is achieved when all the data fit into the established categories and no new categories emerge from the data.

Constant Comparison Method

In qualitative research, the most significant analytical strategy is making comparisons, finding patterns and contrasting one set of data with another (Krueger, 1998). Ryan and Bernard (2000) indicate that the constant comparison method is useful as soon as the data are coded and categorized. However, upon completion of coding and categorizing, the collected field data are further transformed and link with the key categories considering the aim and objectives of the research. This technique was adopted to compare similar and dissimilar incidents/issues from different study areas to excavate ground realities that involve continual revision, modification and amendment. It also helped to accommodate new concepts and categories (Dye et al, 2000). This comparison is essential because it allows the researcher to differentiate one category/theme from another and to identify properties and dimensions specific to that category/theme (Corbin and Strauss, 2008). This method allows the theory generated by the analysis, which doesn't exist in the theoretical world. In this thesis, data were analyzed through the GT approach following the above-mentioned step-wise techniques that maintained a close connection between the data and the conceptual framework.

3.9 Challenges Faced During Fieldwork

3.9.1 Planning Phase

I went to the field in Bangladesh in early October 2009 and I decided to finish by the end of March 2010. During the entire fieldwork I faced several problems and the dimensions of the problems were various, ranging from administrative to non-administrative, official to casual, social to personal, etc. Firstly, upon arrival in Bangladesh I caught severe flu of the type that is usual in late-autumn's humid and burning day-temperatures. This took almost two weeks to subside. Secondly, I was bit worried about the time management as I was behind my schedule due to my health. The severe road traffic congestion worried me a lot during the first couple of days of my fieldwork while I explored the potential study sites. I realized that it was not possible to finish more than one task a day. Then I decided to work even in the weekends to explore the study sites because I could move easily on those days due to less traffic. Thirdly, I took almost six weeks to make a decision on selecting the organizations and slums for my study. After investigating various GOs and NGOs, I decided to work with DSK, a national level NGO which is one of the pioneer organizations working in the urban sanitation sector. But, it was not so easy to get government-managed informal settlements, as the government hasn't provided any direct intervention in the informal settlements. After a long exploration of different government organizations, finally I found two informal settlements with interventions by DCC which are adjacent to each other. I also found a similar type of government-managed slum located on the other side of the city. I didn't choose this settlement because the social environment as well as the local surroundings and the law and order situation somehow seem suspect to me. To confirm my initial impression I went to the local police station to know detail about the possibility of working in that place but they insisted that I should not go there alone as this has been recognized as one of the largest

crime hot spots in Dhaka. They assured me of help if the study was for only one or two days, so I decided not to select this settlement as I needed an extensive period to build a relationship and gain the trust of the community in order to get the real picture.

3.9.2 Data Collection Phase

During the data collection, I found that missing appointments was one of the major potential problems. I tried to visit relevant GO-NGO personnel with prior appointments; but unfortunately, in most cases, they didn't show up. Later, they gave another time and requested me to come again. In the worst case, I couldn't meet one government official despite several approaches such as making prior appointment (several times), calling his phones (he requested me to call later…several times), and I also tried to contact him through emails (several times). It is unfortunate that I didn't see his face during the entire period of my fieldwork. Such problems caused delays in my investigation. In general, the appointment culture is not widely practiced in the formal and informal sectors in Bangladesh and is not a priority. As a result I became shamelessly opportunist and visited people, calling them only just before the visit. I got positive results through this sudden visit technique. Apart from this, some non-cooperation was also evident at the organizational and community levels. Some NGOs just refused to help as they believe this kind of academic research couldn't add anything in their development arena. I was successful in changing their perception but still didn't get their full support. At the community level, some influential persons initially didn't allow me to interview people because they were curious to listen in on the interviews and they watched us suspiciously. At the same time I was always wondering whether the people were telling me the truth and I was always thinking about possible alternatives or explanations they were saying to me such as they may have their own political agenda. There were even some people who threw insulting words at us. But I managed later to get them to understand the purpose of my fieldwork. The scenario in the unmanaged slum was bit different because the people there were not bonded with any GO/NGOs. For that reason they might be expected not to have spent their time with me but I did manage to conduct several in-depth interview sessions with them by taking help from a local influential person/key informant. Unfortunately this turned out to be less than ideal because he failed several times to aggregate men and women for FGD sessions. This social discordance finally forced me to apply other techniques to collect group responses in KP and I found 2 families who agreed to spend their time with me and all of their family members. Supposedly, slum residents always interpreted me as an investigator of their slum and they expect a certain level of instant help from my end such as money, relief, clothing, jobs etc. When they came to know about my real identity, some of them became dissatisfied. In that case, I tried to convince them by re-stating my identity and the purpose of my research.

3.9.3 Data Analysis Phase

During the data analysis, I encountered a problem that is related to the generalization of data. In qualitative research, statements are often made for a certain context or specific cases and based on the analysis of relations, conditions, and processes. This attachment to contexts allows qualitative research a specific expressiveness. However, when attempts are made at generalizing the findings, this context link has to be given up in order to find out whether the findings are valid independently of and outside specific contexts (Flick, 1998). In highlighting this dilemma, Linchon and Guba (1985) for example discuss it under the heading of 'the only generalization is: there is no generalization'. However, to minimize the effect, bias or misrepresentation of data, the relevance and self-judgement of the context has been carefully evaluated and presented accordingly.

3.9.4 An Unforgettable Event

In Mohammadpur City Colony (MCC), an unpredictable incident occurred just before the day in-depth interview sessions were due to commence. The community leader, who was also my key informant for this slum, was killed in a road accident with her six-year-old daughter. I was therefore unable to conduct my scheduled in-depth interview and FGD sessions, which was due to commence after extensive preparatory work with her. The assigned government representative of that slum and other influential community members recommended revisiting them 2-3 weeks later for my scheduled survey. Unfortunately this meant that I had to start from the beginning and organize people for the second time to get the necessary respondents.

3.10 Opportunities During the Fieldwork

As a part of my initial research design, I was recommended to organize a round table discussion with different actors, slum dwellers and policy makers in the water and sanitation field. Moreover, a session of horizontal learning, through formal discussion and information sharing and argumentation between two peer groups (GO and NGO representatives), was also in my proposal. But I was unable to organize such events because most of the official personnel were busy with their work and if someone found a slot then the other persons couldn't. Basically, most of them agreed to attend the discussion but it was not possible to get all of them under one roof at the same time. As a single researcher without any media coverage or recognized banner it was not possible for me to organize such events. To minimize this gap I did some extra in-depth interviews with the concerned GO-NGO personnel to talk in length about WatSan-related issues. Surprisingly, in the last few days of my fieldwork, I got an opportunity to attend three national-level sanitation events in Dhaka (Figure 3.10-A,B,C) organized by several GOs, NGOs, donor agencies and their partner organizations as discussed in section 3.7.4. These events certainly compensated for the loss of my own events.

3.11 Conclusion

This chapter has discussed the research methodologies used to address the aim and objectives of this study. The presence of diverse 'social-technological-governance' systems of the study areas in managing the GO-NGO provided sanitation interventions made each of the studied slums distinctive. I remain mindful that this study will attempt to break new ground, both geographically and theoretically, by aiming to gain insights into the role of different parties, including GO-NGO and the people in dynamic, over-populated, sub-standard and filthy urban neighbourhoods. Considering the gaps in the sanitation related research in Bangladesh I think, this bottom-up, inductively-derived, grounded theory-imposed, ethnographic, qualitative methodology is appropriate to obtain the real scenario from those distinctive slum neighbourhoods because, methodologically different techniques have been applied to minimize the issues that may potentially impact the field data. It is the vision of new and innovative understandings and the building of constructive grounded theory that is the driving force behind my methodology. The implication of this methodology to other researchers for exploring relevant social issues may worthwhile as every single step from fieldwork planning to data analysis were explained logically considering local contexts and existing methodological approaches. This methodology not only assembles different dimensions of textual, social, organizational data from different fieldwork techniques but also it helps to simplify diverse empirical information into plain text that makes the analysis easier. The following chapter outlines overall scenarios of the study areas and WatSan service provider organizations and their project strategies, derived from the theoretical background and the methods presented above.

Chapter Four

Study Areas and Project Features

Chapter Four
Study Areas and Project Features

4.1 Introduction

Dhaka, the capital and the largest city of Bangladesh is located in the central region of the flat deltaic plain of the three major international rivers, the Ganges, the Brahmaputra and the Meghna. It enjoys a distinct primacy in the national and regional hierarchy. Geographically, Dhaka is situated on the northern bank of the river Buriganga (Figure 1.2). Its increasing growth and primacy is partly explained by its geographic location. However, the central location and good accessibility through rail, road and waterways together with major 'push factors' such as river erosion and lack of employment opportunities in rural areas point to the fact that the bulk of the country's migrant population takes shelter in the slums of Dhaka city (Islam, 2000). The Centre for Urban Studies (CUS) has identified about 5000 slums and squatter settlements in Dhaka located scattered all over the city. Figure 1.2 shows the existing slum and squatter settlements. The proportion of slums on private land appears to have increased, perhaps due to greater vigilance over public land by the government (CUS, NIPORT and MEASURE Evaluation, 2006). Some studies reveal that in the near future the population of Dhaka city will increase drastically, with up to 60 percent in the slums (Khan, 2004; Podymow et al, c2006). This excessive burden of population poses formidable difficulties for urban public health, and upon the water and sanitation systems to provide regular services to the city dwellers. The present extent of these services for the poor barely covers their needs (Islam, 2000). Responding to the above needs, different GOs and mostly the NGOs have been engaged in implementing WatSan projects and programmes with varied strategies and donor-imposed terms and conditions. Following a thick description of geographical characteristics, local contexts and ecologies of the study areas, this chapter emphasizes the GO-NGO managed project strategies, policies and their overall effort in those slums to frame the entire state of affairs. I discuss the framework of step-wise approaches for the selection of my study areas in the previous chapter and the following section gives detailed illustrations of individual slums and GO-NGO-managed WatSan projects.

4.2 Description of the Study Areas and their Ecologies

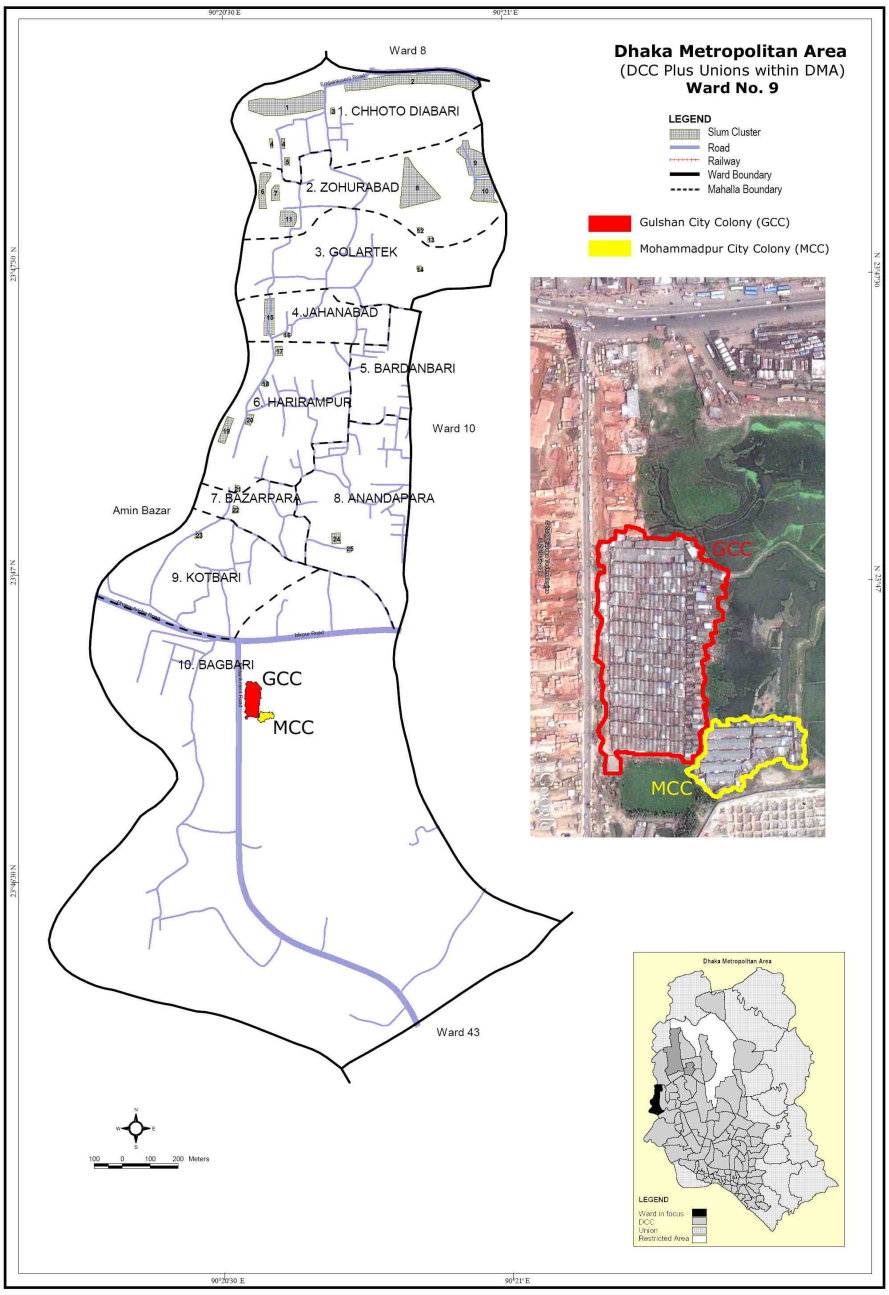
The growth of slums and squatters in Dhaka has been phenomenal and currently there is no legal framework for the protection of rights and settlement of the urban poor (WAB, ITN-BUET and DSK, 2006). Currently, sanitation is a big challenge and it is becoming unmanageable in the context of the urban slums. Davis (2006) explains that slums often begin with geology, where they are often relegated to swamps or unstable places that face a constant threat of floods, fires and diseases. Much academic literature reveals that these unattractive, environmentally sensitive and dangerous sites (Das, 2003; Hardoy and Satterthwaite, 1995) became poverty's niche in the ecology of the city. Annex VIII highlights brief general information about the study areas and the following sub-sections illustrate the overall ecologies of the selected slums. As stated (Figure 2.1) in chapter two, WatSan interventions are considered here as inflows; project results including the state of people's behaviour and changes related to sanitation are regarded as outflows; and, most importantly, slums appear as spatial phenomena where all the input and output mechanisms take place.

4.2.1 Gulshan City Colony

Gulshan City Colony (GCC) is located at Gabtoli in greater the Mirpur area under Ward No. 9 of Dhaka City Corporation. This government-managed slum is situated near the bank of Turag river as it flows past the western end of Dhaka city and adjacent to the DND embankment (Figure 4.1). Although GCC is located inside the embankment, this area is flooded by 1-3 feet of water in every rainy season. Residents of GCC are mainly government 4th class employees like cleaners, sweepers and drivers. The residents also work in the informal sectors although their main occupation is associated with the government formal sector and they have a secure monthly income than the 'average' slum dweller. The dwellers were moved here from the Gulshan Taltola area (previously known as Gulshan slum), which is now another major nodal point of Dhaka and recognized as a high-class residential and diplomatic zone. The Gulshan slum was evicted in 2005 as a part of the government's resettlement and rehabilitation scheme that also evident in Mumbai (Patel, d'Cruz and Burra, 2002). Under this scheme, the city authority (DCC) provided a piece of land for each evicted household together with their WatSan facilities. The same strategy was taken in Orangi Pilot Project in Karachi (OPP, 1995). Likewise, in GCC, the residents didn't get government-provided readymade houses on their new land. They had to build houses with their own resources. The total dwelling units of this slum are approximately 475 (officially 416) and the population is now around 2500 persons in which children below the age 15 represent the highest proportion (Field Survey, 2010). This is a rectangular-shaped slum which includes 15 lanes and each lane comprises 32 houses (Figure 4.1). According to Das's (2003) findings I also observed that most of the houses in Dhaka slums are 'semi-*pucca*[8]' in character as their

[8] Semi *Pucca* house is a structure of normal height and has walls made of bricks. The roof is made of any material other than cement and concrete (BBS, 1999).

Figure 4.1: Location of GCC and MCC in Dhaka city



Source: CUS, NIPORT and MEASURE Evaluation, 2006; Google Earth image, 2012 (Modified by author)

walls and roofs are made of tin (Figure 4.2-D). In GCC, some residents have cemented floors which represent that they are better off but the size of all the houses are the same. There are no cooking spaces outside the tiny single roomed (12x15 feet) houses. There are hardly any gaps between houses and the narrow 2 to 3 feet width lanes are used for getting in and out of the dwelling units. The residents cook in the lanes and these become congested (Figure 4.2-C). The women have to use firewood for their cooking because there is no gas connection. They have some common communal spaces like a club room, school, mosque, small grocery shops, vegetable market, tea stalls, etc. Different communal assemblages take place in those public and community-owned spaces. The majority of the residents are politically affiliated with 'Bangladesh Nationalist Party' (BNP) which is currently in opposition to the ruling *'Awami League'* (AL) government.

Regarding water and sanitation, the DCC has constructed a considerable number of concrete superstructures with a septic tank option for the residents. The DCC has provided 4 latrines and 4 bathing places for each lane. A total of 56 latrines and 56 bathrooms have been constructed in those 15 lanes. One lane hasn't got any latrines or bathrooms and the residents of that lane therefore go to their neighbours' facilities. At the beginning of 2010, the latrines were 5 years old and the residents claimed that the DCC never came for any maintenance after the construction. In the rainy season, almost half of the slum area goes under water and the floodwater often washes away effluent from the septic system. The residents have to face a lot of problems to manage their drinking water and defecation places. Now, these latrines have become unsuitable to use and most of the bathrooms have turned into waste dumps. Besides, most of the latrine doors are broken and there are no

Figure 4.2-A,B,C,D,E,F: Photograph showing overall scenario of GCC

Source: Field Survey, 2010

initiatives for their replacement; instead, people use their neighbours' latrines. As a result, the operational latrines and bathrooms experience extra pressure and the conditions of these superstructures are getting worse day by day. Through my close observation and the responses of the residents, I came to know that the superstructures were built on unstable land where the city corporation had dumped the city's wastes. Due to this, all of the superstructures have become displaced and lean from their original position (Figure 4.2-A) and roughly about 50 percent of those latrine and bathroom chambers are now out of order. Some latrines have been operated with a lock and key system and one latrine is used by 8 families having their own keys. These user families are also responsible to clean and maintain their latrines. But the overall management scenario of the latrines, bathrooms and water points is seemingly not satisfactory (Figure 4.2-B) in this slum as most of the latrines were found unlocked. Moreover, there is no proper waste dumping place in this slum and people usually throw their wastes haphazardly at the edge of their environs, mostly near the latrine, on top/over the septic tank or nearby low-lying areas. During the flood people can't

use their latrines and have to arrange alternative options like open defecation in nearby areas or on top of their house roofs or they build some sort of temporary bamboo hanging latrines.

The DWASA is responsible for supplying water in GCC but most of the connections were found to be out of order. Water points in this slum consist of a municipal piped water connection that is linked with a water storage tank. But, most of the connections are either out of order or get inadequate supplies. To tackle this problem, a better off section in the community installed tubewells on their own initiative (Figure 4.2-E) to get water directly from 280 feet below the ground; but this water is unusable and dirty. The main problem in the area is the waste materials underneath their settlement. Their experience is that they have to repair their tubewell pipes sometimes twice a month because these plastic pipes perish in contact of these waste materials. The residents claim that there is continuous gas (methane) emission from the ground and this can be ignited. The groundwater is highly contaminated due to seepage into the aquifer. At times the colour of the water is red and it is smelly and not potable. It certainly is not suitable for bathing and has a proven impact on the children's skin. People sometimes prefer to bathe and wash their clothes in pond nearby but this is also dirty so the residents have to choose the lesser of two evils. Generally, they buy drinking water from a nearby water kiosk at 2 taka per '*kolshi'* (pot for storing water) but this is nearly a quarter of a kilometre away.

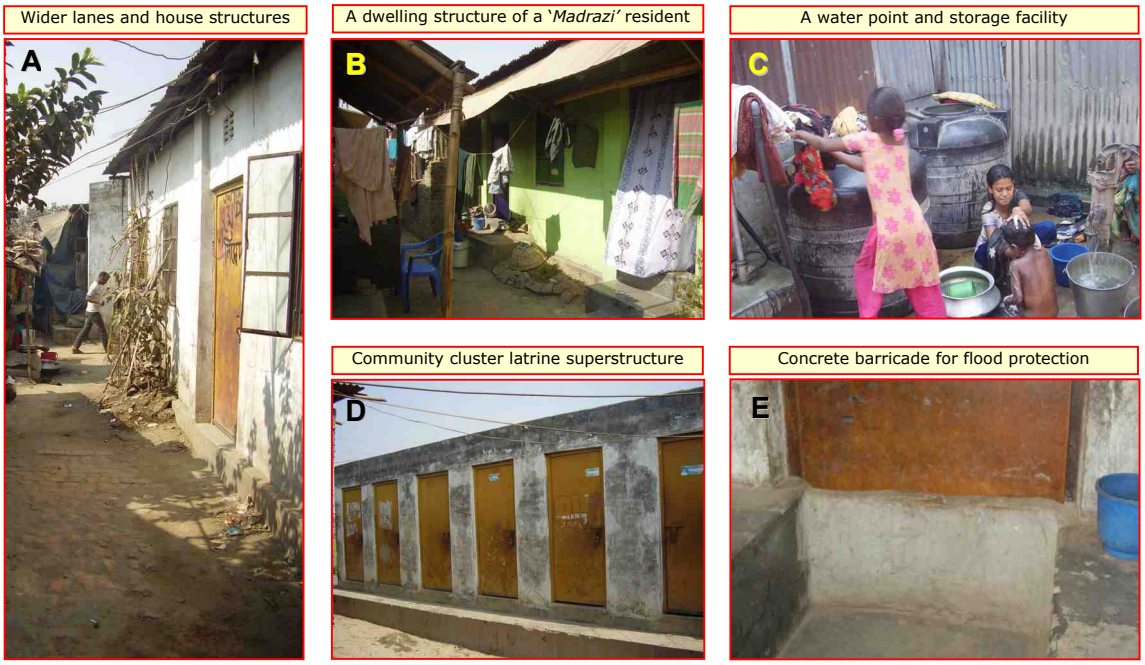
An unauthorized market place has grown up inside the GCC area. They have a school operated by BRAC, a national-level NGO in Bangladesh. This offers basic education for children up to year three. BRAC also operates a delivery centre (labour) for pregnant women to give advice as and when needed. They are committed to support the community 24 hours a day but the residents hardly get their service. Recently an UNDP-funded 'Urban Partnerships for Poverty Reduction' (UPPR) project arrived in this slum with a mission to help the residents considering their needs and priorities and this will be further illustrated under section 4.3.

4.2.2 Mohammadpur City Colony

The Mohammadpur City Colony (MCC) is located adjacent to the South-East corner of GCC (Figure 4.1), and is privileged also to have the UPPR project. The nature of evolution of this slum is similar to GCC as this neighbourhood is also a consequence of the government's rehabilitation and resettlement scheme. The residents moved here in the first quarter of 2006 after their eviction from the Mohammadpur Area, which is one of the biggest residential hubs of Dhaka city. This slum is much smaller than the GCC in terms of its area but consists of a wide road and with relatively better housing structures and facilities (Figure 4.3-A). The houses are 'semi-*pucca'* in character in which the roof is made of tin and the walls and floor are made of brick and cement respectively. The government converted this low-lying area by filling in the land with earth and sand whereas GCC is entirely built on an

old waste dump without any remediation. Therefore, the people here are more confident about the durability of their houses and other infrastructures. The younger generations are seemingly educated and conscious and the political identity of the residents is largely in favour of the current ruling party. The residents of MCC were, relatively speaking, luckier than the GCC as the government allocated complete houses together with other basic amenities like water points, latrines, roads, etc. For this reason, the residents of GCC are jealous about the residents of MCC as they themselves have less facility despite having originated as a similar government project. The house occupiers pay no rent but they are obliged to pay utility bills. Other than local Bangladeshis, there are some '*Madrazi'* people living in this slum (Figure 4.3-B) who came from Andhra Pradesh, during the independence of India in 1947. During my fieldwork, I didn't notice any identity conflict between these two groups of people. The total numbers of households in this slum are 147, of which 39 households are '*Madrazi'* and the total population is around 750 (Field Survey, 2010).

Figure 4.3-A,B,C,D,E: Photograph showing overall scenario of MCC



Source: Field Survey, 2010

The MCC has been organized with six lanes and the DCC placed water points and cluster latrines at the end/edge of the slum. The people have no individual cooking places and have to cook in the lanes. A total of twenty-three latrine chambers have been constructed with a septic tank option in three sanitation blocks (1 block consists of 06-08 latrines) in different places in the slum to minimize the distance from each house (Figure 4.3-D). All of these latrines are operated with lock and key and this is carefully practiced by the users. In MCC, one latrine is assigned for 7 families and they maintain and share associated operation and management (O/M) costs. During my first visit to this community I found that all the latrines were locked and the people were using the same communal facilities. My first impression regarding the overall condition of the cluster latrines was good except for a few leakage

problems in the septic tanks. I found most of the latrines to be fairly clean and the people say that they are quite happy with the facilities. The management strategies are the same as for GCC but the residents of MCC seem very organized and relatively cleaner. Some residents raised the issue of queuing problems in the morning; and they suffer a lot during the floods as they have to live with nearly 2-3 feet of stagnant water.

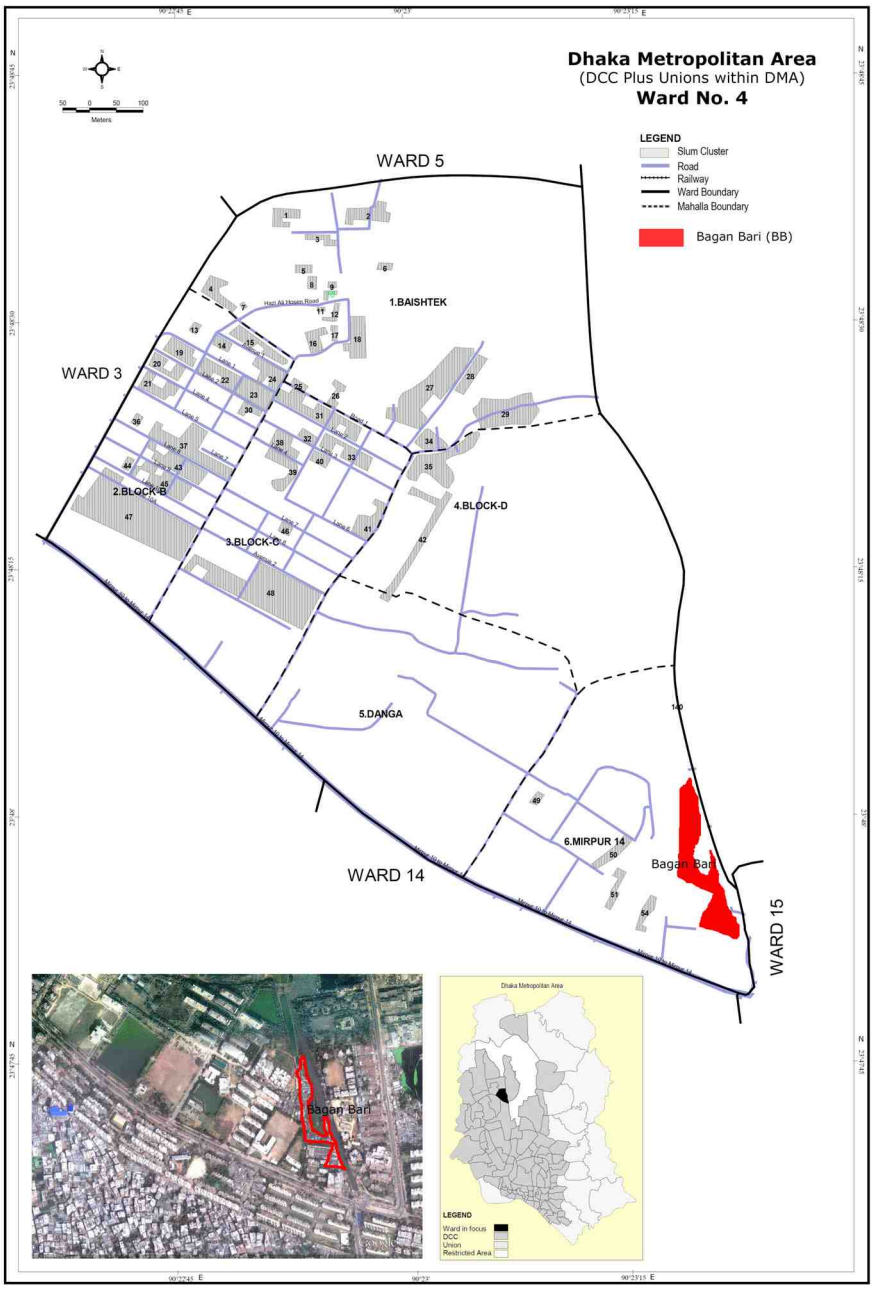
Apart from the latrines, there are some open bathing places near three water points in this neighbourhood (Figure 4.3-C). The DCC has provided two tubewells for this community that can only be used for lifting water from the storage tank while the source of water is the DWASA water supply pipeline. Only one of the tubewells is now in operation as the other is broken. The water availability from these two connections is generally not predictable or reliable as they receive dirty and smelly water once a day that lasts for only one-two hours. Despite this, some residents mentioned that the flooding problem is their main area of concern. However, to mitigate their basic water demand, the residents set up an electric pump in their community at their own expense. Now they are getting safe water but it is a hard job to collect water from one pump. The residents used to reserve water in bigger plastic tanks for emergency use. This additional arrangement for water pump and reserve tanks involves some operation and maintenance cost that is associated with the electricity bill and pump maintenance. The whole community usually shares this cost. However, as a temporary flood protection measure, some residents blocked their main door with bricks and cement to keep their room safe from filthy flood water (Figure 4.3-E). The community has repeatedly requested the DCC authority to build a boundary wall, as they feel insecure in terms of crime and for other related reasons.

There is no drainage system and, regarding the waste management issue, I didn't find any designated waste dumping arrangements or dustbins in MCC. The people throw their waste just beyond the border of the slum and, particularly, over and beyond the septic tank areas. But they are relatively better off than GCC residents in terms of being rewarded with government support, infrastructures and a spacious neighbourhood. Despite this well-off situation, all the residents have a fear of slum eviction and their main demand from the government is a permanent place for living. The government has provided them with land, houses and even a school for the '*Madrazi'* children but they still feel vulnerable as they are hearing that they will have to move again because government will evict this community in the near future. Currently, there is no market place in their community and they need to go to the GCC to buy groceries and other basics. As these two communities (GCC and MCC) are adjacent to each other and due to the inaccessible location of MCC with one single access point through the GCC, the MCC residents sometimes experience disturbances from the GCC residents which might be the result of their contradictory political identities, socio-economic and other related factors.

4.2.3 Bagan Bari

Bagan Bari (BB) is a relatively old slum situated in the North-West of Dhaka city. It was previously known as Karim Mia's slum. Karim Mia, a homeless person, first made a shed and started to live in this area with his family. There was a garden which translates as *'Bagan'* in *'Bengali'*, near the house of Karim Mia. People from outside came into that area and started to build their shelters and sheds around the garden and gradually the place took on the shape of a slum. It was established in 1980 in ward no. 4 of DCC under section 14 of the Mirpur area (Figure 4.4). The area of the slum is around one acre and it is jointly owned by the Ministry of Housing and Public Works and the DWASA. The local people consider this

Figure 4.4: Location of Bagan Bari (BB) in Dhaka city



Source: CUS, NIPORT and MEASURE Evaluation, 2006; Google Earth image, 2012 (Modified by author)

slum a safe hiding place for *'mastaans'* and criminals as it is located at the edge of three administrative units (Thana) Mirpur, Cantonment and Kafrul. Figure 4.4 depicts the overview of the BB which developed on the bank of a DWASA waste water disposal canal, behind the boundary wall of police battalion quarter and Dhaka Dental College that hid the slum from nearby built up areas. Most of the sewerage from the Mirpur area passes through the DWASA wastewater disposal canal. The whole area is smelly, dirty and the people are exposed to environmental hazards.

The total population of BB is now approximately 2200. According to a DSK survey conducted in early 2009, there are 339 households living in this slum. During the field survey, local residents claimed the real number of households is 410, with an average of 5 members in each household. There are 13 lanes in this slum, all very narrow and used for access to the houses and for cooking purposes (Figure 4.5-A). There is a temporarily built long path around the slum which was constructed under the supervision of slum dwellers and financed by the DSK. The houses are mostly *'semi-pucca'* and *'kutcha*[9]*'* with tin made roofs,

Figure 4.5-A,B,C,D,E,F: Photograph showing overall scenario of BB

Source: Field Survey, 2010

tin/bamboo/straw walls and earthen floors. People came to BB and built their own houses without any government or NGO support. Since there is no rent, they spend their money on their houses and are free to improve them subject to the availability of space and social connections. This is a kind of occupancy with a first come first capture basis. People also prefer to attract their kin as neighbours to strengthen their control in the slum. Those able to build several houses can earn extra income from renting them out as also identified by Begum (2007) and Das (2003). In reality it is the powerful who capture empty spaces and build houses for rental purpose. Some house owners live outside of the slum and come only

[9] *Kutcha* house has a ceiling which is usually low height and is made of very cheap construction materials like straw, bamboo, *chhan* (grass), *golpata* (leaves), polythene sheets, old tins and gunny bags (BBS, 1999).

to collect their house rent. In BB, the most common employment for men is rickshaw pulling, daily labouring, transport labouring, street hawking or small business, whereas women are engaged as garment workers or maid servants in nearby residential areas. Most residents are illiterate; an ITN-BUET field survey on this neighbourhood indicates that only 37 percent of the people have basic literacy and can write their name correctly.

Bagan Bari is one of the slums where the socio-economic status of the people is considered to be low and the WatSan condition of the area was very deficient. From that perception, the DSK started their WatSan intervention among deprived poor people through a project entitled 'Advancing Sustainable Environmental Health (ASEH)', which was financed by WaterAid Bangladesh. This slum has two types of latrine: household ring slab pit latrines (PLs) (Figure 4.5-B) and the community septic tank latrines (STLs) often known as 'cluster latrines' (Figure 4.5-C) . I also found some hanging latrines, which were constructed above the sewage canal using local materials like bamboo and poly bags (Figure 4.5-D). Here, the DSK first initiated individual household PLs but the scheme failed due to saturated soil conditions where pit technology simply could not work properly. After this experience, the DSK introduced community based cluster STLs in 2005. The STL technology did not perform properly either and most of the facilities have turned into unhygienic ones and all of the human faeces and urine is discharged in an untreated manner into the nearby sewage canal. Most of the PLs are in households but some are found in BB shared between 5 to 7 families. The STLs are shared on a 10 families per chamber basis. But most of the latrines were found unlocked. There is male or female sign marked on each of the latrine doors but the residents do not use them accordingly.

Regarding the means of providing drinking water, residents of BB are currently getting water from a DWASA pipeline. They have 11 legal DWASA pipeline connections, which are temporary flexible plastic pipes that are often disconnected from the main supply line. They get dirty water when the pipelines are disconnected or damaged. These pipelines end in the underground water storage tanks and people lift that water through pumping the tubewells. All of the water pipelines approach through the sewage canals in an unhygienic and intolerable manner (Figure 4.5-E) and the water is distributed at different water points. However, the residents have to pay water bills, which have been managed and supervised by the CBO and DSK respectively. During the summer season or periods of water scarcity, the men usually bathe in the pond, which is located near the police line campus. The women also prefer to collect their water from that campus. Other than the campus source they do not have any other alternative access to water.

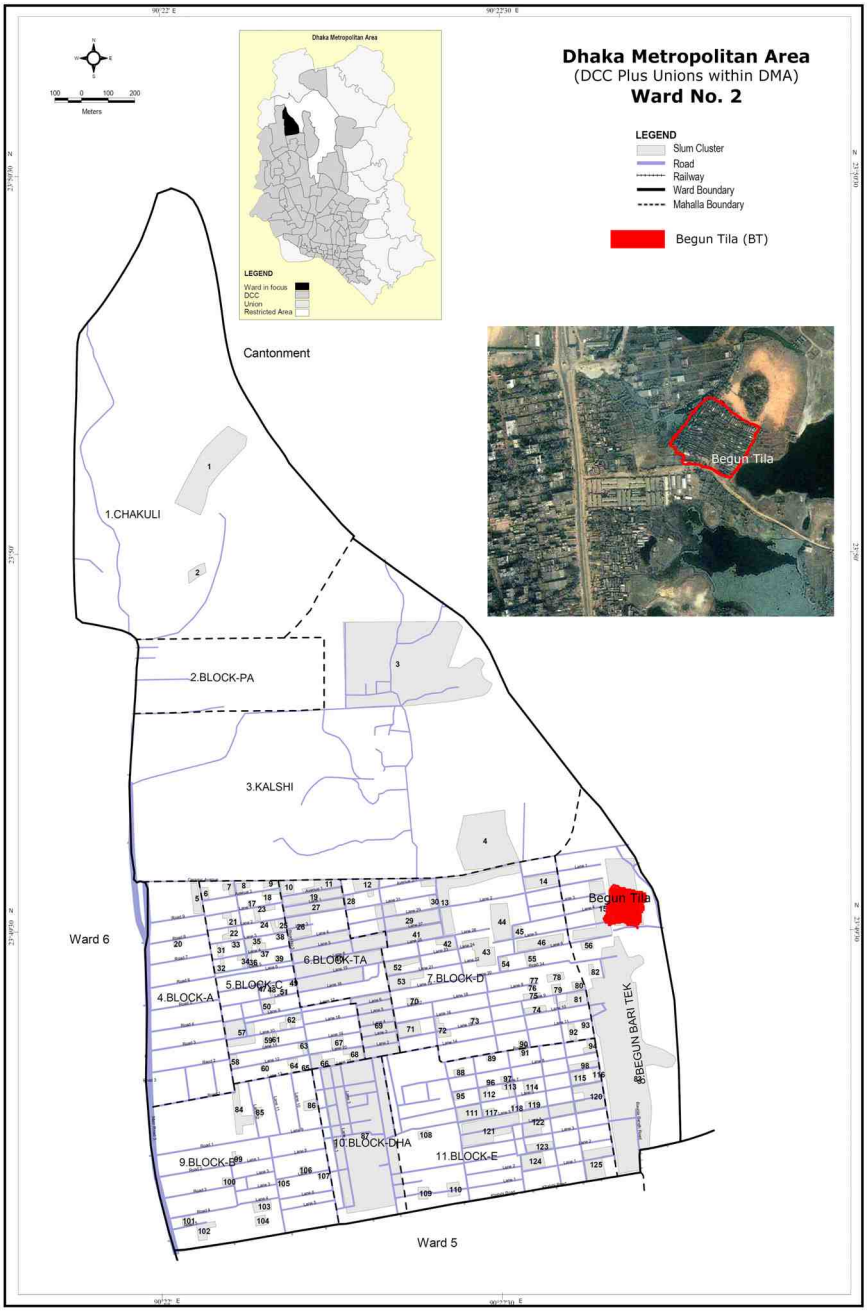
There are 3 schools present in this slum, operated by BRAC. There are no waste management facilities in the slum, and the people throw their waste into the sewage canal and nearest empty places around their house (Figure 4.5-F). There is a strong and complex network of power relations among the residents of this slum. Akash and Singha (2011, p.13) state that "access to scarce resources is a recurring source of conflict in a slum and often provides a power base for a distinct social leadership, which dictates the terms and conditions under which the residents of a particular neighbourhood have to live" and this

power group locally known as *'mastaans'*. Two groups exist in BB of which local political leaders patronize one group and other is struggling to support the local slum dwellers. There are conflicts between them as each tries to establish their own rule.

4.2.4 Begun Tila

Begun Tila (BT) slum is located in the periphery vicinity of Dhaka city under the jurisdiction of Pallabi Thana, Mirpur, Ward no. 02 of DCC area (Figure 4.6). In 1999, government

Figure 4.6: Location of Begun Tila (BT) in Dhaka city



Source: CUS, NIPORT and MEASURE Evaluation, 2006; Google Earth image, 2012 (Modified by author)

eviction took place of 49 slums in several parts of Dhaka city (Joshi et al, c2005). Some of the displaced people demanded justice and rehabilitation and demonstrated outside the High Court with the support of several local leaders. Eventually the government took the initiative to rehouse them temporarily on vacant government land on 29 August 1999. The slum dwellers were informed that they would be provided with a more permanent rehabilitation within a few weeks. This did not happen and the BT residents continue to live insecure lives, still fearing eviction. Currently, there are around 530 households living here of whom about 100 households are living as tenants. According to a DSK source, the total population of this slum is approximately 3500, with an average household size of 6.5. Most of the residents in BT are *'Awami League'* (present government) supporters and religiously Muslim, with some households headed by females. Almost all the residents live in their own 24 x 18 feet houses allocated by the government, mostly with a tin roof, tin or bamboo wall, and a clay or cement floor (Figure 4.7-A). There are 20 lanes in this community, somewhat wider than BB and GCC. Some of the slum dwellers cultivate vegetables in the empty spaces near their houses. It is now considered as a flood-free zone.

Figure 4.7-A,B,C,D,E,F: Photograph showing overall scenario of BT

Source: Field Survey, 2010

The main occupations of the residents are as day labourers, rickshaw pullers, small business owners, garment and factory workers, street beggars, handicrafts makers, etc. A few are employed in the transport sector, government and other private sectors. Residents living out-of-town, as for BT, find many disadvantages to their location. Joshi et al (c2005) stated that inner city slums have worse infrastructure and congestion but offer more jobs and higher wages, which is evident when comparing the characteristics of BT and BB. However, this slum is located some distance from nearby centres such as Purobi and Mirpur Section 11, which are about a 30 minute walk away. For women in BT, job opportunities are limited due to its location.

After their move in 1999, the people used hanging latrines and *'kutcha'* latrines. They didn't have a water source nearby and women and children walked 20-30 minutes in the mornings and evenings to neighbouring areas to fetch clean water for cooking and drinking from households and shops located on the main road, which allowed the slum residents to access their water points, charging them Tk 15-20 a week. This place was a jungle and the surrounding areas were low-lying water bodies. First, they built temporary houses with polythene. The BT slum was not really livable at that time. However, the people gradually improved it after a long struggle and effort. The residents got some sanitation infrastructure from the government and UNICEF but all the support was incomplete and inadequate, resulting in early deterioration. The DSK launched their WatSan project in BT in 2005 and installed 15 water points (Figure 4.7-B) and several cluster latrines with STL options (Figure 4.7-C) and upgraded several DCC-provided cluster latrines. Each water point includes a paved floor, a tubewell and an underground water storage tank, which is connected through a DWASA water connection pipeline. An overhead water tank has been constructed to improve the water supply system for the whole community but still this infrastructure is not in operation due to lack of a legal electricity connection. Regarding sanitation, the DSK introduced household PLs and communal cluster latrines with STL option. The people chose their technology according to their own preferences. The cluster latrines are operated by lock and key and shared by 10 households. Like BB, a sign for males and females exists on all the latrine doors but the users ignore this and have changed the rules for their own convenience and for better management. The overall O/M is run by the CBO and is guided by DSK representatives.

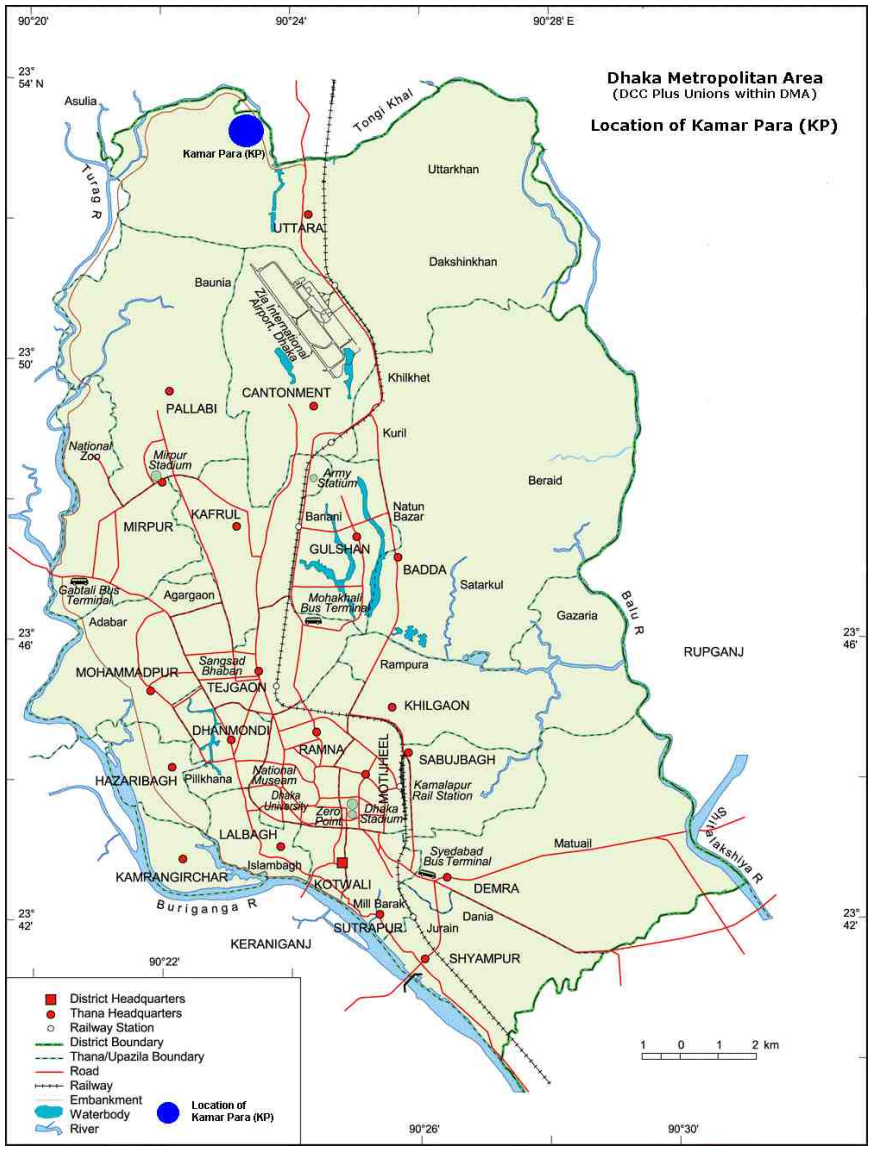
Apart from the water and latrine facilities, BT residents also acquired drainage and waste management infrastructures. But the state of these infrastructures was inappropriate, inadequate and incomplete (Figure 4.7-D). NGOs, namely Grameen, Catalyst and BRAC, operate three elementary level schools in this slum but these do not follow any national curriculum. A community centre constructed by the DSK is used as a place for social gatherings, organizing meetings, playing and as a temporary shelter (Figure 4.7-E). From my fieldwork experience here I got a positive impression about this community: I found them to be cooperative, responsive and well organized in managing their WatSan infrastructures.

4.2.5 Kamar Para

Kamar Para (KP) Slum is located in the Uttara Sector 10, under the jurisdiction of Batulia-Namapara of Turag Thana. This is a periphery neighbourhood in northern Dhaka, close to the Turag River and adjacent to the Tongi-Ashulia highway (Figure 4.8). The entire slum came into existence some ten years ago but unfortunately this area is not covered by DCC and DWASA services. Without having any utilities, the KP slum is a typical urban informal settlement of poor people living with temporary low-cost housing units usually built and

maintained by the occupants. KP grew up on both public (Roads and Highways Department) and privately owned land. The inhabitants of the public land do not pay any rent except the residents who have built houses for renting out. The private land owner has not demanded any rent from the residents as he considers the residents a means of keeping the land secure from powerful land-grabbers. Two types of community live in KP: '*Bengalis'* along the Tongi-Ashulia highway, and a distinct '*Bede*' community on privately owned land (Figure 4.9-A) on the western side of the Turag River and the highway. Professionally, the *'Bede'* peoples are snake charmers and earn a living also through selling indigenous and *'kobiraji'* medicine and playing street shows with deadly snakes. They also offer dental treatment, solutions for menstruation problems and pain relief, all at the patient's door. They have no fixed place for their business as they are itinerant. In Dhaka city, they sell their products in the streets, market places and at tourist destinations. Their daily income is around 300-500 taka, which aggregates to 9000-15000 taka a month. Most family members are engaged

Figure 4.8: Location of Kamar Para (KP) in Dhaka city



Source: http://www.banglapedia.org/httpdocs/HT/D_0145.HTM (Accessed April, 2012) (Modified by author)

with their traditional business, including the children. They are illiterate and they have no tradition of going to school. There are approximately 250 households living in KP and the '*Bede*' and non-'*Bede*' communities live in *'kutcha'* and 'semi-*pucca'* houses respectively. The '*Bede*' community used to build their own traditional elevated housing structures which are 4-5 feet above from the ground on a bamboo raised platform in which they build their rooms with locally-available materials such as bamboo, straw, polythene, cardboard, paper, and so on (Figure 4.9-B). The elevation is so that they can continue living in their houses during the floods. On the other hand, the non-'*Bede*' '*Bengalis'* mostly live in 8 ft x 15 ft room 'semi-*pucca'* houses (Figure 4.9-C). These houses usually have straw/tin made walls, an earthen floor and a plastic or tin roof, and most of them are single-family constructions. There are no boundaries evident in this slum and no evidence of social, economical and political power struggles as they are suffering from the identity crisis of having a continuous fear of eviction.

Figure 4.9-A,B,C,D,E,F: Photograph showing overall scenario of KP

Source: Field Survey, 2010

The KP residents do not receive any intervention either from the state or from NGOs. The state of hygiene is inferior to that in the other studied slums. The '*Bede*' community use three temporary hanging latrines and these are shared by around 120 '*Bede*' families. These latrines are very unhygienic and faeces are visible from nearby areas and are exposed to the environment. These latrines are roofless, bamboo or jute mat enclosures, with a pair of bamboo pieces or bricks placed across a dug hole as a foot rest/slab (Figure 4.9-D). During my observation, I saw excreta overflowing from the main dug hole and being deposited in the narrow roadside ditches, which are open. These unhygienic infrastructures are polluting the nearby areas and creating a nuisance. During my visit there was an extremely bad odour and I could not breathe at a distance of nearly 10 metres. The people usually pay for the maintenance and a *'sordar'* (Leader of the *'Bede'* community) collects money from the users.

The non-'*Bede*' communities do not use these hanging latrines and some residents have made pit latrines and share the cost amongst the users. However, open defecation alongside the river is also evident and many prefer this rather than using the unhygienic hanging latrines. Some indigenous knowledge also applied to construct latrine options with locally available materials, which I found interesting and sustainable. Since access to clean water was located outside KP, I observed the frequent use of nearby, plentiful but heavily contaminated blackish lake water for washing and bathing (Figure 4.9-E). The majority use non-boiled tap water from the nearby water kiosk at 2 taka per *'kolshi',* this water coming from a DWASA source. The community has only one tubewell and that doesn't work properly (Figure 4.9-F). There is also a dug well but recently the community people abandoned that when it dried up.

4.3 Sanitation Service Providers in the Study Areas

In Bangladesh, a unique partnership among government, donors, NGOs, private sector and media has been established out of a multi stakeholder approach put in place by the GoB. Under the overall leadership of the Ministry of LGRD & Cooperatives, different government departments, Local Government Institutions like the DCC, Development Partners, National and International NGOs and a host of private sector and media partners have been implementing various WatSan programme interventions keeping in unison with the national strategies and targets (LGD, 2008). This section outlines an overview of GO and NGO service providers and their activities in the selected study areas of Dhaka city in the field of water and sanitation. In Dhaka, the WatSan services are carried out by the DWASA and the DCC while the DPHE has that role in other urban areas (LGD, 2005). Several NGOs such as PSTC, Fulki, Prodipon, Urban including the DSK are working in this urban WatSan sector. Based on existing sanitation projects in Dhaka city and considering the conceptual background, aims and objectives of this research, the municipal authority, Dhaka City Corporation (DCC) and Dusthya Shasthya Kendra (DSK), are Government and NGO sanitation service providers respectively. The current context, institutional arrangements, project strategies and other relevant issues for DCC and DSK-managed WatSan services in the above mentioned study areas are discussed in the following sub-sections while empirical evidence is mainly provided in the fifth, sixth and seventh chapter of this thesis.

4.3.1 Description of the Government Projects: Dhaka City Corporation (DCC)

Context: Dhaka Municipality was established in 1864 and replaced by Dhaka Municipal Corporation (DMC) in 1978 (Hasan and Mulamoottil, 1994). Currently, the name of this administrative area is Dhaka City Corporation. The DCC was created with the objective of improving city services, however overall services to the residents have not improved due to the unmanageable environmental conditions of the city. Moreover, the limited resources of the city are stretched to the limit by this huge environmental burden. There are no official

plans for providing potable water and sanitation services to the urban poor. Some government projects (mainly financed by UN Agencies) are providing WatSan services to a very few informal settlements in Dhaka but these are inadequate. In most cases, Government agencies like the DCC implemented these projects through local contractors.

Project Overview: According to the slum development office of the DCC, there are no ongoing WatSan projects now in operation except collaborating programmes with NGOs and other development partner organizations while most of the government programmes have been operated and managed by the NGOs since 1986. In my selected study areas (GCC and MCC), the DCC has acted as the provider or facilitator of WatSan infrastructure; but, currently it seems they are not paying any attention to their own interventions. Considering this context, it could be determined that the government institution is characterized by a 'facilitation' and 'forget' strategy. The UNDP funded the UPPR project launched in 2008 in both GCC and MCC in order to improve the livelihood of the residents and reduce poverty through 'participatory approaches' which is a popular concept in development schemes. Regarding WatSan activities, the project will fund and provide technical support for the development and implementation of community contracts for the construction of basic services such as sanitation and water supply, improvements in access, and environmental improvements such as drainage, solid waste management and the cleansing of ponds. The project is being implemented through a partnership arrangement between the UNDP, DFID, LGED, and UN-Habitat, with the DCC (GoB and UNDP, 2008). It is still the early stage of this project and they have just started mobilizing at the grassroots. They have formed a Community Development Committee (CDC) that works like a Community Based Organization (CBO). These groups have been formed in their project locations for the local support and overall management of their project. The UPPR aims to work only as a facilitator and provide funds directly to the residents to plan and work according to their own needs and priorities and the role of the UPPR is to guide and monitor the activities of the CDC and the communities. The communities themselves will execute the contracts and manage project funds (Field Survey, 2010). However, the CDC leaders do not receive any remuneration from the project for their roles and different activities. They get an honorarium to arrange meetings, attend training sessions and they get small amounts of money to execute different projects, which are allocated beforehand. The UPPR aims to stay connected with the community for three years regardless of the level of security of tenure (UPPR, 2009). They will do the necessary development work within the community and they will target other communities. In this respect, they aim to instruct the people how to deal with problems and how to manage them properly.

Targets, Achievements and Monitoring: Concerning the WatSan infrastructures in GCC and MCC, the DCC do not have any targets, sense of achievement or active monitoring programmes. By comparison the UPPR project came forward to support local capacity for the development and implementation of poverty reduction strategies in the poorer urban settlements through numerous types of interventions including water and sanitation. However, their target is "to improve the livelihoods and living conditions of extremely poor people, especially women and children" (GoB and UNDP, 2008). During my field survey, I

didn't find any achievements despite their plans to monitor and review their projects annually and to provide quarterly work plans and budgets. One wonders about the impact of the UPPR project so long as they have to work in collaboration with the local municipal authority who have proved their inefficiency in their previous routine WatSan interventions in the various low-income settlements of Dhaka city.

4.3.2 Description of the NGO Projects: Dusthya Shasthya Kendra (DSK)

Context: NGOs in Dhaka started to emerge in the late 1980s, as rapid slum growth stimulated a focus on health and sanitation (Habib, 2009). The Dusthya Shasthya Kendra (DSK) is a national-level NGO established in 1988 and currently working mainly in community-based WatSan projects in different informal settlements in Dhaka and Chittagong. They have initiated a working strategy often recognized and institutionalized as the 'DSK Model' (Akbar et al, 2007; DSK, 2009; DSK, 2010) that demonstrates how the informal community can access formal urban utility services such as water and sanitation. Recently, the DSK was able to gain access to the piped water system but still they have not managed to get any sewerage connection to serve the people. However, the DSK negotiated continuously with the DWASA and the DCC to get access to these formal services for the slum dwellers. In this way, the DSK has gradually extended its operations in the informal settlements and is currently working in 127 slums and squatter settlements of Dhaka city. Currently, they are working with the support of four donor agencies, namely WaterAid, PLAN Bangladesh, Water Trust and Water Partners International. The DSK have been implementing their project work under the ASEH Project but now they are working under the banner of the EEHCO (Enhancing Environmental Health by Community Organization) project. The ASEH project focuses on the provision of basic WatSan services using empowering approaches and is guided by core principles of participation, equity, gender sensitivity, governance and a livelihoods approach to poverty reduction (Barkat et al, 2009), whereas the EEHCO project empowers the CBOs and enables them to take decisions from planning to implementation phases. Here, the role of the DSK is capacity-building through facilitation and supportive activities. Apart from the local CBO, the DSK have helped to formulate a ward level, zone level and city level committees, which are known as CCAC (City Citizen Action Committees) working in different hierarchies in city areas with valid registrations. The identification of WatSan-related problems, policy issues and advocacy with DCC and DWASA is done by the above-mentioned committees. The EEHCO project is also trying to make a linkage between the CBOs and the related service providers so that after the project period the CBOs can manage their own problems with confidence. However, Akbar et al (2007) found that the DSK is the central actor in all mechanisms in their projects and that this 'DSK model' has proved its efficiency through some successful projects in Dhaka city.

Project Overview: It is generally established that NGOs follow different modes and approaches in the implementation of programmes for the benefit of the target population (Islam, 2000). Since in most cases NGO programmes are funded by external funding agencies, their inputs as well as influence in programme design and implementation,

including the setting of modes and approaches, play a vital role. Currently, the DSK is implementing their WatSan projects under a cost-recovery approach. The philosophy behind this approach is to grow a sense of ownership among the users. In the 'DSK Model', some international donor agencies, national NGOs, service providers, local governments and the informal communities are the actors in which the DSK is represented as the key actor in the WatSan projects. Akbar et al (2007) describe the 'DSK Model' following different stages of project implementation in which "the first step in the process involves initial dialogue with the community to understand their needs. The second step is to prepare and submit a proposal to the donors for funding. Detailed planning and system design start at the third stage, which includes a base line survey of existing practices, site selection and the design of the water points and latrines. The fourth step is the implementation stage, which includes community mobilization through the formation of a CBO and application submissions for permission from the public service provider and local government. The fifth step is the management and monitoring, which includes both the community's and the NGO's responsibilities". Apart from the CBOs, the DSK has organized people to form different community-based committees for receiving WatSan services in their locality to tackle local and specific issues. The DSK provides training to those committees, including CBO members for operation and maintenance of WatSan infrastructures and hygienic practices until the capital cost-recovery is complete.

Targets and Achievements: According to a DSK official statement, the organization grew up in the urban slum areas and their major target is to improve WatSan situation in the low-income settlements of the major cities. Generally, Dhaka city is neglected and particularly the poor people have been suffering from inadequate WatSan facilities due to policy constraints. In this respect, the DSK intends to improve slum neighbourhoods through their project activities including water and sanitation as a priority. The current urbanization trend makes the whole city environment difficult and, considering the future consequences, the DSK is trying to specialize their work forces toward managing urban slum areas. Meanwhile, the DSK has established their type of innovation as the 'DSK model' and, most importantly, other organizations are following this model in their WatSan projects, which is the pride of the organization. Secondly, a 'Citizens Charter' is the outcome of continuous negotiation with the government agencies about the rights of the slum dwellers to access legal water supplies from the DWASA without the need for a guarantor and they approached and negotiated with the DWASA and the DCC for the transfer of ownership and responsibilities to the communities themselves. The DSK made further progress in showing the potential for informal communities to be reliable clients. The first applications to the DWASA from the slums through the DSK for transfer of ownership came in the early days of March 2007 in the Kalabagan slum of Dhaka city (Jinnah, 2007).

Follow up and Monitoring: It is widely recognized that monitoring activities can play a pro-active role as a management tool (Watters, 1994). The DSK tries to identify problematic areas from several points of view. One of their major strategies is the evaluation of the competency of the CBOs. The Bagan Bari and Begun Tila CBOs fall into category 'C' and 'B' respectively, while the best-performing CBO would be in category 'A' (CBO Monitoring Fact

Sheet of DSK, 2009). Now the DSK is trying to improve the competency of the CBOs by addressing their weaker areas. Moreover, the DSK has a plan to continue their monitoring activities after their project period in order to support the community and for the overall sustainability of their WatSan projects. In this regard, they are struggling to get donor support to monitor their implemented projects for long-term sustainability.

4.4 Conclusion

From the above, this chapter illustrates the overall living conditions of five low-income settlements of Dhaka city in which four slums have been facilitated by GO and NGO-provided WatSan interventions, and one slum having no such intervention. The description of the study areas and the project features is significantly important because this preliminary conception will help to link and understand all the empirical evidences that are qualitatively analyzed in the following four chapters. Typically, I found that the inhabitants of all the studied communities face multiple deprivations: inadequate food intake, health burdens from the illnesses and injuries associated with very poor-quality homes and inadequate water, sanitation, and garbage collection, difficulties in getting health care and affording medicines, the fear of eviction, and so on. This is not unique to Bangladesh. Large sections of the urban population in virtually all low and middle-income nations face a similar mix of these deprivations (Das, 2003; Hardoy et al, 2001; UN-Habitat, 2003). Generally, these poor have to spend most of their earnings on food and basic services as their priority goes to manage their next meal rather than having and maintaining a latrine. This scenario together with rapid increase of the slum population in Dhaka city may create an uncontrollable situation in the near future. Considering this context, the GO-NGOs are working in the slum areas in their own way to address the problems through different projects. GOs and NGOs are dissimilar organizations in terms of structure, form, working styles and motivations (Baruah, 2007), and this has resulted in diverse outcomes from their projects although the demographic and neighbourhood characteristics, as well as the institutional, technological and other unique characteristics of these slums are indistinguishable. Despite having similar inputs in two slums the outputs of the DCC and DSK are dissimilar – one successful and another less-successful. Therefore, it is necessary to analyze the input mechanisms and associated issues in the slum environment to uncover the problematic areas that determine the ultimate success of a project. To explore this vital issue, the next three chapters will illustrate and analyze the social, technological, and governance systems in the context of five study areas to identify the factors that facilitate or hinder WatSan interventions in the urban areas of Bangladesh.

Chapter Five

Society, Neighbourhood and Sanitation

Chapter Five
Society, Neighbourhood and Sanitation

5.1 Introduction

> *"What's your problem? I will do whatever I like. This is not your private property and not your father's land. Mind your own business and don't stick your nose on my personal matters".*

This is a very common type of vocalization that can be heard frequently during clashes amongst the residents in low-income urban settlements. During my observation in GCC, I heard this offensive language when two neighbours were using the communal water point. These typical clashes and confrontations in the slums are part of the cultural landscape and often originate from the physical, societal and neighbourhood environment. The social dynamics of these kinds of settlements in Bangladesh are almost homogeneous due to analogous culture, religion, language, food habits, costumes, and behaviour (Das, 2003) but the large-scale migration of rural poor to the major cities is creating pressure on the existing slum and squatter settlements, challenging societal homogeneity (Adhikari, 2001) with varied regional practices. In this chapter, I will analyze the social dimensions of urban slums and how they influence GO-NGO-managed WatSan interventions from the individual and societal standpoint. In this research, the 'social' dimension is used in many different senses as a 'fuzzy' concept such as appraisal of community mores, norms, values, beliefs, customs, traditions, behaviours, expectations, and demands. Besides, community characteristics such as household aspects, residential status, crime and justice, environment, security, poverty, social bondage, conflicts, power relations, politics, risks and vulnerabilities are also considered in order to link all of these issues with WatSan interventions and therefore address the research objectives.

In line with the Bapat and Agarwal's (2003) research this chapter attempts to understand and tries to advancing the existing debate related to the micro practices of sanitation and everyday forms of experience in slum areas that may contribute in this sector. Rigg (2007) also demonstrates his idea about everyday experiences in his book 'an everyday geography of the global south'. He tried to explore everyday lives and following his experience I am conferring this broader agenda to make sense of a problem related to sanitation from the contexts of people's lives in the slum areas. Besides, I will try to identify how these issues influence the success of WatSan projects. The content of this chapter arises from the

qualitative analysis of several themes and the incorporation of experiences in five different study areas. According to Lewis (1968), the social dimensions of low-income settlements are somehow possessed by the 'culture of poverty' which may be seen as a response by the poor to their position in society. Many argue that poor communities do not live only in deprivation or disorganization, they also have a 'design of living' in which they adapt themselves and get a readymade set of solutions for their various problems (Das, 2003). Here, I would say that it isn't really about culture but rather about the 'constraints of poverty' and especially about the social context of perceptions, behaviour, power and other related factors. I tried to hear both the individual and group responses that are associated with their WatSan-related practices and behaviours including sorrows, frustrations, angers, discomfort, expectations, risks and vulnerabilities as well as their stressful stories of their life in order to sense community practices and everyday experience of life. A detailed door-to-door household survey was not conducted for this research but I will start with an empirical description of the general household characteristics to begin the analysis of social dimension of the study areas. If we know who they are, their origin, their income, education, condition of their houses, and employment, it will be easier for us to make sense of their ways of life, habits, practices, and so forth. Together with this empirical description, I will try to find and relate the key issues that facilitate or hinder GO-NGO-managed WatSan projects.

5.2 General Household Characteristics

Slums, squatters and/or low-income settlements in bigger cities are the result of rapid migration (Ahmed and Rahman, 2000; Das, 2003). Some argue that they are due to people being priced out of legal land for housing (Hasan et al, 2005). About 60 percent of Dhaka's population growth between 1981 and 2000 was the result of net migration (Das, 2003) and it is estimated that the population of the low-income settlements will reach up to nine million by 2020 (Islam and Nazem, 1997). This migration trend is evident especially among the poor people and is the effect of frequent natural disasters and unemployment in the rural areas. These poor migrants usually choose the urban slum and squatter settlements to live in due to cheaper house rents. However, the overall living conditions of low-income settlements are dreadful, as most of them have no access to basic urban services. Bapat and Agarwal (2003) pointed out this kind of dreadful scenario from the slums of two Indian cities where water and sanitation is a stressful and time-consuming challenge.

By way of a starting observation, we should note that the room space per family in the study areas is bigger than in the general slum and squatter settlements of Dhaka city. This is because the main communities studied, other than KP (Kamar Para), were established on land allocated by the government as a result of slum eviction and relocation. In general, the area of the household premises of these settlements varies from 116 to 155 square feet, but more than half usually have a living space of less than the 100 square feet (Majumder et al, 1996) that I noticed in KP. Exact statistics of the study communities are not available but generally the residential densities in Dhaka city slums are 1000-2500 persons per acre

(Siddiqui et al, 2000). Physically, the study areas are characterized by *kutcha* and semi-*pucca* structures of a single storey. The housing is makeshift and largely constructed of temporary materials or in tenements of cheap materials such as plastic, polythene, tin, straw, bamboo, cane, etc. In GCC (Gulshan City Colony) and MCC (Mohammadpur City Colony), the houses have brick walls, tin-roofs and cement floors but the houses in BB (Bagan Bari), BT (Begun Tila) and KP are made of *kutcha* and semi-*pucca* structures. One detailed survey (GoB and ADB, 1996) revealed that about 89 percent of poor households in Dhaka live in one thatched room. Families of four or more live in the same room in most of the low-income settlements (Hasan and Mulamoottil, 1994). However, according to the community leaders' information from each community, the average family size of the studied population stands around five and most of them are Muslim. Children, adolescents and working age adults constitute the largest portion of the population.

Generally, the residents of the low-income settlements engaged in the urban informal sector for their job/work. Most of the people living in the study areas are engaged in small businesses. Many of its inhabitants work in the neighbouring mills and factories. Some men work as day labourers or as rickshaw and van pullers. Women residents generally work in garment factories and as maidservants. In GCC and MCC residents are mainly government 4th class employees, working as street sweepers, cleaners and drivers. Kids usually earn some extra money through working as bus/auto helpers and scavengers often known as '*tokai*'[10]. However, the fact is that a large number of adults in these slums are unemployed. The monthly family income from the respondents ranges from 5000-12000 taka, which is the equivalent of around 38-92 pounds sterling. The majority of respondents have to spend all of their money on food and basic services. It is remarkable that most of the respondents took loans for various reasons either from their neighbours or from local cooperative societies to cover their additional needs.

The residents of the study areas are basically not educated and most are illiterate. However, the field experience indicated that the grown-up boys and girls are very eager to go to school but economic factors temper this enthusiasm. Despite this, I found a considerable number of boys and girls attending school with a future plan. For instance, Mita, daughter of CDC president of GCC, wants to be a barrister and she always reminds her parents not to even think about her early marriage, as is common among poor people. She is against the child marriage tradition and tries to convince her parents about the effect of this. She is very keen, intelligent and interested to continue her studies. Currently, the school is bearing all of her education cost because she has done well continuously in her examinations and is always placed in first position. My general impression regarding educational status amongst the young is that proper support from the government or an NGO can change the scenario.

It is mentioned in the previous chapter that the inhabitants of all the studied communities face multiple deprivations and those could be linked with poverty that ultimately impact

[10] *Tokai*, is a street urchin of age below 12 and became the colloquial synonym for street kids or dumpster divers in Bangladesh having a bald head and pot-belly.

different development projects. Hardoy et al (2001) stated that large sections of the urban population in low and middle-income countries face those deprivations that especially affect slum residents psychologically to be careless about maintaining clean neighbourhood. Apart from the deprivations mentioned in section 4.4, the residential status of the community is one of the major issues that shape some of the social dimensions, often leading to user carelessness towards the operation and management of WatSan infrastructures.

5.3 Residential Status

Residential status is explained here from the viewpoint of legality and the status of its residents. The government sees these settlements as illegal and unauthorized clusters that have developed on unused government vacant land. But it is also true that the government created and promoted these settlements as part of the eviction and rehabilitation process. Yet the government still considers these settlements as illegal. For this reason the residents suffer from an identity crisis because they are always under a threat of eviction. They know that these settlements are temporary and that they can be evicted without prior notice or so-called short notice. The residents from GCC, MCC and BT claim their settlement as legal because they got government permission to live there. But they are still under a cloud because the government settled them on a temporary basis. GCC and MCC residents conditionally got their individual space/plot allotments whereas the BT residents didn't get any individual plots. The residents of BB and KP don't even have any legal rights or government permission to live there and these two settlements are fully illegal.

Despite these facts related to the legality and illegality, residents sometimes take a risk and invest money to make their living space more convenient or build extra rooms for additional income through renting them. This practice is evident in these types of settlements that manipulate two groups – the house owner and the tenant. The house owner status among the community people imposes some invisible cultural dominance on the tenant group, as the owners are generally powerful. It is also evident that some of the house owners do not live in the slums and not even respond the needs and complaints from their tenants. Instead, they prefer to live in nearby residential areas, which results in an all round deterioration of the living environment. In this regard, Soma (aged 30), the cashier of the BB-CBO committee mentioned that

> *"The house owners are mostly from the nearby police quarters and working as police-drivers, chefs and other 3rd and 4th class government servants. These police employees forcedly captured some of the areas and build several houses for renting purpose and they are doing business through investing money in building temporary and low-quality houses on vacant government land. They are police and it is not possible for us to raise a voice against them. They are powerful and can blow us up at any time. That's why we remain silent and just pay the monthly house rent without complaining about anything. Even, sometimes we repair houses and maintain our water points and latrines from our own pocket. They only visit us to collect house rents at the beginning of each month."*

Apart from this type of house owner, there are those who live close to their tenants as neighbours. There is a sharp division between these two groups of residents where the house owner tries to keep their property clean as they are earning money from that source and consider themselves as permanent residents. On the other hand, the tenant group are generally reluctant because they are paying rent and habitually consider themselves as temporary residents and may move elsewhere in case of any difficulties. This 'external-internal' and 'permanent-temporary' status among the residents makes the social and neighbourhood environment a bit complex, often resulting in confrontations and clashes in the society.

Other than the above-mentioned groups or statuses I have also found different ethnic groups in MCC and KP known as *'Madrazi'* and *'Bede'* respectively. In MCC the *'Madrazi'* people get and share similar facilities to the mainstream *'Bengalis'*. But in a conventional slum like KP, the *'Bede'* groups are somehow disgraced and avoided by the general *'Bengali'* community. This *'Bede'* groups live in a small area of legal private vacant land and they do not pay any monthly rent to the landowner. This is a landowner's technique to maintain possession of his land from powerful land grabbers through this kind of temporary settlement. Sometimes, the landowner helps the residents by giving food, clothes, and money on different occasions; he even provides a tube well for their use. But, the status of the residents is still fragile and vulnerable and depends on the landowner's whim (Figure 5.1). The residents are not eager to improve their neighbourhood environment as they fear eventual eviction. This is not only because of the loss of any investment but also they have a fear that the landowner may start charging them when he sees that they have a good living environment.

Figure 5.1: A part of *'Bede'* residents evicted in late 2009 by landowner to build their residential structure

Source: Field Survey, 2010

From the above discussion, we can see that there are a number of residential statuses, including small ethnic groups, present in low-income settlements and that the existing multi-dimensional community power and politics determines the nature of the overall social and neighbourhood environment. But the harsh reality is that all of the low-income settlements are 'temporary' in nature and this 'common' residential status obstructs the WatSan and overall slum development interventions and deteriorates the neighbourhood environment a great deal.

5.4 Law and Order Situation

In general, low-income settlements in Dhaka city are recognized as a crime zone (World Bank, 2007) and these kinds of (un)authorized residential clusters have turned into safe places for many illegal businesses involving illegal drug merchandizing, land grabbing, gambling, violence against children and women, illegal arms, murder and kidnapping, professional '*mastaan'* hiring, contracts for unlawful work, unauthorized sex work, and domestic violence, all of which set these communities apart from mainstream society. These types of 'crimes and violence' are no longer considered as just a 'social' or a 'law and order' problem, but also as an obstacle to development interventions because of their high associated economic costs. World Bank (2007) recognizes these diverse crimes and violence as 'routinized' or 'normalized' into the functional reality of life that affects every aspect of daily life for the urban poor. However, crimes and violence affect all levels of society and so threaten the stability of the urban social atmosphere. Exploring the situation of law and order in a particular place is very challenging as a considerable risk is associated with this. However, the informal discussions and interview sessions were helpful to explore the crime and violence as well as the law and order situation. It is fairly common among the residents to report to community leaders or elderly persons after an incident. But the reporting rate to the law enforcement agencies and Ward Commissioners (local elected people's representatives) are low reflecting the low prevalence of a formal preventive, investigative, and judicial authority in these slums. In most cases the community took some kind of action in a local '*shalish'*,[11] depending on the nature of the occurrence. In GCC and MCC a '*Panchayet'*[12] committee operates as parallel with the CDC. This '*Panchayet'* committee mainly deals with the social problems such as solving conflicts and confrontations between members of the community through locally settled judgment. The local Ward Commissioners are engaged to formulate this type of local governing body.

Several World Bank studies have reported on the severity of crime and violence in the Dhaka city slums where most is organized. However, during my fieldwork, with only a few exceptions, ordinary people addressed their law and order situation positively. Even in BB, which has been reported as the DSK's problematic project area, the following comment came from the male FGD session:

> *"There is no such big terrorist living in our slum. We are only suffering from verbal terrorism and people used to say lot of things verbally, but we never saw any of their application. We have a unity between ourselves and we never allow any illegal activities in this slum. We will never do any illegal work and we have a tendency to protest against illegal activities".*

In reality, I found this community people engaged with issue-wise groupings, clashes, and in event politics. Sometimes, people became violent and destructive as illustrated by Monua's (aged 52) speech, who was the former president of the CBO-operated tubewell committee. I

[11] '*Shalish'* is a kind of informal court settled at the local level by the local community leaders.
[12] Local administration of various neighbourhoods or *Mohollas* of Dhaka city is known as '*Panchayet'*.

visited her goat farm, which was located next to her house. She had more than 100 goats. Selling goat milk and goats was her only source of income. She has only two goats now. During the interview, she became emotional (Figure 5.2) and claimed that '*mastaans*' poisoned her goats and most of them died, leaving a few that were taken away forcefully. Later on, she complained to the local police and searched out some of her goats. After that incident her situation got worse because she had no means of income like before. Then, she

Figure 5.2-A,B: Emotional Monua and her empty goat firm

Source: Field Survey, 2010

decided to replace a part of her farm by two houses and to let them. DSK interpreted this issue as a complex social environment. Likewise, during the interview sessions most respondents told me about the existence of such groupings, and illegal activities like drug and firearms business, but when it came to the FGD sessions everybody ignored the problem. In a somewhat similar vein, this type of social disarray is also evident in KP where the '*Bengali*' community always feel disturbance and interruption when law enforcement agencies/police raid the '*Bede*' community in search of illegal drugs. This policing creates disturbances and interruptions in their normal lives which is one of the sources of anxiety and insecurity. Although verbal confrontations and argumentation in the water point and latrines of low-income settlements are not a matter of law and order; the social disarray involved makes it a significant issue that needs to be negotiated among the residents if the overall management of WatSan project activities is to be a success. A World Bank (2007) study demonstrates that a lack of social cohesion and considerable levels of fear and mistrust subsist in most violent slums and this negatively affects social capital and prevents community members from organizing which is a central concern in community-based WatSan projects that are further analyzed in the following section.

5.5 Dimensions of Power Relations

Local informal power structures are fairly persistent in most low-income settlements. The members of the '*Panchayet*' committee and CBO, '*Matbar*' or '*Sarder*' are recognized as power brokers in these kinds of settlements. The duration of their stay does not seem to determine their power base to a great extent. Some studies suggested that usually the power is through party-based groups but they support each other to strengthen and

maintain their status notwithstanding their political affiliation (Majumder et al, 1996). Politically, slum dwellers are conscious that they are exploited by politicians (Das, 2003) but generally they do not bother about the ideology of various political parties and mostly favour the ruling party to get benefits. However, the actual political views of individuals always create conflict among the residents and divide them into small clusters. One NGO representative said that working with this type of community is difficult where different groups or political views are present. The *'infra-power'* which is the absolute source of illegitimate power generally spread their influence all over the community to maximize benefits of the associated musclemen.

Generally, social leaders are proactive in their responsibilities and institutional powers and this type of social leader is well off in terms of their experience, positionality, economic situation, goodwill, promptness and problem-solving skills in the slum context. Such social leaders maintain a group of people to support their activities. Second, the musclemen or '*mastaans'* and/or 'big men' usually practice illegitimate power but hold strong political support and 'wild connections' (Hansen and Verkaaik, 2009). It is evident that the musclemen also hold institutional power. To explain this situation one NGO representative told me that internal power relations are good in small slums and bad among the bigger communities, where different active sub groups are present. '*Maastans'* are also recognized as a small sub groups and are powerful. Often they are not residents of the slum and live outside the community. They may have several houses in the community and rent them out. These types of musclemen generally maintain a good relation with the local police and offer them some sort of share of the proceeds of their illegal activities. In some settlements these musclemen hold and use firearms, which are actually their source of illegal power. They create pressure on the community and use them as their shelter for illegal business.

Kamal has been known as an unofficial leader of Kallanpur Slum and is currently supported by the government ruling party. He acts according to the commands of government-supported central leaders and/or 'big men'. This slum is not included in my study sites but during the reconnaissance survey I visited it and found it relevant to explore this issue for my research. Basically, he is a politician as well as a businessman. During the informal discussion with him I realized that he is some sort of muscleman who engages with different illegal activities, political conflicts and has even been convicted as a murderer. He is not a resident of that slum but he uses it as a hiding place and for his illegal activities. He is not part of the CBO but he is ruling it. UPPR, the UNDP supported government project is trying to include Kallanpur slum as one of their project areas. But Kamal disagreed because the main officials from the UPPR project were just emphasizing the wellbeing of the general community. Conversely, DSK maintains a good relation with this kind of influential and powerful person to tackle local problems and to minimize power relations. It is interesting to hear from Kamal's speech that he will only agree if the UPPR select DSK as their main project implementer. Moreover this powerful outsider also controls the electricity, cable TV network and other amenities, including the water-selling business in the slum. It is said that the local police used to take bribes from such businessmen or that they have some

underhand dealings. In such a situation, the CBOs are becoming powerless except in organizing meetings and communicating with the residents to disseminate service provider's messages. Apart from this, the internal binaries such as 'political' vs. 'non political', 'CBO supporter' vs. 'CBO opponent', 'poor' vs. 'poorest', and 'gainer' vs. 'looser' are polluting the social environment.

When I tried to investigate the power relations and their impact on sanitation interventions in the community, I found that the residents preferred to remain silent as nobody wanted to talk about that matter. An unknown inferiority, anxiety or fear covers up their mind, which may be due to the possibility of threats, assault or intentional muggings by these kinds of people. For instance, in GCC, people do not know whether their nearest water kiosk has legal permission to sell water or not but the residents have never raised their voice for fear that they may stop selling their water, which would be more problematic for them. One community leader (aged 48) from GCC requested me not to disclose his name and said:

> *We cannot raise our voice. Silence is good for our community. The people of the water kiosk have very good connections with the government, political parties and leaders. We know, if we raise our voice then they will immediately stop selling water and then they will try to evict us through managing their associated 'big men'. We don't want this at all.*

This GCC example explored the fact of 'powerful' and 'powerless' while it is understood by the whole community that only asking a general question to those 'powerful' people might result some unfortunate consequences. These musclemen only recognize money and exploit the poor people, they even do politics with the government, NGOs, and donor agencies, and so all are exploited by them. To address this issue, Abdul (aged 41), president of BT-CBO mentioned….

> *"The problem is that both the government and NGOs are not aware of who the slum people are. They should identify who are the actual slum dwellers; who is living there; and why they are living in the slum. For instance, I went to visit the biggest slum in Bangladesh named 'Korail Bastee' and tried to explore a few things. I asked several people about their past and present and the people mentioned that they once had to pay 150-200 taka each month as their house rent but now this has increased to 1500-2000 taka per month. The rent has increased 10 times and this has happened because of GO-NGO interventions on the facilitation of water, sanitation, drainage, road, electricity, etc. The people of that community are now getting improved facilities but nobody is thinking about the politics behind it. Nobody is thinking about who are the ultimate beneficiaries. I have all these answers. It is true that, the people of that community getting benefits through several services but they had to pay for everything. The ultimate beneficiaries are not the ordinary people who are living there but the musclemen, local influential persons, and political leaders who are gaining lots of money just from dealing with the land. Nobody is trying to identify who is collecting house rent. I suspect that the local police and different GO-NGO personnel are also engaged in this huge illegal activity and making money. The rich people are thus becoming richer and the poor people are becoming poorer. They just cultivate people on that land and they take support from donors, GO and NGOs free of cost and they are now enjoying the end products. This is the reality."*

I got an alternative scenario from BB, where Soma told me that the musclemen always create a barrier in development project activities such as water, sanitation, road, housing, education and so on. Their intention is to prevent any services that create problems for their illegal activities. Instead, they want the residents to contact them for any kind of demand where they will communicate with the political leaders or local influential persons to solve the issue. Their ultimate hope is to be a local elite or influential person or leader to practice power and make money. It is quite understandable that low-income communities are treated as a 'money machine', where everybody is victimized by the musclemen. The way of making this money is seemingly easy if someone has the power. Therefore, the young generation has a desire to be a powerful member of their neighbourhood to become a beneficiary. In this regard, Ramiza (aged 36) from BT mentioned that

> *"Everyone with young adults in their family has at least one with a desire to be a community leader".*

She also mentioned that this tendency creates smaller clusters that show and practices their power to establish their rules and presence. From the above discussion it is quite understandable that the existing *'infra-power'* and different dimensions of power relations within a community often puzzle the residents and personalized clashes somehow destabilize the social environment and untie social bonds that potentially obstruct long-term development initiatives.

5.6 Society and Neighbourhood: A Complex Place to Act

The slums of Dhaka city are generally very disorganized and situated mostly on environmentally vulnerable (Bapat and Agarwal, 2003) and marginal lands (Parkinson, 2003), such as low-lying swamp areas, near the water bodies (UN-Habitat, 2003a; Uzma et al, 1999) and highly polluted industrial areas and fringe locations. Connected to this, Abdul, the CBO president of BT community, reflected on the character of their nearest neighbour:

> *"The local people are simply problematic for us. They think that the slums are just a dirty place and filthy people live in there. They try to hide us even by constructing a wall. They don't like us to live permanently within their sight. 'A permanent latrine is a symbol of permanent residence'- and this philosophy make them crazy to take position against our neighborhood development. For example, we suffered for water several times because of their hostile activities. They used to disconnect our pipe lines from the main water distribution source at midnight just to give us trouble".*

This statement simply raises two questions: why are the local people not participating?; and how do BT residents react? What I realized during the fieldwork was that the neighbouring middle-class communities are complaining about their presence of slums and movement in slum dwellers so close to their locality. They think that the appearance of slum residents in and around their locality may downgrade their own social status. This kind of neighbours' attitude is recognized as "exclusionary communitarian politics otherwise called NIMBYism" (Ruiters, 2005, p.2). In addition, they also have complained about the deterioration of overall social, political and living environment all around their neighbourhood. The answer to

the second question is relatively unexpected as the residents of BT collectively took possession to overcome this hostile next-door neighbour through engaging local political leaders and the WatSan service provider organization- DSK. This collective community stance provides evidence about the social unity among BT residents but still they are negotiating with their neighboring community. In contrast, I hardly found any social cohesion among the residents of BB and KP. In BB, the issue-wise grouping tendency and especially tenant's reluctance made some development initiatives unsettled. For instance, the tenant group denied participating with DSK's road improvement project in a fear that the house owner may increase the rent. In addition, DSK itself considers this settlement as a problematic project area as they had to deal with the *'mastaans'* who threatened DSK field workers, demanded bribes, robbed project money, and so on. This kind of power practice, societal complexity, various interconnecting issues, power relations and economic matters partially obstructed DSK's WatSan intervention in BB. Bloomquist (1992) points out that the issues related to common property management are subject to the whims of local power structures (cited in Stedman et al, 2009). Some economic and social science literature emphasizes that homogeneity or heterogeneity among agents in any society reflects the levels of trust which influences community management activities (Adhikari, 2001). There are some basic differences between the GO and NGO managed slums such as the occupational structure of the residents where they are engaged mostly with formal and informal economic activities respectively that may have an impact on participation or the overall management process which is further analyzed in section 5.11. Conversely, Akbar et al (2007) found a community participation scenario in their research, where the residents are mostly eager to provide social security to the service providers for their project operation. My fieldwork experience suggests that the economic ability, willingness to join and collective community move towards an agenda is not likely due to a complex social environment, as illustrated in the later part of this chapter. However, the GO-NGOs also found it difficult to inspire and motivate the residents to support their development activities. The problem is that some of the residents are interested to join and some are not. This might be a matter of selfishness that may originates from poverty. Besides, social disarray and fragile relationships in the community enables the issue of individualism, where all of them are busy with their own business and there is no space left to spend on the collective issues that I found in BB. This trend pulls poverty nearer to the people and makes them more vulnerable in society.

5.7 Poverty and Dependence

Since the purpose of this chapter is to explore the cultural dimensions of slum dwellers, it is necessary to understand 'what are the general WatSan related practices and behaviour of slum dwellers?'; and 'why?'. As stated earlier that the visible practices of slum dwellers may be linked with the Oscar Lewis's (1968) thesis on the 'culture of poverty' but I would argue that it's less about 'culture of poverty' but more about 'constraints of poverty' where people have other priorities in their everyday life where good sanitation remains somewhere in the bottom of their list that further explained by Maslow (1954). The unhygienic practices could

be linked with the personal behaviour where some people were found reluctant to adopt healthy practices despite having good facilities. Moreover, the poor themselves apparently link poverty to fate (Islam, 2005a; Patwary, 2010; Ray, 2006). These fatalistic attitudes often distract them from being optimistic and opportunistic; characteristics needed to attract and keep external aid and support. I make this comment because a female participant (aged 56) vigorously stated her opinion in the FGD session at BT.

> *"Why you all are busy with the latrines? We don't have food, we don't have a permanent house, and you all are becoming crazy with the latrine. Our tummy is empty and you all are thinking about a shitting place? It sounds crazy and funny. So, first talk about the food which is more essential than the latrine. Actually, this is our fate. Nobody offered us what we actually need; and the reality is … our needs and priorities are never going to be met".*

Reasonably, they have a good understanding of their poverty as sometimes they had to live with hunger and thirst. Not only this, poverty considerably obstructs their children's education, healthy food, maintaining hygiene practices, basic entertainment, and so on. One of the interviewees (Hashem- aged 28) from BB commented that

> *"Hunger and thirst is our part of life. We cannot think about saving money as we are living from hand to mouth. It has been many days since we bought meat. My elder daughter has stopped attending her school. She was in class eight and I couldn't manage to give her the money that is required to buy her reading materials. As we are poor, it is very difficult for us to maintain hygiene practices such as washing our hands with soap because to do this we need to buy soap while we hardly can use soap even when taking a bath."*

My fieldwork experience certainly sheds light on the concept of poverty and people's real situation. The realization of poverty and multiple social realities both are important to assess people's responses and their willingness to pay for WatSan interventions. Islam (2005a) describes as situational theory of poverty where he argues that the poor behave differently because they do not have the resources and opportunities for adopting healthy life styles. Besides, Hossain (2005, p.1) argues that "poverty is a product not just of material conditions, but also of a set of interlocking factors, including physical weakness, social isolation, vulnerability and powerlessness" where they are forced to adopt survival strategies but not to improve their welfare. Reardon and Vosti (1995) identified how poverty types and levels affect livelihood and investment decisions. However, it is important to measure the degree of poverty that may vary from dwelling to dwelling; and this measurement will help to assess the needs as well as vulnerabilities of the poor people for appropriate organizational support. Here, the distribution of poverty across households within a community affects the link between welfare and investment (Reardon and Vosti, 1995). One question in particular came through: to what extent people living in the low-income settlements depend on the GOs, NGOs or other sources. The answer to this question gave similar impressions among the study areas, due to economic factors and residential status. Firstly, economic factors are crucial because the infrastructure management, operation and maintenance in the community level require a substantial amount of money and need

participation from all of the user community. One female respondent (aged 25) from GCC commented on this.

> *"It is not possible to maintain our latrines and water points because all the infrastructures are faulty and cannot be repaired. We don't know what will be our alternative sanitation arrangements in future. We became tired of repairing it over and over again and the problem still remains. Now, there is no roof on the latrines; a 'Kalboishakhi[13]' storm blew it away. Just think how unfeasible construction it is? I don't know how to resolve the problem but I think, only the government can help us, nobody else."*

Superficially it may seem that the poor residents are rationally incapable, helpless and totally dependent on external support, and that they might not be able to carry out extensive maintenance work without this support. But, on the other hand, it is also evident that the people are showing their dependency and unwillingness because of their current residential status as they illegal residents. Abdul, from the BT–CBO told me of his eagerness to adopt self-help initiatives through managing and constructing their own WatSan infrastructures.

> *"Simply, we can't solve WatSan-related problems by ourselves. We can try it if we get permission to live here permanently. This is government land and the government could solve the problem. We don't want to stay here for free and if the government wants us to pay for the land we will come forward and definitely agree with their proposal and we will be able to pay through long-term monthly installments. Here, I can guarantee you that all the residents will then build their own sanitation infrastructures."*

From this discussion, we can see that the poverty and dependency issues are transitory matters and the people could possibly be motivated if they got assurances about their land. They actually do not want to take any risk to invest money where they have no legal rights to build infrastructure (Agbola and Agunbiade, 2009; Baharoglu, 2002; Boonyabancha, 2009; CUE, 2010; DiNino et al, 2006; Toomey, 2010; Uzun and Colak, 2007). Incidentally, I got similar responses from all of the communities, even from the KP, which didn't receive any intervention from either GOs or NGOs. This kind of substantial and analogous societal response is important in policy planning where people's demands and realities could be addressed properly.

5.8 Demands and Realities

All people are more or less surrounded by a range of expectations or targets in different stages of their life. Given that in any society there are different groups with different social, economic and political interests, it is likely that specific demands will be associated with each group. These specific demands may contradict other groups of people within the community and conflicts therefore develop between groups (Bilton et al, 1984). From my field experience I found a degree of commonality in the pattern of respondents' demands, which is related to their permanent homestead, comfort and personal interests. I observed that

[13] A short duration storm, known as '*Kalboishakhi'* generally occurs in Summer and quite common in Bangladesh. This storm generally comes without warning and causes mass destruction.

respondents often made personalized demands and showed preferences during the in-depth interview sessions and they made collective demands and preferences during the FGD sessions but the issue of land tenure was common to both. A detailed state of community preferences is outlined in Table 5.1, the data being the result of male and female FGD sessions discussing their priorities in all of the study areas.

Table 5.1: Community Preferences including sanitation and other demands.

Priority	Slum	GCC		MCC		BT		BB		KP	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
First Priority		Land Tenure	Land Tenure	Land Tenure	Land Tenure	Land Tenure	Land Tenure	Land Tenure	Land Tenure	N/A	N/A
Second Priority		Road	Water	Water	Gas	Work & Job	Clinic	Road	Water	N/A	N/A
Third Priority		Water	Latrine	Wall	Bath Place	Training	School	Electric line	Road	N/A	N/A

Source: Field Survey, FGD Sessions, 2010.

Table 5.1 presents the community people's priority of concerns where it is revealed that the first priority across all the study areas is permanent land for a shelter. It was apparent from the discussions that people will change their behaviour if the government helps to change their residential status. But most are not in a position to make demands for this to a concerned authority. They know the reality and are anxious about what might happen when they raise this. They don't want to bring down any retribution on themselves as the residents because they are aware of the vulnerability of their residential status. Therefore, their main demand remains concealed and some of the minor wishes come forward instead. For instance, while interviewing with a question related to their demands, Mina (aged 23) from BT commented that

> *"It is human nature that people will demand more if their previous demand has been met. Our water and sanitation system and existing facilities are fine and if they offer more facilities, I personally would prefer more latrines for our community so that the latrine to household ratio could be minimized. I am demanding this because the children used to defecate in front of the latrine very often while waiting in a queue. It will also be nice if they provide a special latrine for the children because they are fearful. They think that they might fall down into the tank through the squatting hole."*

Respondents from the MCC also have similar types of demand because their WatSan infrastructures are in a reasonable condition and want improvements for comfort and convenience. In this regard, Mina's further expectation is water availability inside the latrine chambers. She believes that this would improve cleanliness. People find it inconvenient to go to the latrine again to put some more water to clean it properly as they couldn't put the required amount of water in the first place because no water source is installed inside the latrine (Figure 5.3). But WatSan provider organizations do not have any plan to meet this preference because it

Figure 5.3: Absence of water source inside the latrine

Source: Field Survey, 2010

would require additional and expensive infrastructural support which is currently absent in their project intervention strategies.

Another priority for GCC and BB residents is the construction of new WatSan infrastructures and maintenance activities respectively, whereas the residents of KP are totally silent in this regard because they think that they are currently guardian-less and are beyond hope of any GO-NGO intervention. Apart from the KP, many of the WatSan related demands are finally derived from the present state of the infrastructure. In other words, it can be said that the cleaner and more stable the infrastructure, the more precise and realistic their demands are. From my field experience I could certainly say that the community practices are the main driving force to maintain cleanliness and stability of WatSan facilities that may ensure project success.

5.9 Access to WatSan Facilities and Community Practices

Low-income settlements i.e. slums and squatters are very common in Bangladeshi cities, the largest concentrations being in Dhaka, followed by Chittagong, Khulna and Rajshahi. Most of the low-income settlements do not have adequate access to basic services, particularly WatSan facilities, which are among the most important criteria for sustainable livelihoods and healthy living. The scarcity of pure drinking water is the major problem in Dhaka city slums and toilet facilities are insufficient and unhygienic. As per the slum mapping census in 2005, about 62.7 percent of the slum dwellers in Dhaka use municipal taps as their source of drinking water, 33.4 percent use tubewells, and 3.8 percent use other sources like rivers, ponds, lakes and canals (cited in Jinnah, 2007). There is a chronic shortage of WatSan facilities affecting all levels of residential functions, and slum residents are the worst sufferers. In this context, communities are obliged to adapt, using indigenous coping mechanisms. However, the current community practices might be the result of the quality and the extent of WatSan facilities. This relationship is analyzed in the following sub-sections.

5.9.1 WatSan Facilities and Societal Confrontation

As mentioned at the beginning of this chapter, societal confrontations in low-income settlements are basically temporary in nature and often materialize during water collection and latrine use. Inadequate water supply, latrines and their use fuel these problems. This section describes another very difficult element of everyday lives caused by inadequate sanitation and the purpose of this section is to communicate about the way people are struggled and challenged by the constraints of water and sanitation. Despite the temporary nature of different types of confrontation my field experience suggest that these confrontations (Figure 5.4-A) fragment community cohesion which in the longer term impacts on different development projects where a collective stance is necessary. This is

because people don't want to share the facilities permanently with those who previously confronted each other. Such confrontations also cause interconnecting problems like non-participation, abuse of facilities, group politics or even trigger power struggles which are known to be hindering factor in WatSan projects.

Figure 5.4-A,B: Usual scenario at the water point every morning

Confrontations at water point

Source: http://gmbakash.wordpress.com/tag/slum/ (Accessed April 2012)

Queue for water collection

Source: http://salvationist.ca/2010/03/ (Accessed April 2012)

In the study areas, people usually receive water once a day for a short duration, ranging from 1 to 2 hours at most. This short time availability and the slow flow of water make consumers desperate to secure the desired amount of water (Figure 5.4-B). Similarly, in the morning, people usually use latrines as a 'call of nature' in which a queue of a minimum of 2-3 people is evident until 10 a.m. These issues cannot be ignored and simple circumstances may escalate into bigger, hectic situations that amount to social confrontation, including verbal disputes, quarrelsome activities, aggressive attitudes, and threats. As an example, Shirina, an adolescent girl (aged 14) in the GCC, stated that queue jumping is a major cause of trouble. Sometimes this may be justified in an emergency but she gave an example where if someone's latrine was out of order they used their neighbour's latrine without informing them. When the owner found out they were angry and started a fiery argument and quarrelsome activities. Shaheen (aged 22) from BT mentioned that some users neglect their responsibilities and let their communal latrines get dirty. This could be linked with Hardin's (1968) 'the tragedy of the commons' concept where he didn't associate the term with unhappiness but rather he explained it through the attitude/behaviour of individuals. In his opinion, it is a compromise of their freedom and it depends on a natural weighting of the values of the variables (Hardin, 1968). The BT resident (Shaheen) who is not familiar with this kind of concepts and theories but he added that this kind of societal confrontation within their community does help to make people concerned about the fair use of latrines and water points. He mentioned that:

> *"It is chaotic that 1 latrine is for 10 families. Some people left the latrine clean and some do not. It is really difficult to enter into a dirty latrine. One irresponsible user is enough to hamper everybody's contribution towards cleanliness. This kind of activity often creates social problems mainly clashes and confrontations. So, it is nice to have a private latrine. But space is always a big problem here."*

This kind of understanding is very encouraging but it is also true in case of open-access and unregulated common property where individuals do not get proper incentives to act in a socially efficient way (Adhikari, 2001). Because people are not homogeneous and this heterogeneity and the lack of sufficient sensitivity toward social and gender issues cause trouble and create conflicts in the community (Sun, 2007). In contrast with Shaheen's understanding, I got different response from Kulsum (aged 23) in BB. She commented about the nature of some women residents:

> *"Some of the women are very quarrelsome. Their food will not be digested if they don't quarrel with other people".*

She also added that confrontations between residents are most visible in the summer while in the winter the situation is comparatively tolerable. This kind of social problem increases when water demand increases. The evidence of confrontation seems highest in BB slum as I experienced shouting and quarrelling there every time I visited. Even during my first visit to this slum, some of the powerful residents were suspicious and wanted to know my motives of being there. At the same time they started quarrelling with their neighbours who came forward to help me. Finally, I explained everything about my research and then they stopped their aggressive activities. As an outsider, they may pay attention to my explanations but this is unusual when the residents confront each other. In this regard Soma, the cashier of the BB-CBO told me that

> *"Personally, I have changed a lot of my previous practices but some of my neighbours haven't changed at all. The problem is that we are not well behaved or united. If I willingly try to suggest or motivate him/her to act according to the DSK's hygiene training, (s)he may respond badly. That's why, nobody tries to correct, motivate or comment on other people's practices. Only DSK officials can do this motivational work".*

Other than the WatSan and its cleanliness issue, the remainder of the confrontations are generally the result of personal and socio-economic crises. Most residents do not think of daily quarrels and confrontations as a social problem because they after a while forget everything and sit together to continue their habitual gossiping. They consider these daily events as part of life but in case of extremes and uncontrollable situations, the local '*Panchayet'*, CBO or other community leaders take action to solve any problems internally without police interference. This practice is evident in the MCC, where the president of the '*Panchayet'* committee stated his positionality tackling the situation through a community court often known as a *'shalish'*. He also explained the minimum occurrence of this kind of major confrontations within their community which was possible for having no burden of diverse kinds of additional residents/tenants other than registered government occupants. In BT, an unusual scenario has been found regarding WatSan infrastructure management and the routine expenditure of users. BT resident Minu's (aged 51) quotation explains the societal cohesion and bonding among the residents that has even driven them to share the cost of the WatSan services:

"Some people are really poor and live hand to mouth and it will be difficult for them to continue monthly installments or to pay the water bill. In this situation, we tried to consider them and allow them to contribute less money according to their ability. When the system breaks down or needs any maintenance, we took the initiative to repair them and we share the repair cost among the users not involving those extremely poor residents. DSK is helping those poor people directly and we don't have any objection regarding this extra help to individual residents.

A similar sort of societal cohesion and bonding is also apparent in MCC, where even ethnicity doesn't obstruct people's interdependence during water scarcity. Miguel and Gugerty (2004) argue that ethnically diverse groups have a negative impact on the society. However, in MCC, both the '*Bengali'* and '*Madrazi'* people collect water from each other's water point during shortages. Conversely, the general scenario is the opposite in KP where the '*Bengali'* community doesn't like to share their water point with the '*Bede'* community due to their alleged unhygienic practices and other visible maintenance-related issues. One of the female respondents, Sultana (aged 42) from KP said:

"We do not share the tubewell with the 'Bede' families because lifting more water could cause regular maintenance and they will not participate in the maintenance cost. Moreover, it will create an extra burden to do such maintenance work. So, we are using our own way. The thing is, 'Bede' families are extremely unclean and they will not use the tubewell as we do. We are getting ill just to see their activities. That's why we made a fence to hide them from our sight but we have been getting problem with odour and this fence can't obstruct it. Moreover, they have some latrines and sometimes they defecate in the open spaces at night and you can't visit the lakeside areas, which is full of dirt and faeces. All of their children defecate in the open spaces and near the lakeside. They throw their wastes and sometimes they urinate under their elevated/mounted houses (Figure 5.5). I don't want to mention it, but I should to you, that at night they defecate in plastic bags under their houses and throw the faeces in the lake. I tried to help them by providing water but when I saw one of the 'Bede' women urinating in our tubewell area, I gave up helping them anymore and now restrict them for further water collection".

Figure 5.5: Waste disposal and urination practice underneath elevated houses

Source: Field Survey, 2010

After further discussion with this '*Bengali'* family I came to know that the livelihood standard and general practices of the '*Bede'* people obstructed their eagerness to help. This '*Bengali'* family now just ignores them. According to them, it was not a matter of demoralization or cruelty but a kind of self-defense that may reduce confrontations. Therefore, the '*Bengali'* family decided to ignore them and live separately in their own way for the betterment of themselves. However, these diverse kinds of confrontation destabilize social cohesion, create jealousy, power politics, mistrust, selfishness: all proven factors that hamper WatSan interventions in developing countries.

5.9.2 WatSan Facilities and Enviousness

People in the low-income settlements feel envious or jealous of those who are relatively better off economically, socially, and politically. My investigations suggest that this issue of jealousy extends from the individual household level to the community level. At the community level, the causes are the state of housing, infrastructure, facilities, social cohesion, community organization, political stance, the extent of GO-NGO support, and circumstances in both qualitative and quantitative terms. During my fieldwork, I got the better picture from GCC and MCC in this regard because these two settlements are adjacent to each other and their circumstances are different, causing jealousy. The result I found is mistrust, confrontation, exploitation of infrastructure, societal disagreements, brutality and non-participation. For instance Tania (aged 26) from MCC mentioned that

> *"The people of the GCC are all jealous to see our homely environment. It is true that we have got better facilities than them but it is also true that we had to make an effort for that. They always try to tease us and they raise issues to create conflict. When they have a chance they throw bricks or clothes into our latrine so that it becomes unusable. They have an invisible wish in their mind that they will one day capture our area and live here. The basis of their jealousy is why should the government give houses to us and they receive nothing?"*

Shefali (aged 36) from the same community also told me her understanding that she heard from her relative who lives in GCC. It seems that the GCC community leaders tried to motivate the UNDP project officials not to invest money in MCC stating that they don't have the same problems that GCC are experiencing. Instead, they advised them to spend all of the project money in GCC. I believe her comment because while interviewing GCC residents I got the impression of their enviousness from more or less all of the respondents. Even GCC residents are not absent from this list as Zohra (aged 19) from the same community said

> *"Some musclemen or influential persons or leaders of our community have captured most of the available facilities: their latrines, roads, houses are clean and they get clean water".*

According to her, the situation is a matter of service discrimination. Hardoy et al (2005) argue that political and social turmoil has a very large impact on such inequality. At the community level, political influence and power practices within the community influence the service provider to provide services to powerful residents, which is a matter of service discrimination (Satterthwaite, 2003). But the fact is somehow different in the study areas where jealousy is prominent and I found the lanes, latrines and water points comparatively cleaner where I observed better management.

Apart from this, the exercise of power is another root cause of jealousy which is evident in all the study areas. Abdul, the president of the BT-CBO who is totally blind is a victim of this. Some residents of BT do not support Abdul as CBO president and repeatedly make comments about a blind man holding the position. But I found him efficient and organized in

his duty, as well as informative and outgoing. During my fieldwork, I saw him representing their community problems in different sanitation-related national forums where he participated (Figure 5.6). Therefore, it can be concluded that jealousy is a negative force in these societal, physical and neighborhood environments that not only reduces the social cohesion but some cruel activity also restricting the performance of the infrastructure often hampers project interventions.

Figure 5.6: Abdul delivering their community concerns in a national forum

Source: Field Survey, 2010

5.9.3 WatSan Facilities and Hygiene Behaviour

The majority of people in Bangladesh have a poor understanding of the link between hygiene and disease. They want latrines for their convenience, privacy, social status, rather than sanitation and health (Ahmed, 2006a). But it is widely recognized that, once the issues have been understood, communities have the ability to overcome their WatSan problems (DSK, 1997). The issue of hygiene behaviour, however, depends on the availability of WatSan facilities and the economic condition of the people as well as the physical and neighborhood environment. Nowadays, people in the rural areas have better access to WatSan facilities (water and fixed defecation place) as they have more space and common resources but this is not the case for urban neighbourhoods where the people have a minimum level of per capita living space and where they cannot install their own superstructure. It is also true that, without improvements in WatSan services in urban low-income settlements, people may not be able to respond to hygiene education messages and practices (Tayler et al, 2003) as it is inevitably associated with the success of WatSan projects.

There is no doubt that some people perform certain tasks better than others. To begin with, however, I choose to explain hygiene knowledge and hygiene behavior at the same time because both of them are important to assess the community responses and societal norms. Some argue that behaviourism adopts an extreme positivist position and all of the behaviour of humans is determined by, and is a product of, factors external to them in their environment (Bilton et al, 1984). Fundamentally, what I found in the field was that people living in the slums have a basic understanding of hygiene knowledge such as washing hands with soap while handling food and after using the latrine, putting on sandals or shoes during latrine use, drinking clean water, and so forth. Apart from the NGO's hygiene training, the slum dwellers came to know about hygiene-related issues from different TV and radio programmes. But the practices among the people vary a great deal. Momena (aged 48), the president of GCC-CBO tried to explain to me about her own personal hygiene behaviour…

"Nothing will happen ... I didn't use sandals in my entire life while using latrine but I know what should be done. If you go once without sandals then you will be affected but we are habituated with this. Actually, the latrine areas are slippery and using sandals are quite difficult for older people. We don't boil our water because of insufficient firewood. We used to take water that we got directly from the tubewell. I, personally rub my hands in the soil and wash them with water."

Despite having both infrastructure and understanding some people are still locked in with their previous practices. I found that, the existence of WatSan facilities doesn't necessarily mean that people will maintain hygiene behaviour. The above statement is just an example but the majority of the people try to maintain some hygiene practices according to their available facilities. BB and BT residents are quite happy with DSK-provided training sessions but the GCC, MCC and KP residents haven't received any intervention in this regard. Nevertheless, upon my request in the FGD sessions, the participants demonstrated their fingernails and I observed a unique picture from all the intervention areas. Other than KP, I didn't found anybody who has unhealthy and dirty nails (Figure 5.7). This may be because they don't need any infrastructure to maintain their nails but the understanding among the residents reflects good hygiene behaviour. Here, adolescent girls and women indicated that they have to suffer during their menstrual period, as they can't wash the clothes that they usually use as sanitary pads properly with clean water. A 'culture of silence' and ignorance related to menstrual hygiene and management is a matter of common unhealthy practices in Bangladesh. The vast majority of women and girls instead of sanitary towels/napkins use rags (cited in Arif and Ahmed, 2010) - usually torn from old '*saaries*[14]' and known as '*nekra*'. These rags are washed and used several times. There is no private place to change and clean the rag and often no safe water and soap to wash it properly. A culture of shame forces them to wait for privacy even at home. The rag is washed and hung to dry in some well hidden, often damp and unhealthy place. This practice is responsible for a significant proportion of illness and infection associated with female reproductive health. Rags that are unclean cause urinary and vaginal infection and often even serious infections are left untreated.

Figure 5.7: A quick demonstration of fingernails during the FGD in BB

Source: Field Survey, 2010

Another point is that inappropriate or inadequate infrastructure leads users to stay away from it. For instance in BT, DSK supplied a number of small plastic drums as biodegradable garbage bins but they didn't consider the number of household or the amount of waste generated in the neighborhood. The result was that the bins were filled up within a day and

[14] '*Saari*' is a strip of unstitched cloth, worn by females, ranging from four to nine yards in length that is draped over the body in various styles. [http://en.wikipedia.org/wiki/Sari – Accessed December 2011]

people started once more throwing away their waste as they did previously. This issue is further illustrated in section 6.5.4 of the next chapter. Generally there is no waste management visible in the study areas, and dogs, cats, birds and other animals often scavenge and spread the waste in and around their neighbourhood and create a nuisance (Figure 5.8).

Figure 5.8: General waste disposal practices in the study areas

Source: Field Survey, 2010

Much of the above discussion is related to community hygiene behaviour but it is evident that people often shamelessly stated false information regarding their everyday behaviour related to sanitation. This is to hide their unhealthy practices which may objectionable to other people or lack societal approval. I observed such practices where people didn't say what they actually do. For instance, most of the respondents said that they covered their water at all times but I didn't get the same picture when I observed their '*kolshi'* and '*balti'* (Figure 5.9). This highlights the fact that they are conscious but not responsive about their hygiene behaviour which leads to chronic diseases such as diarrhoea, cholera and other water-borne diseases and they often survived from these regular events through their own coping strategies and knowledge such as drinking *'Chira'* (flattened/beaten rice) water, *'Mar'* (sticky water from cooked rice) and so on that widely practised in Bangladesh.

Figure 5.9: Visible dirt and unhygienic practice of household water storage

Source: Field Survey, 2010

5.10 Dimensions of Knowledge

Most of the low-income residents are not educated and their knowledge is derived from their intimates in society. Bilton et al (1984) characterized this knowledge as belief-systems. Given that in any society there are different groups with different social, economic and political interests, it is likely that specific knowledge or belief-systems will be associated with each group. People may hold knowledge without any clear reason or they may unwittingly hold them. Some people think that their existing knowledge is fine and changing that may be a source of anxiety. This is a kind of coping strategy whilst they are helpless. For

instance, my key respondent Mohini, who is a middle aged woman living in KP since her childhood, stated that

> *"The water can be useable where 'one mound' (40 litres) of water exists. It doesn't matter what the quality of that water is. Even if it is dirty it can be useable. We know … the water of this lake is dirty but I believe, it will not create any harm to our skin. Until now we are not affected."*

This concept makes her willing to use even the blackish lake water without any hesitation for bathing, cleaning and other household works. She learned this idea from her parents when she was a child. Anyway, this dirty lake is the only source of water that can be used for the above-mentioned reasons because they don't have any access to get their desired amount of water from other cleaner sources. Putting a little smile on her face she added that

> *"We are simply habituated with this water. We will never say this water is 'dirty'. If we say so, it means that, we are questioning not only the strength and ability of our body but also our belief and previous mindset about the water that we are preserving for years. We just ignore the quality of water and always try to act according to our preserved belief and I would say that, avoidance is our strength to fight against diseases".*

Both of the statements from Mohini highlighted the matter related to their belief system, issue of ignorance and associated health risks where they understand that panic and fear will bring these diseases on and accordingly ignorance will keep them at bay. She laughed and proudly explained her condition as she did not have any kind of skin disease. This unavailability of resources forced her and others to adapt. This is also the case in BB where Hashem heats his water before drinking, saying that this will kill all the germs in water. He also added that

> *"We don't have enough firewood to boil our water. It's not possible for us and not for anybody else living in the slums. If they are saying that they used to boil it, they are just lying."*

Concerning water quality, people inspect the water visually. If they find any dirt or smell they consider it unclean and not drinkable, but if they don't sense a problem they don't treat it before drinking. From the above discussion we can see that the dimensions of knowledge not only refer to those ideas that people hold to be right and true, but also the understanding of hygiene behaviour and affordability of amenities may sometimes make them confused about their previous practices.

5.11 Occupational Status and Responsiveness

It is often argued that occupational status influences human behaviour and attitudes (Dierdorff and Ellington, 2008; Johns, 2006). However, there are clear occupational differences found among the residents between the GO- and NGO-managed slums. As stated earlier, GCC and MCC residents are mainly 4th class government employees. It means that their minimum monthly income is fixed and secured whereas there is a more diversified

occupational scenario among the BT, BB and KP residents whose income is generally not fixed and uncertain. So far I have attempted to explore the differences between these distinct occupational groups, their behaviour and their attitudes to their own social spaces. My observation is that government employees feel more confident to express themselves comparatively as members of a higher social status among residents of other low-income settlements. They often proudly and confidently articulate themselves as part of the government project. Such an attitude and positionality may indicate their superiority, insensitivity on the one hand, or their unity, collectivity on the other. Either way, it tends to hamper the so-called civic society. For instance, one GCC resident (female, aged 42) told me that

> *"We are poor but more powerful than the police. The green uniform is the source of our power. People obey us and they talk with us with due respect because they know that, if we wish, we can make the whole city dirty".*

Similarly, I got another reaction while conducting a FGD with male participants in MCC. When I used the term '*bastee'* (slum) to indicate their settlement, they replied

> *"It is not a 'bastee'. We are government employees and living in a government colony. Our status is different as we are a part of the government but the slum people have no status. This colony is not like the slums as the government is our guardian and the slum people have no such guardian."*

Although, the structure, occupation of the residents and name of the GCC and MCC demonstrated as 'government colonies' but the government statistics recognizes both of the settlements as slum or *'bastee'.* However, the issue of the occupational status and their thoughts about it make them distinct and less responsive in some community actions. For instance, when I wanted to know their opinion about cost-recovery approaches I got the same negative response from both GCC and MCC. Their argument was based on their entitlement to government resources and they believe that the government will solve their problems. In contrast, most of the BT and BB residents are in favour of an approach in which their poorest neighbours contribute less money. They have no understanding of entitlement and they have no expectation of getting help from the government. But in KP, the diverse occupational profile and lack of social bondage shifts the community to a state where responsiveness is virtually absent. However, it is apparent among the government employees that job security and fixed income has raised their confidence in argumentation and given them a tendency of establishing their opinion through the invisible power of their mind. This tends to mean that the nature of occupation and its multiplicity could be a matter of disagreement among communities that could make them non-responsive in WatSan projects.

5.12 Conclusion

Upon discussion of general characteristics of slum and their residents, this chapter has tried to link them with personal and communal attitude and practice to exemplify how the whole system runs and impact on the WatSan projects. The household and community-based social scenario as well as different dimensions of public and private involvedness, disagreement, relationship, resentment, conflicts, power struggles including intra- and inter-household and/or community matters are explored through the discussion of different relevant issues which draws the threads of this chapter together where the main agenda was to identify those social factors that facilitate or hinders sanitation interventions.

In Dhaka city, the slum dwellers basically consider themselves as temporary settlers where they are always under eviction threat. Moreover, they change their place as soon as they change their work where they usually engaged with some kinds of informal urban economic activities. This transitional and temporary characteristic makes them insecure and they are even unable to think about permanent livelihood settings in their current temporary settlements. This insecurity of land is known to be the most captivating factor that hinders sanitation interventions where people's attitude and/or behaviour even becomes less relevant. Furthermore, people came from different places holding their own practices and cultures which often create conflicts and various kinds of social problems. Besides, local power structures, social norms, harmony and relationships between neighbours, together with inadequate basic amenities, complicate the social environment and even cause a fragmented society where people's behaviour is opportunist, self-centred and not sociable or responsive. It could also be argued that when people are living in a densely populated slum they need to compromise with different sets of issues. However, these issues potentially lead to conflicts and that may have nothing to do with the cultural norms that simply because of that there are no adequate services for everybody. Moreover, the constraints on people's ability to have access to good sanitation and those constraints might be partly to do with their own attitudes towards hygiene but that may also be a question of power or relationships between different peoples, groups, parties, issues, etc that were illustrated throughout this chapter with empirical evidence.

The rationale and effectiveness of qualitative analysis in this chapter has uncovered everyday realities in the slums of Dhaka city and an attempt has been made to elaborate the social dimensions and events that have impacted WatSan interventions in the study areas. Different ethnographic techniques have been used to construct the argument, which helped to link between the social realities and WatSan interventions and their consequences. Here I would say that a responsive social structure is necessary in the WatSan projects where poorer or substandard communities could show better results that I found in BT and MCC. In contrast, the 'infra-power' and/or local power structures and their practices are just obstructing the residents to grow as functionalist, prompt and responsive (Gupte, 2008). It is pragmatic to think that the residents of BB, in terms of location and GCC, in terms of their social and occupational status, can lift their position up compared to BT and MCC. But the

realities are just the opposite and one NGO manager commented about 'knowledge', 'attitude' and 'practice' that should be constructed socially with great emphasis on the sustainability of WatSan projects. For instance, among the adolescent school girls in both the urban and rural areas, knowledge about menstruation is poor and the practices are often not optimal for proper hygiene (Thakre et al, 2011) which could simply be addressed through incorporating integrated training/instruction session for girls in the school curriculum. However, it is suggested that identification and assessment of 'knowledge gaps', 'attitudinal challenges' and 'missing practices' (GEPSP, c2010) through KAP studies would be beneficial in WatSan project interventions because it could determine community's priorities, beliefs and cultural practices (Naylor, c2011) specifically the issues related to how individuals or groups feel about specific things, what they know, and how they act. Since this thesis aims to contribute to policy related guidelines the above mentioned discussions in this chapter are important to ensure the quality and relevance of the recommendations that is outlined in the final chapter. Technological dimensions will be explored in the next chapter emphasizing the effect of technology on sanitation projects and how the technology influences people's behaviour and often determines the project outcome.

Chapter Six

Sanitation Technology: Suitability and Responses

Chapter Six
Sanitation Technology: Suitability and Responses

6.1 Introduction

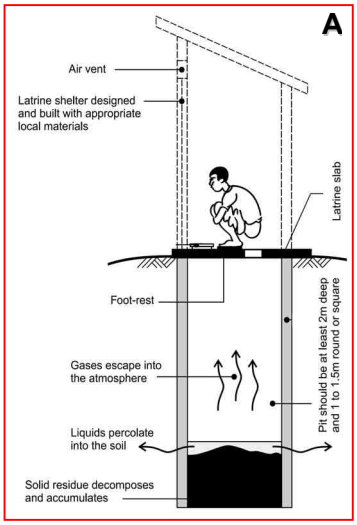
It is widely recognized that water and sanitation technology should always be culturally and socially appropriate and that the social values and cultural variations are likely to influence the type of technology that is appropriate for a specific country, region or community (De Forest, 1980; Murphy et al, 2009). Here, Mara (2012) argues that the technologies are not a part of the sanitation related problems. Technologies are generally developed to solve a particular problem; unless they are re-designed with the input of local users, failure or poor performance is likely. Consequently, there needs to be a two-way exchange of information that encourages local stakeholders to provide feedback and participate in the planning, design, implementation and policy making processes as much as possible (Murphy et al, 2009). But the fact that the low levels of environmental wholesomeness in cities in developing countries is the result of appalling shortages of hygienic and durable sanitation technologies as a common understanding of the sanitation situation reveals, "nobody could be found without access to a latrine but it is difficult to find any hygienic latrine". However, Gopakumar (2009) believes that the durability of sanitation infrastructure and the institutions are required to survive within the urban political environment. There is often little attention paid to understanding how to develop infrastructure that becomes durable or acquire the capacity to survive locally considering its social and political environment. This chapter seeks to explore the factors that facilitate or hinder sanitation interventions that are directly or indirectly associated with sanitation technologies. Here, I will consider sanitation technology as a non-technical object, i.e. either as a sanitation superstructure or system, because technical aspects such as efficiency of waste handling, depth of the pit/septic system, ventilation, water seal, and additive handling capacity, have no significance amongst slum dwellers. Drawing on secondary literature and primary material, including key informant discussions, interviews, FGDs and observations, this chapter presents an overview of existing technological dimensions and states, their facilities, user preferences, convenience, levels of satisfaction, maintenance, and service life, with the aim of understanding how the social, economic, political and other circumstances impact on sanitation technologies. During the data analysis, a critical but particular question was encountered which, in my opinion, is important in addressing various technological dimensions of sanitation. The question is whether the technology influences user practices or

the user influences the technology in a way often leads either to project success or failure? To get a proper answer I will incorporate various metaphors of everyday realities from the study areas that are associated with the sanitation technologies or infrastructures.

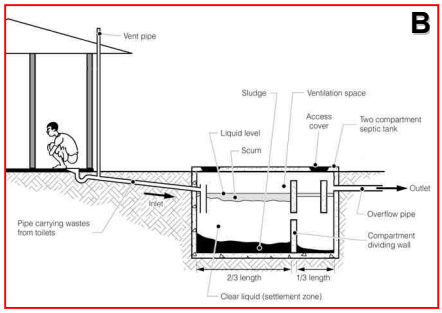
6.2 Sanitation Technology and Community Perception

One of the most important decisions while planning a sanitation development programme is obviously the choice of the sanitation technology that is going to be used. The adoption of an inappropriate technology is likely to cause the waste of resources and even more seriously the health and hygiene in a community may worsen (Ahmed and Rahman, 2000). Community perceptions about sanitation technology in low-income settlements are in most cases unclear, as people are not aware about their technology. During the FGDs the participants seem unconcerned about the mechanics or working mechanism of a technology or its impact on the environment and health; rather they are interested only in their convenience and the associated cost of using that technology. But, they are somehow familiar with the names of the most-used sanitation technologies such as pit latrine (PL), septic tank latrine (STL) and hanging latrine (Figure 6.1). However, a general and emergent understanding about the sanitation technology among the residents of low-income

Figure 6.1: Different types and design of latrines in the study areas



Source: Harvey et al, 2002
(Modified by author)



Source: Harvey et al, 2002
(Modified by author)

Source: Field Survey, 2010

Figure A: Design of pit latrine
Figure B: Design of septic system
Figure C: Photograph of hanging latrine

settlements is a kind of 'fixed defecation place'. The people usually consider this place as a disgusting and unclean area of their neighbourhoods. Despite this fact, people often categorize sanitation technology in several ways in which the service life of the infrastructure is the most prominent consideration. Other categories are related to cost, aesthetics, operation and maintenance, individual or communal facilities, and so on. Placing the sanitation technology at the centre of my analysis, the aim of this section is to describe different community perceptions that have impacted sanitation technology as a whole.

It has been noticed that the reflection of perceptions regarding sanitation technologies usually comes from their overall neighbourhood environment, social and economic status, community behaviour, practices and so on. Alternatively, some people define sanitation technology considering its faults, which may be the result of inappropriate installation, low-cost and poor-quality materials or users' carelessness. The users always complain about the technology but they hardly ever blame their own practices in using those infrastructures. For instance, Anhar from GCC indicated that his latrine often experienced blockages and that the faeces don't disappear from the pan. He blamed the technology but another respondent from next door, who uses the same latrine, said that their septic system became full and need to be emptied, which is not a technological fault but rather a problem with their understanding. But a harsh reality is that most of the STL infrastructures in GCC and BB and a few in BT and MCC are not working properly, and I observed that the connecting pipelines from superstructure to septic system are either broken (Figure 6.2) or that the septic system has overflowed due to lack of maintenance. As a consequence, the surrounding areas, including the nearby low-lying vicinity and open spaces are getting contaminated with faecal materials.

Figure 6.2: Photograph showing a broken pipeline of STL and exposed faecal material in MCC

Source: Field Survey, 2010

Furthermore, most of the respondents conceptualize sanitation technology in terms of its state of robustness or service life and they believe that a suitable technology should be robust and be able to offer a long service life. A common misconception among the people about the robustness or longer service life of a technology is much associated with high cost of the whole system. According to their perception, the higher the cost of the infrastructure, the more robust and longer the service life of the infrastructure should be and vice versa. This perception makes people careless about their infrastructure when using a low-cost technology. Typically, in the study areas, most of the household latrines are of low-cost, whereas community latrines are relatively expensive, and in general people consider them as non-robust and robust technologies respectively. A household PL owner Anwar from BB said that

> *"Our latrine has been working just like a hanging latrine. At this point, we do not consider this to be as good a sanitation technology as previously. When our pit became full we installed a pipeline to release faecal matter directly to the nearby sewage canal. We have no other alternative. This is a low-cost technology and we cannot expect more from it."*

However, DSK operates a pit emptying service and could solve such problems. This pit-emptying service can access all PL and STL infrastructures in their slum. The matter might be the non-willingness to pay the additional pit emptying charges. Alternatively, in BT, most of the PLs are functional and well-managed. Some of the residents have even installed a latrine inside their home and they do not experience any odour. Here, the above mentioned Anwar's

comment about his technology raises several questions: why is the same technology not working in BB but working well in BT?; what are the other factors associated with this?; what is the perception about the users' own technology?; why are users not willing to use the DSK-operated pit emptying services?, and so on. The answers of these questions inevitably contribute to project planning as well as policy guidelines. Those household latrines in BT were also provided by DSK with some subsidy and the users pay the rest of the money through small monthly installments. The users find their PL system convenient for them but all the residents didn't choose this technology. Actually, they were not willing to compromise their small room space by constructing a PL inside their house. I found it remarkable that the female headed households mostly manage their own in-house latrine ignoring the state of the tenure security where personal safety and privacy are more important (BAPPENAS, 2007; Grown, Gupta and Kes, 2005). In addition, from the perspective of Balamir and Payne (2001) it could also be said that the engagement of the local politician and their assurance may play a significant role for enabling the BT residents to have sufficient confidence about their land. Besides, the lower cost of the system influence them to install their own latrine where the tenure security became less important. During the observation and interview sessions in BB, I realized that the water in the subsoil is almost saturated and pits become full within a few days, while water enters from the subsoil to the inside of the pits. In such condition, people choose alternative options that are unhygienic but it is also understandable that people cannot just take the DSK's pit-emptying service when they know that after a few days the pit will become full again. Therefore, the PL technology in BB is undeniably not appropriate and the people of this settlement also have the same opinion. Here, I took the opportunity to analyze this data that are associated with the PL option because people do care about their infrastructure when they own it. But the community perceptions and responses concerning their sanitation technology are unclear in most cases. In this regard, one female respondent, Selina (aged 24), from the same community said that

> *"We don't want to know about the types of sanitation technology. We only need such a place where we can go for our natural call. Technology is not important for us as we don't have adequate facilities. It is the rich people who might think about various technologies but we can't think about those options. We just need basic things."*

Her argument supports Kar's (2012) contemporary principle 'basics for all'. However, the community-based STL technology users conceptualized the problems concerning the possibility of mismanagement and misconduct but BT gives some successful examples in this regard. Finally, I often noticed while investigating the community perception about sanitation technology, that the argument was often abstracted to ownership status, i.e. the single household facilities or communal facilities rather than their technical side such as pit latrines or septic systems. Besides, I also observed that the users often interested much to talk about the visible part of superstructures whereas the invisible substructures situated beneath the surface are not getting such attention.

6.3 Access and State of Sanitation Facilities

Access to formal and basic urban services like water, sanitation, garbage disposal, electricity and gas are mostly absent in the slums. Recently, some of the slum areas have been connected to legal water supply systems where the local CBOs are responsible for paying the bills. However, the water supply in Dhaka city has been characterized by chronic shortages, affecting mainly residential functions. The city gets its water from both surface and groundwater sources. A DWASA source reported that the existing sewerage system services are inadequate and this section lacks adequate technical staff, skilled manpower and modern logistics. The management of solid wastes in Dhaka city is primarily a concern of the DCC. However, in recent years, some small scale and local level private sector entrepreneurs have increasingly been involved in primary refuse collection from households but this scenario is totally absent in the slums. The waste collectors do not reach these high-density areas. Therefore, the people of the low-income settlements are generally living with this inadequate access of sanitation facilities. But low-income settlements overseen by GO-NGOs are comparatively better off than other general slums. Although the settlements get GO-NGO intervention, some of their provisions of substandard condition whereas most of the projects typically started with very good intentions, and in the first few months they were looked after regularly and provided services of a high quality, it does not take long before services deteriorate. Here, Akbar (2005) identified that this is not because of negligence on the part of the service provider but rather because the CBOs frequently fail to operate the infrastructures properly. Considering the opinion and qualitative information from people in the community and GO-NGO representatives, a general imprint of sanitation scenario of the study areas have evolved as presented in Table 6.1.

Table 6.1: Existence and state of hygienic sanitation service provisions of the study areas.

Sanitation Facilities/ Slums	GCC	MCC	BT	BB	KP
Latrine	Yes	Yes	Yes	Yes	No
Water	Yes	Yes	Yes	Yes	No
Waste Disposal	No	No	Yes	No	No
Drainage	No	No	Yes	No	No

Service Existence: Yes, No;
Current Situation: Bad | Moderate | Good | Non-existent

From this above table, it is clear that the GO and NGO managed slums are getting mostly water and latrine facilities but other sanitation facilities like waste disposal and drainage system are not provided, with the exception of BT. On the other hand, the condition of all the aspects in KP is totally absent and they don't have any access to the above-mentioned sanitation facilities. But it is a matter of fact that most of the respondents from the five study areas are not worried or concerned about waste disposal and drainage infrastructures while their main concern is to own latrine and water facilities whether it is shared communal or private infrastructure. Depending on the availability of project fund, the DSK is quite flexible to offer either PL or community based STL. The residents chose their own option, which depends on their personal choices and other contexts. It is important to mention here that

the costs of both of the systems are mostly the same where the DSK equalizes the cost of the system offering a subsidy. Here, I didn't find any conflict between the users of PL and STL latrine users but due to the shared nature of all the STLs, the occurrence of conflicts are likely arising from the mismanagement, operation and maintenance activities. Regarding the issue of public and private ownership of latrines it is understood that the PL and STL users need to compromise either their room space or convenience respectively.

Regarding the state of sanitation facilities, only BT and MCC residents made positive comments about their latrines. It is remarkable that all the GO and NGO slums have moderate water provision whereas the condition of latrines and drainage is reported to be worst in GCC and BT respectively. Logically, one question came through: why is the situation different when they are using similar options for water and latrines? The answer is different for different slums as most of the reasons are entirely local, institutional and managerial, i.e. management structures, building materials, planning processes, corruption, operation & maintenance, inadequacy or inappropriate technology. As an example, the existing drainage system of BT (Figure 6.3) could be explored to address all these issues. A BT resident, Mina, for instance, mentioned that

> *"We expected a drainage system in our community and finally a NGO (not DSK) constructed several drains. But now, those drains are our only headache and they became a source of several problems. The NGO promised us that they will construct drains and they will put covers on them. But they didn't complete the drain construction. There is no final discharge point for the entire drainage network. The drains are now open and the contents are exposed and directly visible. They left the project incomplete, which is a result of corruption. Now men often urinate into the drains and children also use drains as a safe defecation place. Apart from this, children and even adults often fall down in the open drains and get injured. Their construction material was fine but it was incomplete, inadequate and lacked proper planning."*

Figure 6.3: Condition of drains in BT

Source: Field Survey, 2010

Here, Mina's comment addresses mostly the institutional and managerial issues, whereas local residents are much more interested to express their demands and preferences considering their access and the state of sanitation facilities.

6.4 Demand and Preference

The demand and preferences in sanitation technology are to a large extent derived from cultural and socio-economic factors. Although the choice of technology used for the substructure also depends on environmental and technical conditions, most people base their choice on the cultural acceptability of a certain system (Ahmed and Rahman, 2000). Most people, especially the poor, are not aware of health and environmental benefits of improved sanitation technologies, as their priorities are different (Singh, 2005). Latrines are not a felt-need for them. They are also not aware of the availability of affordable technological options.

Generally, ease of access, comfort and privacy are often the main considerations to have a latrine. Although a latrine inside the house would be optimal from a perspective of ease of access; for most low-cost latrines this is technically not possible. Even if it were possible, in many cultures it is not acceptable (Das, 2003). Generally, in the low-income settlements and the study areas in particular, I couldn't find any cultural restrictions in this regard but their personal choices. However, the community wants to talk about their superstructure rather than substructure. Their demand and preferences are more concerned with the size of the latrine, number of chambers, urinals, bathroom, floor, roof, pan/squatting hole, water options, male-female-disabled options, etc. In Bangladesh, an evaluation survey was carried out to assess user opinions and use of different types of latrines. This study demonstrated that, it was not the type of technology used which was the deciding factor for the use of the latrine, but the quality of the superstructure (cited in Ahmed and Rahman, 2000). While attempting to get information about people's demands and preferences regarding sanitation technology, every time I had to hear about their other demands and preferences that could be linked with Maslow's (1970) theory on 'hierarchy of needs'. For instance, during the FGD with the male participants in GCC and BB, people argued about their necessities other than their existing sanitation facilities. They knew about the filthy condition of their latrines and water points but some of them thought that they only use their latrine once a day but that other issues, such as road problems, should be solved as a priority because they need the road all the time. While discussing about their priority demands in different FGDs, I observed that the priority of demand regarding latrine would be higher up in their needs hierarchy if they had no access to a latrine at all. Since they have access to latrines (regardless its cleanliness or adequacy) their needs and priorities were diverted to other amenities where the land tenure issue becomes most prominent.

To explore the detail about the expectation or demand of technology, I got a general but common opinion from all GO- and NGO-managed study areas which is for a *'pucca'* latrine, i.e. with cement floor, a squatting hole, brick wall and durable roof. But their demands are not well-defined when asking them for further options, such as pit latrine vs. septic tank, individual household vs. communal latrine, pay and use vs. monthly scheme, tubewell vs. tap, etc. In contrast, the KP residents have generally no such demands or expectation from the government or NGOs because they consider themselves to be illegal. Regarding expectations, Malek (aged 32) from KP mentioned that

> *"I like to have a latrine that may have fence, roof and a good quality slab with several rings. 'Pucca' latrine is not for us, as we cannot afford it. Since we are living here illegally, we couldn't expect anything from GO and NGOs and I think, they will also not be responsible to provide any infrastructure in our area. It is fine that we are living on this land and I think this is the thing the government is giving us. We are happy with this."*

It is understandable from Malek's comment that nobody came forward to offer them sanitation options. They didn't receive any motivation in this regard and different studies reveal that social motivation often unites a community to develop WatSan systems and to express their demands to politicians and the government (Akbar et al, 2007). It is also

evident that some people don't like to engage themselves with a formal system, as they think that the informal water supply system is more reliable and hassle-free than a formal system. Moreover, household tap connections in the slums are not economically and physically feasible due to congested housing patterns and non-existence of enough room for installation of pipeline network. Also, the drainage system needed for this service does not exist in most settlements. Nevertheless, one NGO field representative made an overall comment about the nature of people's demand.

> *"To be honest, the poor people are often very confused to demand something and it is not very difficult to motivate them to implement our specific agenda. In fact, they don't want to take the responsibility through making a specific demand because they are quite unsure about the end result. They feel nervous if their demand turns out to be unsuccessful. That's why they remain silent and prefer to accept our plans. Lack of knowledge is another cause but it is our strategy to listen to their concerns before making any intervention."*

In the above quotation arises a simple question, e.g. 'why are these poor people not expressing their demand?' The NGO field representative also answered this question through her comment. Observing the respondents' opinion about their demand, I became bewildered and that led me ask question to myself e.g. 'why and what will they demand?'- as there is no social security or state provided services existing in Bangladesh. Only materialistic support and in a few cases financial incentives are provided in floods or various disasters affecting people in rural areas. The residents of the study areas didn't expect this kind of direct question related to their demand. It seems that they never heard this kind of question from other parties. Actually, they are generally pessimistic about the possibility of getting government grants, relief or any other entitlement. This is the reason why specific demands are often so unexposed from the community end, and they have a tendency to generalize their demands such as household latrines or community latrines and not PLs or STLs. People feel secure to demand community-based latrines in a sense that they could collectively solve if any problems arise; but while making their decision they didn't sense the problems related to operation and management of those infrastructures. However, the service providers usually help the residents to choose their technology stating their pros and cons in the specific neighbourhood context.

6.5 Acceptance and Levels of Satisfaction

Acceptance of technology is important for the sustainability of a certain sanitation technology that may eventually determine project success. Both individual and social acceptance as well as user's levels of satisfaction, could allow judgment of the performance of a certain technology. Rahman's (2006) research, which was mainly on comparing and assessing the performance of NGO installed and community-based twin-pit and STL technology carried out in several Dhaka city slums, presented an overview of those technologies where the users of STL technology are found to be more satisfied than those with twin-pit technology. The users from my current study areas have the same opinion but they made additional comments.

Initially, people happily accept GO-NGO-provided interventions regardless the types of technology, but their levels of satisfaction deteriorate while using that technology. One of the community based STL users Zohra from GCC mentioned that

> *"We used hanging latrines made of bamboo in our previous place. We were happy when we get our communal septic tank latrine. The Government provided those concrete latrines and water points here. But most of the infrastructures are now out of order. At this instant we could say that our previous hanging latrines were better than our current improved technology."*

Her comment conceivably raises the issue of satisfaction. They had no such expectation from their previous hanging latrine option and they didn't raise the issue of satisfaction while using those latrines. Now, their present improved option are also unable to satisfy the user community because people expect a minimum level of service from that technology which is currently incapable of offering an optimal service. During my fieldwork in the GCC, I came to know that majority of the septic systems and tubewells in the water points are malfunctioning, which is not the result of technological fault or low-grade construction materials, but rather the presence of various local circumstances especially the existence of hazardous waste materials underneath their settlement that made the whole area unstable as I described in chapter four (section 4.2.1). Due to this, most of the concrete latrine superstructures and septic systems subsided into the ground and started malfunctioning. The residents couldn't even use their tubewells as the wastes below the ground and their hazardous materials damaged the pipes and working mechanism of all the tubewells. The water from the tubewells is not usable as it is always filthy and smelly (Figure 6.4-A,B,C).

Figure 6.4: State of latrine superstructure, tubewells and water quality in GCC

Source: Field Survey, 2010

Therefore the local situation challenges technologies that have already proved their suitability and satisfy people in the context of other urban low-income settlements. Levels of satisfaction of technologies will be further analyzed in the following sub-sections.

6.5.1 Queues and Waiting Time

During the in-depth interviews and FGD sessions in the study areas, people complained about queuing during peak hours, especially in the morning. Satisfaction regarding latrine use among PL users is high whereas most of the community-based STL users are not satisfied because they need to stand in a queue when they want to use the latrine (Figure

6.5). Nevertheless, one resident from MCC said that they have a safe place for their defecation and the waiting time is not a big problem for them. But female community-based latrine users commented on the embarrassing situation that came up when they had to stand in a queue or when people are waiting outside while they are using the latrine. This is a matter of shyness and they can't use the latrine comfortably in such a situation. It is evident that women tend go to the latrine after 10 o'clock in the morning when the men have finished and gone to their work/job. An old woman (aged 62) from BB supported the point about the embarrassing situation and added the issue of children and elderly people. She mentioned that

Figure 6.5: A child waiting for latrine use

Source: Field Survey, 2010

> *"We can't hold the pressure for long. I prefer to have a small room space but having a personal household latrine would minimize our anxiety as well as reduce many social problems."*

Considering this context, both of the male and female FGD participants in BB preferred household PLs and added that this household technology would especially help women and girls to use latrine without feeling uneasiness, discomfort in the presence of male. One of the female participants said

> *"It is very embarrassing that a girl is inside the latrine and a man is knocking at the door or vice versa. It is particularly a matter of shyness for girls and women when there is a queue. A woman can knock the door when a woman is inside the latrine but it is different in the case of opposite sex when one is inside and other is waiting outside."*

Bearing this in mind, I observed that women and girls used to go to the latrine when they didn't see any queue in the latrine area. People do not need to face this problem if they have their own household latrine. This issue again raises the question related to private and public/shared latrine, which is entirely the users' choice of selecting their own option. Nevertheless, this issue is not directly associated with the technology itself but rather the number of users per latrine, creating a problem that impacted on users' levels of satisfaction.

6.5.2 Convenience

Convenience for women, children, aged and differently abled persons was said to be the main advantage of having latrines in every house in the study areas. However, most respondents preferred to use latrines for their defecation. But some studies reveal that the older generation, usually men, prefer to defecate and urinate under the open sky. The scenario is different for women as they prefer to have privacy and a certain level of convenience (Ahmed and Rahman, 2000; Nawab et al, 2006). Regarding the convenience

issue, the household PL users seem to be more satisfied than communal STL users. One married female respondent from GCC stated that a household latrine would stop others seeing them. It is a matter of shyness or inconvenience as generally women in Bangladesh hide themselves from their male counterparts while using latrine, going in and coming out. Some from BT commented that water availability inside the latrine is in most cases inadequate, and so people carry a *'bodna'* (bucket) full of water (approximately 1.5 liters) for anal cleansing purpose. They feel that this is inconvenient and desire more water. This is not only a necessity for hygienic anal cleansing but sometimes they would like to put more water in the pan (alternative of flushing) to push their faeces out of sight for the convenience of the next user. Most of the time the inadequate water makes the users completely careless and they leave the latrine unclean. Alternatively, during the peak hours, when the users need more water to flush the latrine feel awkward when the next users are waiting in a queue. This situation often creates social problems, for instance verbal disputes and confrontations. Household latrine users didn't raise this issue but the community latrine users emphasized this matter. One BT resident Zamil (aged 34) commented in this regard

> *"Our latrine is clean. But to make it more hygienic we need a water arrangement inside the latrine. A complete sanitation technology should not be without water. I could certainly say that water inside the latrine could solve lots of social problems that we experience very often."*

Here, Zamil's comment link firmly to the sanitation technology and users' convenience. On the other hand, the service provider organization DSK consulted users as a part of their project strategy and they think that this water option inside the latrine will be difficult to introduce for the whole system because it requires an additional and expensive superstructure such as overhead water storage tank, and a necessary pipeline network. However, on a trial basis, DSK constructed an overhead water storage tank in BT (Figure 6.6) to supply water directly to the latrine chamber through a tap but the whole infrastructure is not yet complete. It seems that this initiative will give a good result, as I observed that the residents of BT are reasonably aware from the outset.

Figure 6.6: Overhead water storage tank in BT

Source: Field Survey, 2010

Besides, non-structural parameters of a sanitation technology, such as distance of latrines and water points from individual houses, are also a matter of convenience. But this issue generates mixed opinions from the user groups, in which the residents living nearer to the communal facilities feel convenient while using them but, at the same time, not satisfied due to disturbances created by other users while using these facilities (Figure 6.7). In this regard, most of the residents who are living nearer to the superstructures are not satisfied and they have a desire to stay far away. Anhar (aged 52) from GCC mentioned that

Figure 6.7: A typical scenario of water point during the day

Source: Field Survey, 2010

> *"Latrines should be placed far away from the house as they create nuisances. Individual household latrine could be constructed nearer or even inside the house but community latrines and water points should be located in such a place where all the households can conveniently use them. But here, we are the worst sufferers. We can't take a rest during the day as most of the time this area remains busy and there is a lot of shouting at the water point."*

On the other hand, Aladin's (aged 36) house in GCC is located approximately at the beginning of the lane and the superstructures are situated at the end of the lane; therefore, he is not happy and prefers to have a latrine nearer to his house. Similarly, people from other communities, especially the residents of BT, also favour household latrines to avoid walking far during the rainy season because it is hardly possible for them to move outside as a result of muddy and slippery lanes and roads. Clear demand seems to exist for household PL latrines in BT whereas other slums have no similar demand. As explained earlier in section 6.2, the difference is not associated with the cost of the system but the unfavourable soil conditions, personal choice, preference and people's capacity to compromise between space and convenience. Besides, engagement of a local politician in BT may enable the level of confidence of the people about their tenure status and it is evident in many parts of the developing world that the involvement of the political leaders may raise the confidence amongst the poor people despite them not having been provided with the security of tenure (cited in Baharoglu, 2002; Balamir and Payne, 2001).

Another issue which was raised by most of the respondents, from in-depth interviews and FGDs about the necessity of urinals in the community-based superstructures. It was mostly male respondents who raised this issue about their convenience for urination. It is observed in the study areas that men usually urinate everywhere in and around their neighbourhood and they have a tendency not to go inside the latrine for this. This may be due to the odour, the surrounding environment, the absence of urinal places or just a lack of civic awareness. More to the point, some female FGD participants from MCC recommended having urinal places for men because they don't want to see them urinating around their neighbourhood. Here, I would say that the residents are fairly well aware of the nuisance caused by uncontrolled urination behaviour but the absence of the necessary infrastructure might be the root cause of such a disappointing state of nuisance. Men prefer to use designated urinals so that they don't need to stand in a latrine queue. If these were available everyone's levels of satisfaction would rise.

Likewise, the options of elderly and disabled access in the communal facilities are additional features of sanitation technology that may introduce the issue of user friendliness. Here, children, the elderly and differently abled persons from around the community expressed their wish to have a household latrine. No special arrangement for these people has been found in the study areas, although DSK recently introduced community based sanitation technology in Kallanpur slum (not my study area) that can meet all such requirements. But the fact remains that these groups prefer to have household latrines instead of communal facilities because they don't want to go so far to use the latrine, as all of them need a certain level of assistance.

6.5.3 Odour

> *"I feel better to defecate near the river side. It is an odourless place but I feel disgust when I enter our communal latrine."*

One of the *'Bede'* respondents (aged 38) from KP who does not use their community hanging latrines added that the latrine should be odourless. The people are using this arrangement, which in his opinion is not good and they have no alternative place other than their filthy and unhygienic hanging latrines (Figure 4.9-D). But generally and without the exception, I got a unique message from all types of latrine users from the study areas that their latrines create odour and nuisance. Both the household PL and communal STL users say the same but the origins of their views were different. The household PL users assumed that the origin of odour might be potentially from their pit as the latrines installed inside the house and nearby cause the problem. But most of the communal STL users alleged that their state of filthiness is the foremost source of odour. This bad smell comes from the pan when someone leaves the latrine unclean without using enough water after defecation. It is important to mention here that this GO-NGO provided all of the latrine technologies with a water-seal option that prevents odour but at the same time needs a certain amount of water for flushing after every visit, which does not comply with local conditions as water availability is a significant problem in the slum areas. However, I found from the in-depth interview sessions with the respondents that the household PL users thought that they had to use water carefully during their latrine visit. They used water in such a way so that they can clean their anus at the same time it allows the faecal matters to be flushed from their pan. Despite this, the users often complained about the odour from the latrine. An exceptional statement came from Salam (aged 33) who has been living in BT since 2005 as a tenant:

> *"I use the same household PL but I never have bad smells from my latrine. It is possible to take food inside the latrine and it is not disgusting. We keep it clean all the time because it is situated inside our house. If we don't maintain properly, it will definitely create an odour, which will be a problematic issue."*

Salam also believes that the private household latrine is always a better option than that of community-based latrines, where technology is not a big issue. The only matter is keeping the latrine clean and use of water after defecation that can minimize the odour problem. The sanitation experts and NGO field workers agreed with Salam's opinion. Considering local context and inadequate supply of water, the sanitation experts tried to conceptualize the notion of ecological sanitation but they rejected the idea of introducing dry ecological latrines in Bangladesh due to social, cultural and religious disapproval to a large extent. I also tried to explore the understanding and acceptance of the concept of ecological sanitation among the male and female FGD participants but everybody discarded the idea and nobody wanted to talk about this option.

6.5.4 Durability and Robustness

Durability means the toughness and hardness of any structure but here I refer to durability as the ability of the superstructure to resist weathering action and abrasion. In the study areas, most of the STL superstructures are made of materials like brick, sand and cement, except the household PLs which are made of low cost materials such as several rings and a slab with a cemented/plastic pan. I observed that the service-life of STLs is longer than that of PLs in terms of both superstructures and substructures. Despite this, the STLs in the study areas have problems with the pipelines that connect the septic tanks with the superstructures. Pit latrines do not have these additional pipeline connections but this technology suffers with weathering action and abrasion of the pits. From the study areas, I came to know that the effective service life of PLs varies place to place, for instance 5 months in BB and 2 years in BT. The adjacent soil structure and physical terrain impact on the service life of PLs. As I mentioned earlier that the soil in BB is nearly saturated due to the presence of a sewerage canal near the slum and for that reason pits become full within a very short time. A sanitation expert from DSK mentioned that sometimes water moves in opposite direction, from the adjacent soil to the pits, which causes most of the problems with the durability of the structure and robustness of the technology. However, the poor durability of STLs is mainly due to faulty installation, low cost materials, user's carelessness, impact of floods and other local circumstances. From BB and BT, the PL users strongly agreed that the STL is a durable technology considering their service life and durable superstructure and substructure. All the respondents from four sanitation intervention study areas supported the durable outer shell of STLs. Despite this, in GCC, all the government-provided sanitation blocks are experiencing problems as most of them are now malfunctioning. DSK made another mistake through the wrong interpretation and reconstruction of one of those sanitation blocks. They repaired the septic tank and this made the whole sanitation block usable. A few months later the system again started malfunctioning. Then DSK realised the underneath composition of the land around the whole community which I mentioned earlier.

Apart from these arguments concerning the durability of infrastructure it is also important to find the reasons for people's dissatisfaction regarding particular technologies. Ahmed and Rahman (2000) stated that the on-site sanitation technology such as PL and STL often fail because of insufficient land infiltration and the soil's capacity to absorb wastewater with a high organic content. Alternatively, the underground rings of PL become pickled and lose their capacity to hold the pressure of wastewater and are unable to soak up liquid materials, which results early subsidence of the system. Despite this fact, DSK distributed a growing number of PLs among the slum residents to address the community's demand. The result has been an early collapse of the technology and afterwards people have been trying to use this either more carefully or by making changes to their initial designs that I described through Anwar's comment in section 6.2. However, the conditions of STLs are the same and they also release their wastewater directly to the canal through a pipe. Besides, during the rainy season or in floods the whole area is inundated, together with all latrines and water points, and the sanitation technologies or options are flooded to a depth of 3 feet of water.

Similarly, sanitation options in the GCC and MCC are also partially flooded. All these situations have made the sanitation technologies vulnerable: a situation that eventually affects people's satisfaction.

In a somewhat similar vein, the water connections in BB are also non-durable and might be regarded as a temporary arrangement. Actually, the water supply technology in the DCC area is similar for all the residents, which is a piped connection with a readable meter at the front. However, this unique system may vary due to local settings and types of connection. For instance, residents of the BB get water through several temporary loose plastic pipes (Figure 6.8), which are often disconnected from the main water supply point. This point is located under a bridge where the sewage canal flows. This place is nearly 500 metres from the community water point and during the rainy season the connection point is inundated. During this season the residents have to wait several days until a DWASA maintenance team arrives. During these days they receive filthy water, which is not drinkable or usable. A nearby and permanent metal pipeline connection would easily solve the problem and the residents have applied through the DSK to the concerned authority to get a permanent water connection nearer to their slum. Similarly, the entire water supply system in GCC and to some extent the MCC residents are facing water problems, which were the result of local physical conditions. The only biodegradable waste disposal facility that I found in BT amongst 5 study areas, has been recognized as an inappropriate technology due to the size of the system. It is durable but not robust to handle large amounts of waste materials (Figure 6.9) and the BT residents do not use this facility for the purpose it was intended for. The residents

Figure 6.8: Water supply arrangement to water points in BB

Source: Field Survey, 2010

Figure 6.9: Organic waste disposal facility in BT

Source: Field Survey, 2010

are completely unaware about the type of waste that should be disposed in those bins and some respondents called it a 'complex' system. The DSK was very enthusiastic to see the positive outcome of those waste disposal bins but the minimum response from the residents hinders the possibilities of installing a central bio-gas unit which is also one of the DSK's future plans. Therefore, it is understood that people usually welcome durable and robust technology but at the same time they will reject that technology if they feel the system is a 'complex' one. Nevertheless, the sanitation technologies especially the latrines in the other general slums like KP are of below standard or poor quality, and are generally non-durable and hazardous to health and the environment as well. Finally, it could be viable to say that, in parallel with structural and technical matters, behavioural issues always dominate the

technological dimensions as tolerance of sanitation technology is vital to assess their toughness/robustness where disgraceful behaviour obstructs the technological performances and vice versa.

6.5.5 Aesthetics

The common conception about aesthetics is a thing that is artistically valid or beautiful in a certain environment. The respondents from all the study areas were asked whether their sanitation infrastructures in the neighbourhood premises are aesthetically repulsive or not. To answer the question, most of the respondents living close to the infrastructures complained about noise and odour. Moreover, they specifically mentioned the state of adjacent sanitation infrastructure areas that often create muddy, slippery and damp environments, which are not aesthetically acceptable to most residents (Figure 6.10-A,B,C).

Figure 6.10-A,B,C: General state of adjacent WatSan infrastructure area in the study areas

Source: Field Survey, 2010

At the same time, those who are living comparatively far from the infrastructures also mention the same point. For instance, during the FGD session in BB, I also faced the noise problem that comes from an adjacent water point to the FGD venue. The noise was so immense and disturbing I couldn't communicate with other participants and vice versa. At this point, the participants arranged an alternative space to conduct the FGD sessions. However, it is understandable that residents from distant locations are inevitably less disturbed or affected than the residents who are living nearby. On the other hand, the household PL users are satisfied regarding the aesthetics issue. One BT resident, Ramiza, mentioned that

> *"I have constructed a household latrine inside my room. I made a wall to hide it and I have been using a screen as a door. As long as it is clean it will not create any nuisance and not reduce any aesthetic value. The good thing is, I am not giving any trouble to other residents as I am holding it inside my room even if it has taken up some of my living space."*

Ramiza's comment is common and complies with those of other PL users, whereas community-based STL users used a variety of explanations that restrict the aesthetic value of that technology, mostly related to the deterioration of neighbourhood environment through appearance of superstructures as well as filthy surroundings due to excessive use of that place.

6.6 Maintenance

Maintenance of a sanitation technology depends on the type and characteristics of the system. Both expensive and low-cost sanitation technologies require a level of maintenance work to function properly. It is presented in a report of IRC's (1997) joint research programme about the necessity of maintenance of low-cost technologies which offer a viable and satisfactory long-term alternative for the safe disposal of human excreta in urban slums, provided that requirements for maintenance are taken into account from the start. This report also illustrates that "the maintenance of low-cost sanitation systems is not an issue that only comes up when there are problems with the functioning or use of the installed systems, or when pits or tanks have to be emptied" (p.83). Nor is it only a private concern of the individual households. Rather "the maintenance is always dependent on local conditions, both with respect to technical and socio-economic feasibility and to users' attitudes and capabilities, as well as the number of users" (IRC, 1997, p.83). However, during the fieldwork in the study areas it was found that the GO- and NGO-provided sanitation infrastructures require extensive maintenance work in both latrine superstructures, substructures and water points. The problems and maintenance issues are similar in all the study areas but the willingness to maintain the infrastructure varies among the household and community-based technology users. In general, the household PL users are very keen to clean and maintain their facilities while I found a mixed scenario with communal facilities. Anschutz (1996) also found that the communities have low willingness to keep public spaces or facilities clean because they usually think that these are the responsibility of the state and there is a tendency for societies to sweep problems out of the house and into the community (Smith and Ezzati, 2005). Apart from the state's responsibility the community people didn't ignore the importance of their tasks and moral duties to maintain the cleanliness of their common property but the actions are not visible in reality. Besides, property rights arrangements also have an influence to the community people as to how they manage their resources such as public or private facilities (Adhikari, 2001). However, in the study areas, most of the community-based technologies are operating along routine lines, with a clear division of responsibilities and some control actions but users are not active in their duties and responsibilities when control actions are somehow ineffective. In this regard, Werlin (1999) emphasizes private sanitary facilities and argues that public sanitary facility will not resolve the problem. For instance, some users like to avoid their cleaning turn and say that they have cleaned it (communal latrine) already. One female resident (aged 25) from GCC stated that

> *"It is quite straightforward to clean household latrine because only our family members are using it but it is painful when our turn comes to clean the communal latrines because many people are using them, including outsiders. I think, everybody feels disgust while cleaning communal facilities. In fact, urine and faeces are the most disgusting thing in the world and everybody dislikes even their own urine and faeces."*

This is a very common feature of human behaviour that obstructs and impacts the maintenance process; while it seems that the 'divisions of responsibility' and 'rules' are associated with successful community-based resource management. But, most of the recent literature on heterogeneity and collective action presume that socio-economic differentiation and group heterogeneity makes cooperative arrangements and management more difficult (Adhikari, 2001). However, learning from the context of Tamil Nadu, India, D'Souza et al (2009) presented an example of successful management through 'self-help' initiative which is comparable with BT where the appearance of both PL and STL technologies give the impression of better management. Whereas in BB, the communal STLs give an ideal impression but the residents deliberately took some unfair modification of their technology to avoid frequent maintenance that I mentioned earlier in section 6.2. In GCC and other GO-NGO-intervention study areas, I found that no unique rule exists amongst the users regarding maintenance activities. Much depends upon individual or group decisions, while the community people have made their own rules and regulations for the management of their sanitation system. However, it is noticeable that the men are not usually involved with the infrastructure management such as operations, maintenance and cleaning. Women particularly look after these infrastructures and they listen to suggestions from men when tackling bigger problems and taking decisions. I found an exception in KP where the key respondent Mohini, who is aged 50, made her own sanitation system using locally available materials such as bamboo as floor, wall and screen, a *'kolshi'*-head as a squatting hole and a piece of wood to cover the squatting hole (Figure 6.11). She has been using this latrine since 2005 and until now hasn't experienced any major problem such as emptying the pit or any major maintenance work. In her opinion the latrine is clean and hygienic as she covered up the squatting hole after latrine use to restrict the odour. The adjoining soil structure is dry and there is a lower possibility of the entire superstructure collapsing into the dug hole. She told me that

Figure 6.11: A handmade latrine with locally available materials

Source: Field Survey, 2010

> *"It takes nearly one month to build the whole superstructure because the hole needs to be dug very carefully. After plastering the wall of the dug hole with sticky mud it needs to be dried several times to make it robust. I came to know about this from my father. I maintain my latrine with a lock and key so that other residents cannot abuse my latrine. It is still working because we are the only users and we maintain it with care."*

Here, Mohini's comment reflects her satisfaction level and the latrine has minimized her anxiety and the almost zero maintenance effort has made her happy. But she is suffering from water problems, as she had to buy it from a water vendor from two-taka per *'kolshi'* basis and she uses this water only for drinking and cooking purposes. Water from other sources (river, lake, pond and dug-well) is utilized for cleaning, bathing and flushing the latrine. Others in the community dug a well to get water for other household tasks but they

could not get enough from that source. Now it is completely abandoned and they have not taken any initiative for its further maintenance. From the above discussion, it seems that the operation and maintenance of sanitation technology is better where the users are from one household whilst the community-based technology generally lacks proper and timely maintenance initiatives (Anschutz, 1996). More about the maintenance of sanitation technologies will be highlighted in the next chapter as it mainly associated with the management of infrastructure and governance.

6.7 Gender and Technology

The needs and priorities of men and women concerning sanitation technology are often different, as their tasks, concerns and responsibilities are dissimilar. Women around the world especially in Africa, Asia and Latin America work hard to collect water in order to care for their children and other family members. Murphy et al (2009) indicate that women have a crucial role in technology development as the majority of WatSan-related activities are performed by women, as I found and mentioned earlier about a successful example and innovation of household latrine by Mohini, who was my key respondent in KP. However, there are many challenges when incorporating women into the technology innovation process. Various socio-economic, religious, or cultural barriers may hinder their participation. Gender is increasingly discussed in papers and different forums but real action in programmes still seems to be limited (Ahmed and Rahman, 2000). This may, in part, be because the topic is only recently gaining importance internationally and generally in Bangladesh, women are not regarded as equal to men, although Hossain et al (2004) found that giving women equal access and empowering them results in project success. During my fieldwork in the selected slums I considered female groups as equal to male groups and organized the same number of FGD sessions and in-depth interview sessions for them both. However, from the FGD sessions it is revealed that the options of a sanitation technology are important issues for women, such as number of chambers, bathing places, urinals, options of extra space for adolescent girls and women, and water availability, etc., that may offer a certain level of privacy and convenience. For instance, adolescent girls and women need extra health care during the menstrual period and they can't manage it in the home because they tend to live in one room with other family members. Some of the middle-aged FGD participants from GCC said that a separate chamber in the communal facilities should be installed for the special needs of adolescents and women. But arguably, younger participants protested they would feel embarrassed to use this chamber as they would fear somebody seeing them entering or leaving it. They don't want anybody to know about their menstrual periods in this way. Considering this issue, most of the female participants initially supported the idea of single-household technology but after the discussion regarding different sanitation options in the FGD session about their advantages, disadvantages and facilities, all of them came to a concrete decision and chose community-based STL technology. Women participants from the three other study areas also came to the same opinion. But opinions expressed in the community setting of the FGDs are rather different when they are alone during the in-depth

interviews. This might be the influence of so-called social bonding, where respect is shown for other members of the community. It doesn't necessarily mean that the male respondents do not have any respect for others but most of them favoured community-based latrines because it would not reduce their dwelling space.

Regarding water, it is widely recognized that the women are mostly responsible for collection from various sources because they are the main users while washing, cooking, caring, and so on. The existing technology operates manually and the users need to pump the tubewell in order to get the water. But most women responded that the option of having a tap would be a big advantage for them, as they don't have to put any extra effort into getting water. This is, however, unrealistic in the context of Dhaka city where water in the pipes is only available for 1-2 hours. The existing underground/overground storage tank (Figure 6.12-A,B) and the

Figure 6.12-A,B: Communal water storage facility

Source: Field Survey, 2010

tubewell option usually extends their service beyond these hours subject to the availability of water in the storage tank. But in GCC and MCC some tubewells that had been installed privately could lift water at any time but the water is smelly and dirty and not suitable for drinking. Therefore, they use this water only for cleaning, bathing and flushing the latrines. However, pumping water from these tubewells by hand is laborious. One DSK official claimed that their existing water supply technology is suitable which is the end product of research, community responses and experience. Finally, it can be concluded that the privacy, convenience and various options within sanitation superstructures are the main driving force prompting choice of a certain technology.

6.8 Technology and Cost

In sanitation-related debates, the cost of a certain technology is often a big issue, while many argue that low-cost sanitation technologies are the best solution for low-income settlements (Pathak, 1999; Pathak, 2006; Singh, 2005; IHS, 1997; Oxfam, c2012; GoI, 2011). By contrast, I would say that a durable, simplified and affordable technology could be appropriate if it offers a longer service life as well as helps to raise users' satisfaction. People also understand that low-cost technology has a shorter life and my fieldwork experience suggests that people are usually reluctant to rebuild their latrine again after a short period. The possibility of longer service life offers the community the chance to grow a certain level

of their practice in using latrines that could let them builds their own system again without any external motivation. I observed that most people in slums with NGO intervention are eager to spend money to get sanitation facilities and not all of them had anxieties about the cost because their current arrangements are based on small monthly installments, where DSK is implementing a cost-recovery approach in a vision that will create a sense of ownership among the users that may lead to sustainability (DSK, 2005). Therefore, I think that the existing arrangement is sensible and may offer the community a better technology with a substantially longer service life. However, proper and constructive motivation from the government may also motivate people living in GCC and MCC to start contributing money for a sustainable sanitation technology for their own betterment. At this juncture, the implementation of this approach in low-income settlements could be more effective if the government took the initiative to legalize these clusters (SEHAB, c2004), and many suggested that this land tenure problem should be dealt at the policy level (Balamir and Payne, 2001; FAO, 2002) rather than the project level (Baharoglu, 2002) or through the community based enumeration process (Arputham, 2012; GLTN, 2010; Patel and Baptist, 2012; Patel et al, 2012; Muller and Mbanga, 2012; Payne, 2005). This is a matter of long discourse and a potential avenue for further research. Abdul from BT said in this regard

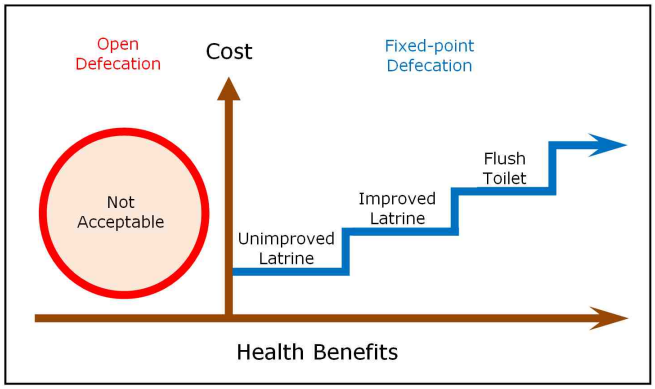
> *"We don't want the land free of cost from the government. But we need support from the GO, NGO and different donor agencies. I know they are spending lots of money to improve our lifestyle. But they won't be able to reach their ultimate target until they provide land ownership. I think, everybody may build their own infrastructure like houses, latrines, water points, etc. but it is difficult for us to get land in Dhaka. Most of us are ready to contribute money through monthly installments to pay for the land. So, if they help us to get the expensive land, I think, we can help them to reach their target without any investment through projects."*

The term 'cost' and 'affordability' come to the front while these are the most challenging constraints in the selection of durable and robust technology. Internationally, the political economy of sanitation technology shifted their focus several times whereas the government of Bangladesh is still implementing their 'some for all' and 'supply driven' strategy to improve the sanitation scenario where the key component is low-cost technology. I also understand the fact that if the technology is not affordable, it is not suitable for the slum areas and I support Murphy et al's (2009) comment that the cost should closely match the willingness to pay and ability to pay of the users of that technology. In that point, I observed from the field that most of the people are currently using very efficient STLs in the selected GO-NGO intervened slums, which is relatively considered as expensive technology, and most interestingly people are paying for this service and show eagerness to get more convenient options with water tap inside the latrine although a problem associated with final excreta disposal persists in the slum areas. Here, I observed that the slum dwellers are willing to pay for a good quality option but for better results it should be considered as a key challenge to motivate and make people aware about the cost-benefit scenario with some local evidences to make people understand the effects of good sanitation so that the new political economy towards 'more for some' should be in focus.

6.9 Technology and Human Health

Most research on sanitation explored the fact that access to adequate sanitation is key for improving human health and well-being (UNU-INWEH, 2010; Botting et al, 2010). Health issues are not emphasized in my research objectives but I tried to include this section to explore whether or not people choose their technology considering the direct health benefits. Although Caldwell et al (2002) explored the reasons of deaths of the poor people which partly explained by poverty, folk belief about illness, treatment options and lack of appropriate health services but it is also crucial to identify the relationship between those deaths and poor sanitation or technology. While defining the sanitation ladder (Figure 6.13)

Figure 6.13: The Sanitation Ladder



Source: Morella, Foster and Banerjee, 2010
(Modified by author)

Morella, Foster and Banerjee (2008 and 2010) link between different technologies (from unimproved to flush toilets) and associated health benefits and argue that the higher unit cost or improved technology determines lower level of health risk. It is quite difficult to unscramble the nature of various diseases and epidemiology of the situation of why the slum residents are catching water-borne and different skin diseases. I am quite aware and not ignoring the fact that human faeces are the root cause of most of the diarrhoea, cholera and other related diseases but, I would argue that these diseases may not necessarily result only from sanitation but rather the impact of surrounding unhealthy environment, people's practices such as ineffective handwashing (Luby et al, 2011), use of dirty water, and so forth. While analyzing the environmental risk transition theory, Smith and Ezzati (2005) defined this issue as 'causal risk factor' and argue that some cases of disease are caused by multiple risk factors and the risks act in combination with one another. Apart from this theoretical argument, it is also a matter of concern how the slum people define water-borne or other related diseases. I got an interesting comment from the owner (aged 28) of a local drug store in GCC:

> *"Children are severely affected. Most children continuously suffering from loose motion (mild diarrhoea), stomach pain and skin diseases and their parents never took it seriously until it got severe and require to admit in the hospital. They consider this kind of suffering as part of their life and never regarded as disease. They don't want to buy medicines but interestingly, I mostly sell water-borne disease-related medicines. Now, you could realize the number and scale of the affected people."*

He also pointed out that there are several causes for the prevalence of these diseases that I also found during my field investigation and the causes are unhealthy living environment, impure water and not using sandals or shoes while using latrine. Another respondent from BT also pointed out that they never took skin disease seriously (Figure 6.14-A,B,C) whereas diarrhoea is widely ignored until it turn into severe cholera. It seems a contradictory issue

Figure 6.14- A,B,C: Skin diseases amongst children

Source: Field Survey, 2010

while the NGOs are claiming that once the hygiene education programme is successful, the health situation will improve dramatically. But I found that the causes of these water-borne diseases i.e. quality of water and associated treatment options are not major concerns of the NGOs. The quality of water which is universally known as major source of water-borne diseases is largely disregarded by the community due to associated cost. One respondent from GCC (aged 43) said that

> *"Stomach pain and mild diarrhoea are painful but tolerable whereas continuous effort towards 'firewood for boiling-' and 'tablets for purifying-' the water is a matter of anxiety and constant headache".*

Here, the same issue again came across while there is nothing to blame the technology regarding the causes and episodes of water-borne diseases but rather the people's understanding and practices that often determine the health status of the community. Although WaterAid (2008a) demonstrated that access to improved excreta disposal alone can reduce the rate of childhood diarrhea by up to 43 percent. Evidence from the study areas revealed that people chose their technology not considering their direct health benefits but rather other components such as convenience and cost mostly acts as determining factors.

6.10 Technology and Environment

According to WHO (2008) a large proportion of the population in developing countries is not served with adequate WatSan services while untreated sewage is discharged directly into the rivers, lakes, canals and wetlands that impacts human, environmental and economic health (Jewitt, 2011). In Bangladesh especially in major cities, the environment is tremendously affected due to unplanned, inadequate and low quality excreta management options. It is not only visible in the slum areas but it is polluting the whole urban environment hence affecting household, community and society (WHO, 2008). In the study areas, the condition of environmental wholesomeness is undeniably questionable and the existing sanitation technologies and their excreta handling/management capacities/options could be regarded

as below standard, non-robust and of low quality. I found broken pipelines/pits/septic systems even in the best cases in MCC and BT where excreta are directly exposed and create a nuisance to the surrounding environment (Figure 6.2). During the field observation, it came to my mind that this might be a fault of the technology but after close investigation it was revealed that the cause was mainly due to low-quality construction materials and not the design of the technology. The local people and the users raised the question about 'durability'. Both STL and PL users stated this fact and some argue that

> *"We, the users are responsible for that. Our latrine is good but we don't know how to take a good care of it. The visible front part of the latrine is good but we often don't care about the situation in the back side which is simply not tolerable."*

A respondent (aged 27) from BB vigorously opined the overall environmental condition of their slum and added that

> *"Don't talk about good environment. We know what is environment but we can't maintain it due to our location and we don't have even very basic things. In this situation, nobody can act to maintain good living environment as we smell the shit all round the year. Even if we want, we cannot improve the situation because we are living near the 'shit canal'- the most disgusting thing in the world."*

From these two comments it is revealed that the technologies are suffering from two interconnecting issues in which one is related to physical infrastructure and another is related to people's thoughts about their overall living environment where communities' desire for a clean environment is substantially concealed or buried over the existing situation. They always feel and find themselves helpless to see the extent of the problem. Here, Jewitt (2011, p.617) argues that "a wider desire for cleanliness (environmental and personal) has been important in creating demand for improved sanitation" while Black and Fawcett (2008) indicated that 'a cultural revolution' is necessary not only among potential consumers, but among sanitary engineers, bureaucrats and politicians (cited in Jewitt, 2011a) to reduce environmental burdens, increase sustainability of environmental resources and allow for a healthier population (WHO, 2008). Satterthwaite (2003) precisely links urban poverty and the environment and further exemplifies possible synergies between well-managed services and long-term environmental goals. However, from the field investigation it is revealed that the geographical perspective of environment is substantially an ignorable phenomenon for both benefactors and beneficiaries group. Generally, during the project-planning phase the environmental issues were considered but in the implementation phase, the environment is always neglected. Bangladesh has 'Environmental Conservation Rules, 1997' and 'Environmental Conservation Acts, 1995' but these policy documents are ineffective since its inception. However, in practice, Bangladesh is currently not on the track in environmental protection campaign but it is also true that the country is not recognizing severe environmental degradation causing from unhealthy latrines from thousands of urban slums. Here, I would argue that, even the simplest form of low-cost pit latrines could be effective in some local conditions. Here, technologies are built to solve sanitation related problems and different technologies are made to suit different situations. Despite this fact, technology

remains at the centre of all discourses where blame always goes to the technology not vice-versa. The benefactor organizations are well aware of the environmental situation and pollution from the provided sanitation technologies but they have almost no mitigating options other than giving motivation to the people concerning hygiene behaviour and good practices.

6.11 What Works and Why?

The discussion presented in this section is slightly integrative that concentrates different social and technological issues. This includes a summary of people's practices and their impact on different technologies while an attempt is made to present a guideline for future development of this sector. It is arguable that onsite sanitation technologies such as PLs and STLs are appropriate for slum areas as they are relatively low-cost but space is always at a premium in urban settings and these technologies require a certain amount of land for the wastewater to soak away effectively. On the other hand, offsite technologies or conventional sewerage systems which are appropriate in urban areas are not feasible for low-income settlements in a belief that people will not be able to pay for the service and the whole system is very expensive even for the governments of developing countries. In fact, sewerage networks in Dhaka city cover only about 30 percent of the area. It is unrealistic to think about the sewerage connections in the slum areas where major residential and commercial areas are unserved or underserved. Therefore a strong institutional setting as well as a simplified sanitation technology needs to be introduced in the slum areas that could offer durability, convenience and require less maintenance; this would increase the level of user satisfaction. Here, together with many, I will also argue that 'change is possible when people change their practices' and my understanding about people's perceptions about sanitation technology is not the thing that will solve the entire problem. Rather, a sensible demand from the community as well as a strong and effective social institutions such as CBOs could play a big role in managing the infrastructures, where the service provider's role will be that of promoting sanitation technologies, motivational activities and necessary follow-up/monitoring programmes. This is the impression I got from BT, where both PL and STL technologies as well as tubewell with ground water storage, are working effectively with strong social institutions and continuous support from the benefactor organization.

From the above discussion we can say that the choices of technology, as well as the community responses, are very difficult to determine when opinions vary according to the local setting. Much of the discussion so far has inevitably made reference, either directly or indirectly, to people's individual demands and preferences. Despite this, these diverse opinions, demands and preferences are evidence of a simple individuality that could be used positively as a foundation of project success. This simplicity makes people flexible in decision-making while choosing a technology from a range of options. A strong motivational campaign and proper follow up activities could persuade people to the 'right' track which might be a source of stimulation from the GO-NGO point of view. Obviously appropriate

sanitation technologies facilitate sanitation programmes to a great extent but it is quite difficult to determine which technology is suitable for urban informal settlements as the local contexts are different in each slum. Moreover, these sanitation technologies sometimes contradict the national sanitation strategy and other policy recommendations that are discussed in chapter eight. It is important to generalize the context of urban slums, which may help to evolve an appropriate sanitation technology that could be further modified considering local diversified contexts. But the major question is how to generalize the context and how to select a technology that also satisfies people's needs and priorities where local settings are different. For instance, the ownership of a latrine (household and communal) always became an issue where community-based shared technologies/facilities face most of the operation and maintenance related challenges. It also rises the question 'why people do as they do' that pinpointing the state of people's practices. Here, the answer is not quite straightforward as a specific answer to this question from the residents always underscores the lack of either latrine facility or adequate water. This is obvious but if we observe critically then a series of interrelated issues come to the fore that simply have power over people's practices. As stated, one of the reasons is associated with ownership or public-private facility where people's sense of cleanliness, operation and maintenance seems optimal in managing their private facilities only. Apart from this, some governance, technology, neighbourhood environment and personal behaviour-related issues such as ignorance, carelessness, heterogeneity of the residents, illegality and extent of other local problems often determine people's practices. Therefore, it could be argued that people do this unintentionally; and, apart from the issue related to inadequacy they will not be able to identify any reason or find the answer 'why we do as we do'.

The above-mentioned issues are also linked with the land tenure where people couldn't recognize themselves as permanent settlers, which dampens their spirit to improve their neighbourhood environment. Here, I would argue that, the issue of land tenure is another factor that may revolutionize this sector. I am raising this argument because my fieldwork experience suggests that the state of preference amongst most residents of the study areas is that they would prefer to have permanent land tenure or ownership of the land and not sanitation which was presented in Table 5.1 in the preceding chapter. However, the responses from all the community seem realistic which is reasonably acknowledged by many researchers where people are not eager to invest anything without the security of land (Agbola and Agunbiade, 2009; Baharoglu, 2002; Boonyabancha, 2009; CUE, 2010; DiNino et al, 2006; Toomey, 2010; Uzun and Colak, 2007). Conversely, it is not guaranteed that the people will change their behaviour or sell their land after getting ownership in order to raise money. This is unpredictable and needs specific terms and conditions to make further decisions in this regard.

When specific issues regarding the technology comes across, the concept of 'some for all' and 'more for some' should be explored. It is often argued that the complex social dynamics of those slums, inappropriate or inadequate facilities, and incompetent governance system, obstruct the pace of WatSan interventions where responsibility goes to both of the parties

i.e. benefactors and beneficiaries. Arguably, these obstructing factors might be the result of the 'New Delhi Statement', which supports the 'some for all' concept rather than 'more for some' (IDS, 2011; Nicol, Mehta and Allouche, 2012). Here, my standpoint is apparently optimistic; as my proposal is to think beyond 'low-cost' and introduce the term 'affordable' for a sustainable solution to sanitation problem across major cities. My argument simultaneously supports both concepts to ensure long-term sustainability while this strategy may create a new political economy in this sector. The current 'some for all' strategy should be continued across the city and simultaneously it would be worth constructing simplified sewerage networks or septic systems in selected densely populated slum neighbourhoods and connecting them to nearby sewerage networks. All these construction process should be implemented phase-wise considering the priority areas across the city. It partly supports the concept 'more for some' i.e. more investment in some projects, which I believe, could offer long-term sustainability through reinforcing strong 'social-technological-governance' system. In so doing, we should avoid looking at problems exclusively through the eyes of an engineer as Murphy et al (2009) stated that this might not be a sustainable solution if multi-stakeholder collaboration is not taken into account and cooperation from GO-NGOs and other related stakeholders will not be ensured.

6.12 Conclusion

Finally, considering the discussion in this chapter, we have seen that the choice and appropriateness of sanitation systems for urban slum areas is difficult to evaluate, as several local issues and contexts are obstructing the overall performance of individual technologies. In this chapter a minimal effort has been made to evaluate the performance of technologies and the emphasis has been on understanding the factors that are obstructing the performance of each technology. The technical part of a sanitation system is inevitably important for the success of a certain sanitation project but the benefits of various sanitation technologies cannot be quantified and the final approach in identifying the most appropriate type should rest with the intended users. But, the fact is that users are generally not aware about the technologies per se. Therefore, a mixed approach, for instance the well-recognized 'participatory' method, should be introduced and used in a way where the service provider will take the final decision in technology selection considering opinions at the grassroots level. Moreover, to make constructive recommendations about a viable technology for the slum areas, in-depth and sophisticated research should be carried out to consider the context of cities in developing countries.

My contribution in this chapter has been in considering the decision-making process and I have tried to explore the existing problems that sanitation technologies are experiencing now in urban slums. I also consider the fact that users should obviously be consulted before the introduction of any sanitation technologies but my understanding about people who are short of information and giving them ultimate decision-making power regarding the selection of a technology does carry potential risks, because peoples' opinions are flexible, diverse and

giving them decision making power may create another social problem. Alternatively, after consultation with the people and accordingly considering their voices regarding a technology, it is fruitful to offer a locally sustainable technology (Murphy et al, 2009) with pre-designed motivational and convincing statements to the targeted community, which should also address the 'cost' and 'affordability' agendas. Mara (2012) added that some governments have done well because they 'think clean' and have 'invested in clean' which also could revolutionize this sector for a longer term. So, the government should take necessary steps to contribute to this sector through changes in policy and practices in the field. However, my general impression about technology in this chapter is that the term 'technology' is situated in the middle of all WatSan related discourses and is continuously criticized for their inappropriateness, inability, inefficiency and worse performance. Here, I would argue that both social and governance issues often rule the technology and project failure is not determined only through the technological setbacks. The next chapter will demonstrate the issues of governance that are vital in every segment of WatSan projects.

Chapter Seven

Governance Systems and Sanitation

Chapter Seven
Governance Systems and Sanitation

7.1 Introduction

The benefits of improved access to water and sanitation are obvious. It is obvious to us, but while analyzing the field data and different quotes in particular, it is identified that the residents of my selected study areas often had more pressing priorities and rather failed to see the benefits of having clean water and sanitation. However, a topic for discussion at the outset is why WatSan problems are so acute in developing countries. Is it because there is not enough infrastructure or is there another reason? It is widely recognized that most developing countries suffer from inadequate infrastructure. Apart from the lack of demand from the community end, WaterAid (2008) has clearly stated that the problem lies largely with governance, where managing and distributing the available resources for the maximum and equitable benefit of everyone has not been ensured. Research on urban governance offers valuable analytical frameworks for understanding the interacting coordination and regulation mechanisms in urban politics, their spatiality, and the new challenges for city governments (Monstadt, 2009). But in Bangladesh, the emergence of urban governance related research especially highlighting the relationship between civil society, the state and the market are substantially ignored. Monstadt (2009) added that good urban governance will be ensured when the power is distributed across multitude of actors, scales and not dependent upon local public authorities. The fact that "black money nurtures corruption in Bangladesh through politics and bureaucracy, subverts democratic values to undemocratic governance" and so creates discrimination between the different groups in society, feeds inequality and obstructs successful social and economic development (Hasan, 2007, p.2). All the regulatory bodies generally suffer from a lack of precise responsibilities, little or no real power, and co-option by the government and/or the private operator, all of which ultimately jeopardize the interests of the users (Hardoy et al, 2005) and so ultimately affects the poor people. However, in this research, governance has been presented in a way where I have tried to explore how the openness, transparency, accountability and other aspects of the existing governance system from different levels are impacting the effectiveness of WatSan services delivered to the urban poor. In this chapter, the empirical facts and evidence of the study are extensively analyzed and presented from the different qualitative field investigations in order to explore the possible governance-related issues that facilitate and hinder the GO-NGO-managed sanitation programmes in the selected slums. This will

contribute to uncovering and remedying failures partly because direct approaches to tackling governance failures tend to be difficult and are presently not much answered by the academics, bureaucrats, policy planners or implementing agencies in Bangladesh.

7.2 Concept of Governance

Governance as a theory is still emerging in the field of public administration. Due to its varying nature, it has been under debate in the past several decades as a theory and practice among practitioners and international aid agencies (Asaduzzaman, 2008). Governance has become an important issue in the discourse of contemporary political and global development (Ara and Khan, 2006) as widespread failure of economic adjustment, misuse of public funds, weak public administration including bureaucracy and corruption are still persisting throughout the developing nations. The concept of governance has been viewed from a number of perspectives, ranging from a relatively narrow to a wider one. It has become a common phenomenon in the literature of international aid agencies as a precondition for aid receiving countries (Rhodes, 1997). The World Bank (1994) defined governance as the manner in which power is exercised in the management of a country's economic and social resources for development. In other words, governance may be taken as denoting how people are ruled, and how the affairs of a state are administered and regulated (Landell-Mills and Serageldin, 1991). Governance relates to ways in which decisions are taken and implemented by state authorities and civil society organizations. The term is normally associated with the exercise of power and authority for the management of national resources with 'good governance' implying social justice, basic human rights, transparency, efficiency, accountability, partnerships, empowerment and a willingness to address corruption and its underlying causes (Asaduzzaman, 2008; Leftwich, 1994; Siddiqui et al, 2000; UNESCAP, c2012; World Bank, 1994). Against this background WaterAid Bangladesh and their partner organizations working in the WatSan sector describe governance as

> *"…the processes and institutions, both formal and informal, by which the state interacts with citizens and others that are affected by the activities of government. Participatory governance places a special emphasis upon the inclusion of the people, particularly the poor (ASEH, 2004)."*

WaterAid introduces 'people's participation' in a belief that governance as a result will be effective and smooth to tackle complex social settings. However, the governance process is described in this chapter from the viewpoint of several interconnecting issues, i.e. social, technological and institutional which are vital in sanitation projects; where I am considering how different actors or stakeholders behave in their own social or institutional settings and how these issues are affecting WatSan projects. However, this analysis addresses mainly local and institutional issues where I tried to explore the interfaces between the rules and the culture, i.e. beliefs, values, norms, practices and attitudes, of different actors that facilitate or hinder GO-NGO-managed sanitation interventions.

7.2.1 Social Governance: The term 'social governance' is conceptualized here to describe different social issues that have evolved within the community settings and are impacting the GO-NGO-managed sanitation interventions. For instance, existing power relations within the community is one of the vital social issues that need to be solved/minimized before any intervention for a better project outcome. Here, the DSK currently implementing their project through this reverse strategy where generally project interventions need to work around existing power relations. Here, I try to describe how these kinds of social issues impact overall governance system in GO-NGO-managed sanitation interventions.

7.2.2 Technological Governance: This concept is adopted to illustrate the problems and the community initiatives taken toward the operation, maintenance and management of GO-NGO-provided sanitation infrastructures. The WatSan technology or infrastructure-related governance issues have been considered here. For instance, cleaning the latrines and water points is one of the vital parts of technological governance where an attempt has been made to describe whether the community is maintaining for instance, its cleaning schedule, how they systematize the cleaning schedule, what are the problems, and how do people respond? Empirical evidence from fieldwork will be considered to elucidate the state of technological governance.

7.2.3 Institutional Governance: In this chapter, institutional governance focuses on the regulatory framework of both macro- and micro-level institutions i.e. GO, NGO, CBO, community groups, and committees that are associated with my study areas. The formal and informal nature of their work, accountability mechanisms, leadership structures and transitions, problem-solving mechanisms, political boundaries of those institutions will be analyzed to evaluate their existing governance structures and gauge public perceptions and performances of each individual institution. Both the existing governance-related literature and field-level qualitative data will be discussed here in order to explain the state of institutional governance.

7.3 GO-NGO Activities

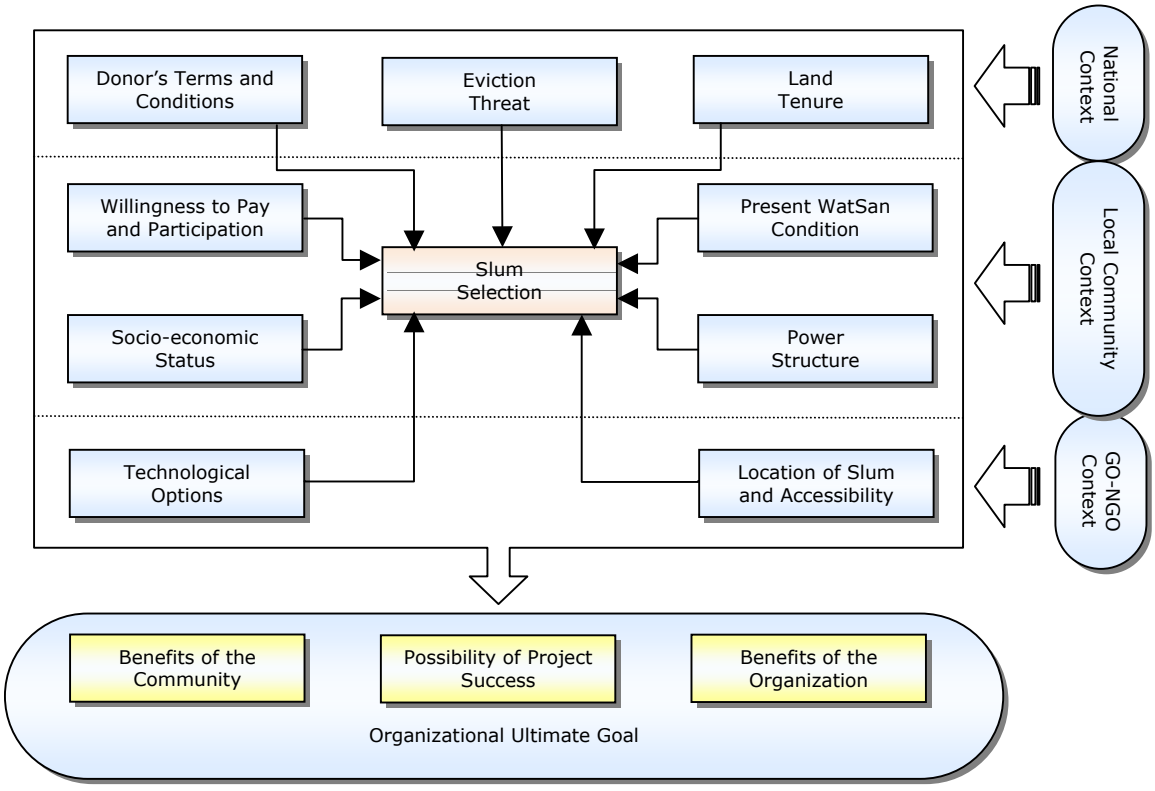
It has already been suggested by different actors that political commitment by government is one of the major driving forces for achieving progress in sanitation (Mwangi, 2000; Newborne, 2008). Basically, a government's willingness to work in partnership with NGOs, development partners, civil society, media and private organizations, has provided a wider platform for forming multi-stakeholder partnerships that have played a catalytic role in the sanitation sector and created a synergistic effect in achieving the goal of sanitation (LGD, 2008). Despite this, WaterAid Bangladesh and partners have identified a set of issues that act as barriers to the encouragement of pro-poor governance at the community,

organization and state levels (ASEH, 2004). Moreover, the NGOs are facing major challenges like lack of concrete strategies, donor-imposed terms and conditions, transparency and accountability of financial practices, competencies in local resource mobilization, community capacity building and handling various socio-economic and political problems. Whereas, government organizations such as DCC, DPHE and DWASA are more geared to the concept of 'facilitation' and accordingly, I didn't find any remarkable government initiative associated with WatSan infrastructural governance at the grassroots level. Both GOs and NGOs initially need to follow specific guidelines, as this is vital for governance in different hierarchies. Therefore, a detailed existing governance mechanism is outlined sequentially in the following sub-sections.

7.3.1 Project Location: Target and Selection

Choosing a project location is one of the central issues while thinking about sanitation interventions. As an NGO, the DSK initially attempts to look at the likelihood of slum eviction before choosing any project location. They try to get information regarding the status of the slum from the community, government organizations and from the landowners, as appropriate. Apart from this eviction threat the DSK considers several vital issues during slum selection from the context of national, organizational and local community points of view, as presented in the following flow diagram (Figure 7.1). Numerous governance-related activities are taken into account when taking this vital decision. However, after this assessment has been made, they usually decide their intervention strategy on the basis of the needs and priorities of that particular community. Their final but hidden agenda or

Figure 7.1: Issues considered for the selection of DSK project locations.



ultimate target is to assess whether their project in the selected slum could benefit the community and the organization in the long run.

During my interview with DSK personnel, it was apparent that they select their project areas using their own strategy of vulnerability assessment. Highly vulnerable communities and those lacking sanitation facilities are often prioritized. The organization also assesses the level of the people's interest, enthusiasm, willingness to pay and participation regarding their project. They also try to understand the internal power structure of the targeted community. Apart from the internal and external power structure, they try to avoid communities where there are problems like musclemen activities, strong political influence, threats of slum eviction, and especially existing conflicts among the community. Ironically, if they face any difficulties regarding the power structure, they try to minimize them first before targeting a project area. First, they try to assess the moral fiber of the associated influential persons, whether they are helpful or not, and then they try to include them as CBO representatives. Considering the responsiveness of designated people, the DSK tries to include them as a member of the executive committee, such as president, secretary, treasurer, or member. On the other hand, DSK does include influential musclemen as members of the advisory committee to make them happy and to keep them quiet. It is a hidden strategy of the DSK that the organization tries to make them understand that they are in the top position of the CBO committee but in reality they do not have any sort of power to oversee the activities of the CBO executive committee. The DSK has had good results with this kind of strategy and they are able to motivate the advisory committee to deal with different social and political problems that may hamper the sanitation programmes in their community. The DSK executed this sort of practice, which on the one hand enables the environment through an accountable governing body, and at the same time brings the people closer together, and this can be regarded as a strategy of 'good governance'. My fieldwork experience suggests that the above-mentioned issues have been considered in BB and BT except for the extent of vulnerability assessments. Here, I would argue that the slums that are relatively better off or have higher demand for sanitation have been selected for the WatSan interventions; whereas vulnerable slums are neglected from the outset for fear that a project will not be successful there. One '*Bede'* respondent (aged 40) from KP, who is also a leader of that community, mentioned, while putting an extra emphasis to his voice:

> *"They will never come to our place because they knew much better about us and they identified that we are unable to pay for their service. They will not provide us even a little."*

His argument might be a result of personal opinion and an anti-NGO perception but my observation partially supports his statement because I found that other small slum clusters that are similarly vulnerable are not covered by GO-NGO-managed interventions. Here, I could certainly proclaim that the NGOs are doing better job through practicing their 'tailor-made' governance strategies, which consider the field level realities and their strength is supporting grassroots-level organizations like CBOs and close public relations and participation. Moreover, my fieldwork experience suggests that the NGOs are very

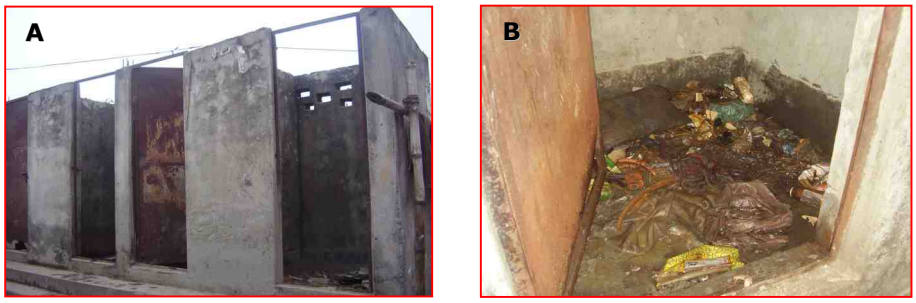
opportunist to choose such a project location where they could implement their project successfully, which is also important to get further donor assistance and financial help.

7.3.2 Organizational Structure and Public Relations

Government organizations are very keen in maintaining formal organizational structures but the question is how effective these are in field-level development projects. NGOs, on the other hand, are obsessed with the 'performance' of their staff in delivering different services (Ahmed, 2002). It has been argued that they behave more like business organizations than the 'third' or 'non-profit' sector (Ahmed, 2002; Uphoff, 1995). My observations during the fieldwork were a bit different because I saw informal, amicable working relations between the DSK superiors and subordinates. Not only this, it is evident that the NGO field workers maintain a good and close relationship with communities where the people hardly see any government faces. However, it is not my task to evaluate their organograms but rather the organizational capacity towards better governance in their WatSan project locations, which is entirely based on my fieldwork experiences. Historically, GOs in Bangladesh have been found inefficient in the provision of WatSan services to slum areas. As a result, the DSK took the opportunity to fill the gap by launching their own WatSan programme in slum neighbourhoods. The opportunism of the DSK's WatSan programme prevented it from being structurally inert and slow (Ahmed, 2006). The inertia and negativity of government institutions creates positive determination amongst the NGOs that leads to the building of close relationships between people at the grassroots and the NGO workforce, regardless of their hierarchies. For instance, residents from all the studied communities keenly described the potentiality of NGO activities and the negligence of GOs such as DWASA and DCC. For example, a few years ago in BT, the DSK initiated a programme to provide water into the community through a WASA pipeline. When they finished the whole process they found that the WASA pipeline was unable to supply sufficient water to the community, a problem that arose simply due to lack of updated information in the official records of DWASA. The result is that all parties including the ordinary people wasted time, resource, energy and money. Finally, the intervention initiatives towards drinking water have stopped, which was the result of a non-functional organizational structure, and a lack of accountability and inefficiency. Moreover, subcontracting, which is not a direct part of organizational structure, often causes depressing project outcomes. For instance, in GCC the infrastructure made through the subcontracting process has been characterized by early failure (Figure 7.2-A,B). Momena from GCC said in this regard

> *"Here, the construction engineers or contractors didn't pay attention to build this infrastructure properly and they made it just to construct something rather than quality. Here, all related parties were engaged with some sort of corruption and to make money from projects. The result is, most of the latrines are now out of order and all the infrastructures became unstable and tilted."*

Figure 7.2-A,B: Evidence of early failure of sanitation infrastructure



Source: Field Survey, 2010

In contrast, the DSK empowered the community to manage the project work. The people are free to raise any issue to the community meetings in the presence of higher officials, which is also a matter of their engagement with the grassroots. The extent of personal contact between DSK fieldwork representatives, project coordinators and the community is so intense that people often call them by name, which is generally evidence of an informal and close-relationship in the context of Bangladesh. During my first visit to BT and BB with a DSK project coordinator, and while on field survey, most of the residents mentioned the names of those who are involved with DSK in different positions including the Executive Director as top level official and Field Representatives as bottom level workers. One project manager from the DSK said that

> *"Only technical things are not appropriate for managing and implementing a project successfully but the local people's opinion is very important. They know better about their own problems and they have some extent of their own indigenous idea of solving such problems. Lack of money and freedom of speech always obstructs their development path where we came forward to hear their voices and offer them a platform where they can express their views".*

Here, this project manager directly mentioned their grassroots organization which is known as a community-based organization (CBO) and has been working as a driving force for the better governance and empowering of the people and to disseminate development messages amongst them. NGOs and particularly the DSK used to establish such CBOs in each of their project locations. The detail about CBOs will be described in the later part of this chapter. This scenario is not usual in the GCC and MCC where the people are not sure about the person responsible to hear their voices. As mentioned earlier that, UNDP in collaboration with the DCC initiated a poverty-reduction project in both GCC and MCC, where they set up a Community Development Committee (CDC), which is similar to a CBO. They are now motivating and organizing community people to implement their project that also includes improvement of the WatSan situation. Here, the DCC is involved in this project but the field-level work is organized and managed by UNDP officials and their field representatives. Now, the local people seem happy because they have got a platform to express their needs and priorities, and the UNDP officials are also working in very close contact with the community. In the earlier chapters I have mentioned the anti-NGO emotions among the GCC and MCC

residents but they are now welcoming the UNDP in a sense that the DCC is one of their collaborative organizations. People seem to appreciate smaller committees like CDC at the community level and are happy to stay in close contact with the project personnel.

7.3.3 Governing the WatSan Services

In Bangladesh, government budgets and development assistance have been continuously reported as insufficient to cover the scale of investments needed, while the national water providers have usually failed to achieve financial viability; and private participation has often provided disappointing outcomes. In this context, Kauffmann (2007) argues that cost-recovery objectives would be useful to strengthen WatSan projects, while François et al (2010) added that both the institutional and technical considerations are important for better governance. However, after deciding the intervention areas or project locations, the NGOs usually prepare a priority list for the project considering 'what is needed?'. Then they talk with the community regarding their intervention proposals through formal and informal dialogue sharing. This information exchange enables the organization to get in-depth knowledge about how they will start, who will do what, who will participate, how they will participate, who will be responsible for operation and maintenance, who will manage, who will evaluate, and so on. However, all these works have been done by WatSan project coordinators and DSK regional office's whereas, CBOs and different community groups at the grassroots level, such as women's groups, tubewell committees, water point committees, and maintenance committees, work through the participatory concept. In contrast, the strategy of government intervention is different, as I observed the concept 'facilitate and forget' during my field survey in GCC and MCC, which is entirely subsidized and supply driven. People in the community are often frustrated to see the non-existence of a government WatSan scheme or follow-up programme.

Notwithstanding, it is widely understood that governing such WatSan programmes are of a combination of problems and success merely depends on good governance. The problems are mainly associated with space allocation, social, financial, managerial and behavioural factors. The DSK recognizes the fact that participation by the community and its capacity building is the key to solving most of these problems (DSK, 1997). Their experience is that if water supply and other community-based programmes run in parallel at the same area, then they are more successful and the community is more prepared to take over the management of the water-point and other infrastructure operations. They have also demonstrated that where similar types of projects are run simultaneously, one on a grant basis and another on cost recovery, this is disruptive and the DSK have decided always to offer their services on a like for like basis within a specific community.

As a participatory intervention strategy, the DSK offers possible solutions to the people to solve their internal problems. For instance, as an initial step the DSK introduces a lock and key option for better infrastructure management, cleanliness and to restrict unauthorized

users who were mainly responsible for leaving the latrine unclean. Now, the residents of BT strictly maintain the lock and key option (Figure 7.3-A). Nevertheless, one of the female residents raised the issue with me of small children who find it difficult to open and lock it again after latrine use. MCC residents have also adopted with the lock and key option (Figure 7.3-B); they didn't receive any guidance from the DCC or any other government institutions but rather initiated this option by themselves. Both of the communities which adopted the lock and key option have been successful in maintaining their communal facilities. Most latrines in GCC and BB are left open and that results in their mismanagement, the early deterioration of the facilities, and the beginnings of social problems.

Figure 7.3-A,B: Practice of lock and key strategy in BT and MCC

Source: Field Survey, 2010

As a cost recovery approach, the DSK also arranged different cash collection mechanisms through setting up small committees where the responsible members of those committees collect money from the residents on a weekly/monthly installment basis as appropriate and finally report to the DSK. Both the private household and communal facility users are instructed to pay installments to these committee members. The intention of the DSK is to set up small community based institutions to tackle smaller problems by themselves to enhance the performance of entire governance system. But some of the issues need direct DSK interference where some disagreement arises among people in the community concerning the allocation of monthly installments. For instance, regarding the ring-slab PL, a total of 3000 taka has been disbursed by the DSK but the residents had to pay usually only half of the total money i.e. 1500 taka through small monthly installments. The DSK offers rest of the money to the residents as a subsidy. In some cases, the DSK didn't charge anything and provided water and latrine access free of cost. In return, those people usually do necessary cleaning of their latrine infrastructure and water point that restricts from further conflict within the community that some are seen to get something for nothing. Actually, the cost of the latrine depends on the user's financial capabilities and monthly income which is assessed by the DSK officials. At the same time, the cost of the STLs are relatively higher and the DSK recover only one third of the total cost and the rest of the money has been offered as a subsidy. Here, the users of the STLs also pay their small amount of installments on a monthly basis which costs them only 10 taka. All of the PL and STL installments have been recovered from BT and BB. If required, the STL users pay the necessary minor maintenance cost for their latrine and now the people are paying only the water bill which is distributed amongst the users. The DSK will provide necessary financial

support that may be required for any major maintenance. The source of the money will be the monthly installments that were collected from the users for their latrine. Notably, there is no arrangement to administer solid waste management, drainage or other hygiene related activities. But in some cases, the NGO officials and CBO representatives took the initiative when it was absolutely necessary and there were problems in the community.

Apart from this local community-based governance, the DSK maintains a number of state level and international-level relations for the better governance of their WatSan interventions. Akbar et al (2007) demonstrated that the DSK has gained trust where the people are served by this organization, illegal water use has been reduced, and people feel more comfortable with the regulatory system. This is the impact of their target-oriented initiatives such as the implementation of a 'citizen's charter', which is one of the benchmark achievements that allow the residents of low-income informal settlements a right to get a legal water supply through the CBOs. Conversely, it is evident that there are some vested interest groups that don't like being within the legal system to access water. A DSK official said

> *"In general circumstances, some people think that getting water illegally is cheaper or better than getting water legally such as through the implementation of the citizen's charter because it doesn't include any responsibility and no effort about the governance and management process. Moreover, they want to stay liberated as the legal process creates some bindings and responsibilities and sometimes they don't want to be enlisted in any government or NGO database."*

He also stated that community mobilization and motivational campaigns are important in every aspect of WatSan projects. That's why the DSK works with a bottom-up approach and involves the community, which is necessary to develop local governance systems and will form strategic alliances with the key sector actors, including national government, local government, international organizations and networking bodies and civil society organizations, to continuously carry forward policy advocacy at the central government level so that good policies are translated into practice.

7.4 CBO Activities: Governing the Governance

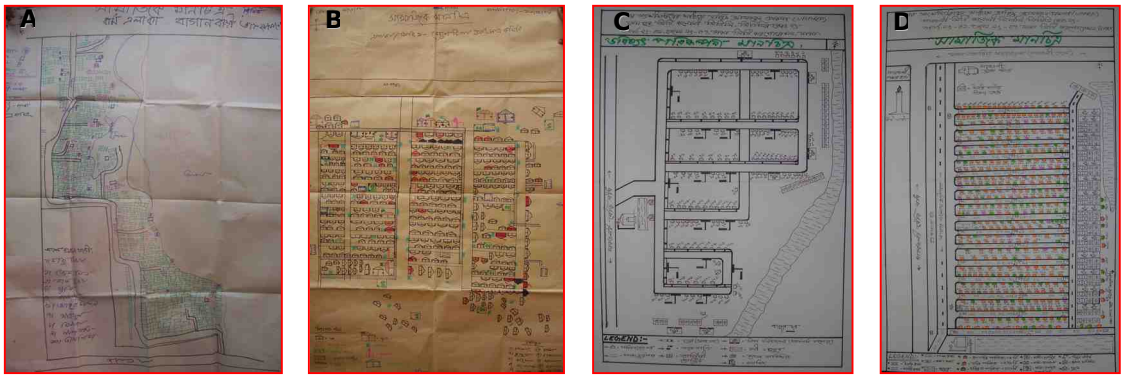
A community-based organization (CBO) is a local people's institution, which has evolved to deal with some of the local issues as well as to handle the administration of community needs. CBOs can be groups of either elected or selected persons who are assigned to manage specific roles and have their own structural arrangements, which are owned and managed by the members of that organization. They are not necessarily affiliated to any religious, political or other parties or groups but they are formal, legal entities or informal registered organizations. The DSK has formed CBOs in all their project sites and CDC has evolved recently through the UNDP project in GCC and MCC. Actually the CBOs operate most of the DSK guided activities, including water and sanitation. According to DSK experience, a successful WatSan programme depends on strong social bonds, geographical location,

landownership structures, local power structures and the internal power structure of the slum. Moreover, the DSK believes that a CBO's working strategy, performance and efficiency is another key factor that can make a project successful. The fact is that performance varies among different CBOs/CDCs in different communities, determining the degree of project success. However, it is not possible to implement a project without the local support from the community. In this regard, CBO/CDC members are recognized as key persons in a community and they can organize the grassroots efficiently, with minimal effort. At the same time, CBO/CDC members also have a good relationship with local influential persons who have some sort of political identity. Therefore, CBOs/CDCs are working for better governance at the community level and GOs/NGOs are driving these grassroots organizations to 'govern the governance'. For instance, CBOs in BT and BB oversee every water point and communal latrines have their own management committees such as the water point management committee, the latrine management committee, the revenue collection committee, etc.

The existence of a CBO is necessary to qualify for state-owned services such as a piped water connection. Moreover, as mentioned in chapter five, the social problems usually initiated during latrine use or water collection are minimized automatically, but some bigger problems may need the direct interference of CBOs, CDCs, '*Ponchayet'* committees, or even local elected Ward Commissioners. Moreover, CBOs have had to face a common problem from all the study areas when calculating the cost sharing percentages for moderately poor and extremely poor households. Ahmed (2006) mentioned that, this variation is very high relative to the small socioeconomic gap between families in the slums regarding occupancy, income and assets. Here, the DSK tries to get involved with the community through their general motivational campaign regarding behaviour, participation, cooperation and instruct or guide the CBOs about possible solutions as and when required. Therefore, it is understood that the CBOs play an important role in establishing the relationship and disseminating messages between the service provider and the people in the community. Moreover, as mediators, CBOs have been solving local community problems effectively because they can combine their local perceptions and institutional guidance towards a particular problem where most of the social, financial, managerial, behavioural and political issues have been addressed. For instance, with the guidance from the service providers the CBOs and CDCs of all the selected slums managed to draw social maps (Figure 7.4) with active participation from CBOs and the residents which has given not only a real understanding and in-depth knowledge about their own neighbourhood but also offered a possible visual imprint of related activities that are necessary for better governance.

The usual structure of a CBO committee constitutes of 15 members, including a president, vice president, secretary and treasurer. Apart from this, each water point and community latrine also has a president, secretary, treasurer and members who are usually the users of sanitation facilities. The members do not get any honorarium but they receive related transportation cost and food to attend meeting and activities with their benefactors. It is a common problem in all neighbourhoods that people are eager to hold a position but not

Figure 7.4: Social maps for BB (A), BT (B), MCC (C) and GCC (D)



Source: Field Survey, 2010

willing to work when required. In BT few respondents want DSK support directly without a CBO involvement. The logic behind this is the unequal resource distribution in which most CBO members facilitate themselves by improving their own surroundings. However, I didn't find any such genuineness on this type of people's allegation during my entire fieldwork. For instance, I visited CBO president's house in BT and I observed the overall condition of his house, lanes and surroundings that were comparatively much poorer than his neighbours. In discussion about this matter with the treasurer of BB-CBO, Soma mentioned that

> *"We don't get any benefits from the NGO. Rather we had to spend more time for community development and to organize different events and meetings within the community. We spend much of our time for the community and the reward is disrespect, reproach and mistrust. I am just doing this because Allah is noticing all of these, and I know what am I doing."*

I understand Soma's disappointment in this matter. Other committees, like the '*Ponchayet'* committee in the GCC and MCC, doesn't face this kind of allegation because they do not handle money and work to control rules and regulations and solve various social problems in the community and arrange judicial meetings if necessary. Whereas in KP, the '*Sordar'*, who is the most respectable person among the *'Bede'* community, acts like a community leader and the people listen to suggestions from the '*Sordar'* as and when required, and he decides all the community activities and events. He also works to minimize different social problems that arise. People obey his decisions and act according to his instructions. The '*Ponchayet'* committee and '*Sordar'* are not members of local government and they have no relation with the local administration. They are just community leaders and are responsible, healthy, experienced and aged persons selected by the people. However, I found that the '*Ponchayet'* committee and '*Sordar'* were alike in that they are not very interested to talk about WatSan related issues.

7.5 Community Practices: The Bottom-line Governance

In the study areas, several institutional hierarchies have been identified for the better governance of WatSan projects. Amongst these, community practices are the most important issue that can influence entire institutional hierarchies. Not only this, project

success also depends on the community practices that are called here 'bottom-line governance'. One of the major crises in the bottom-line governance is arranging community clusters for the sharing and management of sanitation infrastructures. It is often problematic for the residents to get NGO support regarding a water point and a community latrine because they do not have the same background, they don't have the same mentality, or there may be some sort of problem among them or may have different expectations. On the other hand, considering the concept of 'threshold population', the service provider organization often requires a minimum number of households who can operate and maintain their superstructure. Besides, absence of social cohesion, collective action and courage among the people always dampens the spirit of the service providers. However, regarding the governance issue, a resident (aged 32) from near the GCC and MCC said

> *"It is possible to motivate the rural poor regarding the healthy sanitation practices and related management issues but it is not possible to motivate the slum dwellers because they are busy with their business all the time and their priorities are different. They are not willing to spend time for better management of their infrastructures but rather they prefer to keep unhealthy practices which are effortless."*

He also added that the management of the infrastructures is entirely personal, where most of them are not willing to bond in structured management activities in a sense that their freedom of work might be held back. Despite this fact and the presence of this kind of attitude in all of the study areas, some bottom-line governance initiatives, such as activities through small committees, action teams and groups, do facilitate the WatSan programmes that are especially evident in the NGO-managed sanitation project areas.

CBOs/CDCs are responsible to oversee the WatSan-related activities where the community's role should be active participation in those activities. In BT and MCC, the CBO and CDC play a big role respectively to manage entire governance systems through small committees within their own community. For instance in BT, I found an interesting children's group who used to blow a whistle if they found someone urinating or defecating in the open spaces which could be linked with the Arby's (2008) 'Shame Approach' that brought some positive impact towards improving sanitation situation in rural Bangladesh. The DSK provides whistles to the children together with specific guidelines. The DSK field representatives also acknowledge the children's contribution where people are becoming more alert and understand that the whistling is a matter of embarrassment that they might be seen by the children involved in unhygienic behaviour. This kind of appealing concept became visible when the community faced difficulties to get access to sanitation facilities. In natural disasters, especially during the rainy season floods, people united to tackle the situation. At that time the entire prescribed governance system collapsed but they initiated a short-term temporary governance system to fight such disasters. During the FGD with female participants in BB, I came to know that they collectively harvest the rainwater when all their water points go under filthy floodwater and they share this water with their neighbours. Moreover, they try to fix the disconnected water pipeline from the main source by themselves and they did not wait for the authorized DWASA maintenance team. Therefore, it is widely visible that the people become active when they experience problems.

Another source of governance crisis is evident in all the study areas in collecting money from the users. Problems arise with underpayment, missed payments, and non-payment due to various reasons and attitudes of the community people. Most of the time these types of problems are solved by personal contact or with the intervention of the concerned CBOs/CDCs and the service provider organizations. Basically, when one user stops paying the monthly installment then other users come to the fore to solve the problem by creating pressure on that user. Nevertheless, a trouble-free reciprocal management system exists between the CBOs and the service provider organizations due to the pre-designed and formal official systems. Similarly, the maintenance activities are also managed by the user community where they divide their cleaning schedule and share money equally between the user families. In GCC, I found most of the latrines out of order and the user families didn't try to recover them and regarded them as unusable. I didn't find any sort of management activities to overcome this problem despite an acute shortage of infrastructure. Similarly in BB, the involvement of the users toward maintenance activities is hardly visible and the user community indicated that they share money as and when required for emergency maintenance, whereas the long-term maintenance such as roof replacement, door replacement, cleaning the septic system and nearby areas, is totally absent. Here, the users usually agree to spend for their basic needs whereas the less prioritized or optional maintenance activities (as mentioned above) were the subject of a huge debate in the community. Conversely in BT, the users manage their shared community latrine with 10 neighbours and I found them clean and in good working order, with no evidence of mismanagement. They operate their latrines with a lock and key system, which is problematic for children but useful for better cleanliness and good management, whereas the entire communal latrines of BB did not introduce lock and key but the latrine chambers have been assigned for specific households. The people informed me that the lock and key option would not work because of the huge number of users where children represent most. Moreover, missing keys and locks are a common phenomenon. In that circumstance the user need to buy another lock or key which incurs additional expenditure. In the case of water collection, the BT and BB residents collect water according to its availability in the storage tank through the DWASA connection. On the other hand, the government-managed GCC and MCC residents collect water through hand tubewells and electric water pumps directly from a groundwater source. The governance activities regarding the management of WatSan infrastructures are not visible in KP where they have no definite hygienic latrine and are forced to buy water from water kiosks.

From this above discussion, it is revealed that the entire governance system for the operation and management of WatSan infrastructures are managed through different hierarchies where the service provider is situated at the top and the grassroots people as well as users are at the bottom and all these related stakeholders are trying to contribute towards better governance. Despite this, it is necessary to assess the participation at the grassroots, the responsiveness of service provider organizations and their role in the entire governance system, which is discussed below.

7.6 Grassroots Participation: A Range of Reactions

Since the early 1970s, the term 'participation' has become a part of the development jargon (Manikutty, 1998) but it has not been without criticism. The concept of participation suffers from the ambiguity of the given definitions (Ahmed, 1987) and it is particularly difficult to establish a universal definition of participation at the grassroots (Asaduzzaman, 2008). The fundamental idea of grassroots participation in this research is that local people should play a significant role and have decision-making power in local-level development programmes that are designed for them and which affect their everyday lives, and this is a way to good governance. It is widely understood that without grassroots participation, it is exceedingly difficult to identify local needs and appropriate technologies (Murphy et al, 2009). In the NGO-managed study areas and recently the GO-managed study areas, grassroots participation lifts the marginalized people from being excluded to being in partnership with public and private institutions. During the fieldwork, participation was experienced as a kind of local as well as personal autonomy in which people exercise their choices and share their decisions with service providers where the context and meaning of participation differs from person to person across the study areas. The Bangladesh experience shows that generally decision-making power is highly centralized in the bureaucratic system (Anisuzzaman, 1985; Zafarullah, 1992) and this scenario is reflected in the study areas, where the service provider organizations contribute to people considering donor- and government-imposed pre-planned terms of reference. In that situation, grassroots participation becomes fragmentized where local issues are ignored and affected. However, I have found four major steps of grassroots participation in the DSK-managed BT and BB slums that eventually considers Uphoff's (1987) thesis. The steps are described in Box 7.1.

Box 7.1: Major four steps of grassroots participation in DSK managed slums

Step 01: Participation in decision-making, identifying problems, formulating alternatives, planning activities, allocating resources, etc.;

Step 02: Participation in the implementation of carrying out activities, managing and operating programmes;

Step 03: Participation in economic, social, political, cultural or other benefits, individually or collectively; and

Step 04: Participation in evaluation for its outcomes and feedback purposes.

Despite my previous understanding, it is difficult to measure the extent of grassroots' participation only by asking questions to the people or observing their everyday lives; but, interviews with the project personnel and examining WatSan projects gave me the opportunity to assess the scenario of grassroots participation. A DSK field representative commented that access to a community is much harder than people's participation, particularly where they don't trust the GOs and NGOs and may have experienced suspended projects. In this regard, the DSK field representative, Aleya, added that they had to work hard under local people's pressure. Initially, the people didn't participate and they spoiled

several informal meetings with the residents. After this critical situation, the DSK tried to identify their priority problems and the organization came again with proposals of what the community needed in the first instance. Upon completion of the DSK's first development initiative, they got full access to the community because the residents are getting benefits from that source. After this hard ice-breaking work, the DSK offered their planned WatSan projects to the community, which took it up with enthusiasm and promised their participation. Finally, for better governance, the DSK set up CBO committees in those slums and expanded their project activities. Furthermore, when the DSK needed to implement their agenda through grassroots participation, they identified resistance from some of the self-seeking residents who tried to protect their own interests. Because the needs and priorities are different from person to person, their level of participation will naturally be affected. In such cases, the community took collective action to convince or motivate those residents who are against the mainstream and eventually these types of problem have been minimized internally.

Until the recent inauguration of the UNDP project, I didn't find any epitome of participation in GCC and MCC. Whereas, BT and BB residents are now one-step ahead because they knew the concept and accordingly participated in DSK-managed WatSan projects. DSK's project experience suggests that the step 02 in box 7.1 is the most challenging/difficult input from the community side. However, the following setbacks (Box 7.2) have been identified by the DSK, which obstructs the state of people's participation.

Box 7.2: Major obstructions of grassroots participation in DSK managed slums.

01 Time: People engaged in their work and they couldn't give time and labour because it may impact their income.

02. Local power structure: People couldn't bypass the concern of local influential persons. They had to take permissions from the local leaders as well as from the local musclemen who are usually a part of the community.

03. Resistance from family: Some men don't want their wives to work for the NGOs or for the community.

04. Obstruction from the house owners: Without concern from the house owners it is not possible to implement any project in their premises because the project may affect them.

05. Money: Some residents are not willing to join in the participation process because they have a fear of investing money.

Apart from the setbacks in Box 7.2, a generalized conception of corruption, delay and bureaucracy obstructs participation. However, a unique scenario has been identified where the eagerness of people's participation among the GO- and NGO-managed slums is absent and present respectively. In this regard, Monua from BB mentioned in the FGD session:

> *"I don't know who the government is and who the NGOs are. I will participate with anyone who will come to help us. I don't know who is good or who is bad. But I would like to see the activities like DSK who came forward to solve our problems".*

Conversely, in GO-managed slums (i.e. GCC and MCC) residents are not familiar with the concept of participation and they are habituated with getting grants, relief and aid. A general impression about participation is reflected in Selina's comment:

> *"I like government development initiatives. Some NGOs also came to our community to implement their agendas but it seems that they will charge money and not be willing to give the service free of cost. I think, they are working for the money and they will not provide any service without it."*

Here, Selina's comment reflects the general understanding of GO and NGO activities. Jinnah (2007) stated that working with governmental bodies like DWASA and DCC requires time, whereas this long-term government- and NGO- managed development efforts were sometimes neglected or disregarded by the people as they considered themselves to be temporary settlers. However, there was some constructive criticism, which could be used for institutional lessons. Hashem from BB said in this regard:

> *"I was personally satisfied about DSK activities but after experiencing the flood I gave up my idea to support them. They should think about future events like floods, drought, etc and their consequences and accordingly deliver the technologies to us. But they didn't think about it at all and here, we are always dealing with the problems."*

Therefore, Hashem's disappointment and his attitude regarding collaboration with DSK are both logical and constructive in a sense that will help to address those issues carefully during project planning and implementation in future. Some residents from GCC mentioned the gaps between promises and practice. According to the secretary of their '*Ponchayet*' committee, Dulal Miah (aged 44):

> *"The Government has promised us that they will provide government quarters in Gabtoli and they forced us to shift everything from Gulshan. When we moved here, we only got an open field with some water points and latrines. We had to build our homes with our own money. We are still considering this place as a temporary residence but we are not getting the government quarters. That's why everything is scattered, disorganized and nobody is taking care of anything".*

From the above discussion it seems that people prefer to have an exchange or sharing system, where they will take part in projects and, in response, they expect development initiatives from the GOs and NGOs. This sharing system could effectively balance the promises and practices between the service providers and the community. Currently, a new paradigm suggests that international agencies need to go beyond projects: 'no more projects but more partnerships', while Satterthwaite (2003) recommends that the concept will strengthen the capacity of the urban authorities to develop appropriate responses and participation which ultimately will ensure better governance.

7.7 State of Coordination between Agencies

Partnerships have no limit on the number of members; rather, what is required is sufficient coordination and administration to realize their potential (Mwangi, 2000). Partnership issues are difficult to achieve if the objectives and frameworks are confused, and a complex partnership with multiple institutions requires coordination to ensure that timing, quality and resources are on schedule (Mwangi, 2000). According to Pugh (1996), urban environmental management, including water and sanitation, requires the use of effective multi-institutional or multi-organizational structures. The effectiveness of the process will depend largely on whether the communities will identify with them and, because of the unequal power relations between different partners, practice may be mandated or coerced by one party over another (Mwangi, 2000). This implies that the coordination, more specifically participation and partnerships, might be abused by some partners who might have a 'hidden agenda' (Mwangi, 2000). Many argue that, this coordination process may be time-consuming and require a considerable investment of resources, which can present a challenge to projects that operate with limited resources. Apart from the proven shortage of coordination between different agencies, the city authorities in Bangladesh also suffer from weak governance (Islam et al, 2003) and their unaccountable nature creates barriers to building long-term capacity and enhancing the ability of the concerned government agencies to manage and negotiate development projects. During the field data collection from different government agencies like DPHE, DWASA, RAJUK and DCC, I found conflicting statements from the relevant officials, where it seems that they do not feel responsible and they have a tendency to refer to each other for access to specific information. In Bangladesh, responsibility for sanitation is divided among a number of ministries, based on their involvement in urban affairs, housing and public services, rural development, environmental protection and local government administration. As also indicated in chapter two that "this situation leads to a confusing mix of institutional activities, sometimes resulting in overlapping authorities or in a situation where no organization seems to have clearly defined responsibilities, thereby resulting in gaps in sanitation coverage, or even conflicting directives" (Elledge et al, 2002, p.45; Elledge, 2003). One reason for such a situation is that the elected DCC and non-elected governmental agencies differ in their operations and systems of reporting (Islam et al, 2003). To avoid such problems the sanitation needs of all population target groups should be the clear responsibility of specified institutions (Elledge, 2003). In this regard the water supply and sanitation policy 1998 states that all development activities shall be planned, coordinated and monitored through a Sector Development Framework (LGD, 2005) with a positivistic vision of improvement of the coordination and governance system. The Institute of Governance Studies of BRAC University also found a scenario of a lack of coordination between government organizations where the organizational structure of these government bodies is challenged by internal politics while at the same time being dominated by a hierarchy (IGS, 2009). They also explored the hindrances faced by people in accessing information from government offices, where non-cooperation of government officials and bribery, along with the lack of a legal framework to ensure access to information, are viewed as the principal impediments by the professionals (IGS, 2008). This lack of coordination

among the relevant government agencies also makes it difficult for the government to regulate NGOs. Conversely, the DCC and the public agencies have not only failed to coordinate among themselves but also have been less than enthusiastic about coordinating with the private sector and other areas of society.

A problem of coordination exists in implementation of development projects. For instance, a number of central-government utility agencies and autonomous bodies are engaged in almost constant digging of the city's roads at different times of the year causing immense suffering to the people and permanent damage to the roads. This is sometimes evident just after the DCC finish some road surfacing work. This sort of poor coordination has made it difficult for the corporation to serve its clients efficiently and cost-effectively (Islam et al, 2003). Another example of a serious coordination problem is between the DCC and DWASA, where surface drains are the responsibility of the DCC and the sewerage system is manned by DWASA. Owing to this dual administration, the two organizations constantly blame one another for the poor waste disposal in the city, while the citizens continue to suffer (Siddiqui et al, 2000). Alam (2010) explored the issue of non-coordination scenario between DCC and DWASA where after the installation of storm sewer nobody carried out the road surfacing or necessary repair works (Figure 7.5) and argue that both of the institutions do not follow the guidelines that prepared in 2003 on the city's development works. To mitigate this kind of problem in urban governance, a coordination committee was also formulated in 1996 which has been ineffective since its inception. On the other hand, NGO officials perceive their organizations to have greater access to the grassroots and overall to be more effective in service delivery than government organizations. IGS (2008) reported that the overwhelming majority considered NGOs to be credible institutions and perceived them as more efficient than the government. Islam et al (2003) found that NGOs have certain characteristic advantages, such as rapid response, flexibility in financial and operational matters and a generally close relationship with the people that I also perceived. They are good at initiating dialogue between key governmental officials and political decision-makers and the poor which reflects their state of coordination practices. Moreover, NGOs are keen on coordinating relevant WatSan-related issues with their actors, donors, government and civic groups, including CBOs, social organizations, citizens' forums, women groups, professional associations, the media and others. A notable impact has been evident in BT, where the people praised the contribution of DSK for their improved livelihoods. DSK worked as a mediator and coordinated with both government institutions, CBOs and the community to get a legal DWASA piped water connection in the slum areas through the 'citizen's charter'. After legalization of the 'citizen's charter' in 2008, all informal settlements can apply to get a connection under the name of a CBO. Actually, this kind of development attitude, together with the cooperation and coordination between different agencies and actors, ultimately benefits the urban poor.

Figure 7.5: Road digging: A symbol of non-coordination

Source: Alam, 2010

7.8 Role of Political Leaders and Parties

During the fieldwork, I heard a similar opinion from different respondents across the study areas about the role of political leaders and their parties regardless of their specific identity. This opinion is well established among all segments of society that 'the political leaders become active before the election and they forget every promise after the election'. Akbar et al (2007) commented that political commitment and participation are rarely found in water supply development in the informal settlements of Dhaka city, because even under the democratic political system in Bangladesh, political norms and processes do not ensure the accountability of politicians to the people. Some local political leaders of Dhaka city do want to help the urban poor but central government and their bureaucrats try to keep local politicians away from development work and engage them in specific tasks where their benefits are obvious. Despite this, people continue to vote for parties and they continue to have the hope and aspirations for the politicians. Aladin (aged 36) from GCC made an interesting comment regarding the role of political leaders and their parties:

> *"Political leaders make promises before the election; if we want, they will be happy to cook our rice and curry with firewood sitting in our lane but we don't want that. Unfortunately, we didn't see their faces after the election. It's the reality and it is their practice. They are only using us as a vote bank."*

Aladin together with other respondents' comment show the disrespect for the political leaders who hold the ultimate power in the country. Similarly, their affiliated political parties are also making promises but there are few results. During the FGD session, Zamil from BT observed that

> *"After our arranged relocation in August 1999, we went to the prime minister to get government support. We, a total of 5454 families and around 15,000 people, went to her residence and took up positions in the open air until we received help from the government. The Government was then at the end of their tenure and they promised that they would act if they could form a government for the next term. But unfortunately, they failed in the election and the opposition took power. Our hope was submerged in deep water with the election result. Several governments have come and gone but until now we are just getting hope but not any help from the government".*

Despite this kind of observation from grassroots, people hold out an enormous amount of hope for the government's ability to tackle their sanitation problems but the whole of governance is seemingly confronted with pitiless political practices and conflicts between the rulers and opposition. For instance, the previous government took sanitation as a priority agenda. For this reason, the present ruling party who were in opposition at that time is not continuing with the previous government's achievement. Moreover, the previous government set up different task-force committees from national to union level but the activities of these committees no longer exist. After evaluating the role of political parties, one of the DSK officials said that the political leaders are just thinking about their party and not thinking about the people in general or the overall development of the country. Another official from

the same organization mentioned that peoples' expectations from the political leaders are too high and they expect to see them very often in their community. Then the reality of their non-appearance makes people miserable and leads to negative comments about them. Generally, the hope and aspiration towards maintaining a good personalized relation with the politicians persists to achieve only personal gains.

In contrast, the local ward commissioner played a very key role to organize the overall community environment in BT. He distributed and organized lane-wise house plots and he allocated bigger space for bigger families and vice versa. The people were very happy when the ward commissioner intervened in their community matters. The residents of this slum thought that they would not be evicted because the political leader as well as their ward commissioner were directly involved with their community development. Actually, this type of leadership and their involvement raised hope amongst the community, and is one of the major factors leading the project in a positive direction. Considering all of the arguments about the role of political parties and leaders, Akbar et al (2007) suggest that social mobilization effectively ensures local political participation in different projects including water and sanitation and may deliver better governance in all levels of society.

7.9 State of Transparency, Accountability and Corruption

It is very complicated to measure the state of transparency, accountability and corruption of GOs, NGOs and CBOs because most of the issues are hidden in character and require specific evidence. However, my fieldwork experience suggests that the state of transparency, accountability and corruption related to the WatSan projects could be analyzed through uncovering the relationship between GO, Donor, NGO, CBO and people at the grassroots, where NGOs are the centre of all liaisons. Most of the NGO-driven development projects in Bangladesh are heavily dependent on foreign assistance and donations from the national and international organizations (Asthana, 1998). A number of laws exist under which NGOs can secure a legal identity with a recognized government structure, such as the Societies Registration Act 1861, the Trust Act 1882, the Cooperative Societies Act 1925, the Companies Act of 1913, etc. (Banglapedia, 2006). Besides these acts, the NGO Affairs Bureau of the GoB was established in 1990 with the authority to register and regulate all NGOs operating with foreign funds in Bangladesh. With a large number of laws, ordinances, rules and regulations applying to GO-NGO operations, difficulties and inconsistencies have emerged (World Bank, 1996) that spoil the transparent and accountable atmosphere of related organizations. It has been unofficially well-known to all that the NGOs working in the WatSan field face problems from DCC and DWASA staff who frequently ask for bribes for different issues including land and water point permission (Akbar et al, 2007). Despite this, a broad administrative paper work, file-movement activity and documentation have been practiced that tends to show the general people a transparent and accountable institutional performance.

Among the many challenges facing public service institutions in developing countries, corruption remains one of the most pervasive and the least confronted. It has to be noted that Bangladesh, together with other developing countries, has always ranked in the lowest quartile of Transparency International's Corruption Index (Davis, 2004). Paul (1987) documents the prevalence of informal payments for public service delivery in Indian cities which is also evident in Bangladesh where the payments are made in exchange for expediting applications for new connections; quick attention to water supply and sewer repair work; the falsification of water bills and meter readings; and the provision or ignoring of illegal service connections. Davis (2004) pointed out that the exchange of favours and small amounts of money, both in one's public and private life is both commonplace and unobjectionable where this petty corruption is generally viewed as *'cha-biscuit'* (tea & cookies). No one calls this corruption; it is even happening at the higher levels, where it is known as 'speed money' (Chaplin, 2011a; Davis, 2004). Apart from this speed money, the GCC and MCC residents are also not satisfied with DCC as they believe this organization is a part of large-scale corruption. The residents never see any information regarding project expenses and other statistics. One of the *'Ponchayet'* representatives described the transparency and corruption issue:

> *"We heard that one hundred and fifty million taka has been allocated to resettle us here but most of the money has gone to the pockets of associated parties and persons. We are just suffering due to this massive corruption. It is not much difficult to make an estimate and we think maximum of 25 million taka was required to complete the entire work but our question is where has the rest of the money gone? Nobody can answer that question."*

Ironically, the general public cannot access this kind of information from official sources even though they are entitled to. As a researcher, I couldn't find the information regarding the expenses of sanitation infrastructures when I visited DCC and their regional offices. From this practical evidence, it is understood that the government institutions are generally inefficient, less-reliable, less-accountable and less-transparent, thus promoting corruption. In addition to this, the existing structure and activities of the NGO-affairs bureau are contributing to corruption in the implementation of different development projects (Rahman, 2006). It seems that this government section has been created for prolonging bureaucracy. It could be an effective watchdog to oversee the NGO activities, which are currently suffering from a shortage of manpower as the number of NGOs has risen remarkably over the last two decades.

As mentioned earlier, DSK works as an intermediary between the GOs/Donors and the people, holding the community's financial contributions for water bills, which is satisfactorily completed over time without any possibility of corruption. DSK monitors all the incoming and outgoing bills and makes payments respectively for the sustainability of their projects. On the other hand, to become transparent, one mechanism is the regular publication and making available of annual reports with financial statements to the public. These two activities are present in the DSK-managed sanitation projects. Despite this fact, I've heard some allegations against DSK officials who were suspected as bribe takers but the residents

couldn't specify any evidence in this regard. It sounds like they are not satisfied with some of the DSK activities whereas, at the end they appreciated DSK's contribution regarding their improved livelihoods. Besides, some CBO members have themselves had to resist various kinds of allegations, such as capture and use of monies from the installments and water bills, falsifying payment receipts and other related expenses. But the DSK claims that they have full control over these financial matters. However, there are still some allegations with the CBO's expenses, where they showed 500 taka in the vouchers but the real expenditure was actually 50 taka. I heard this kind of allegation in both BB and BT, where the residents tried to say that the CBO members are getting benefits from the projects as they have access to the funds. In this connection, the residents suggest that the DSK should withdraw the power of CBOs to access project funds, and the DSK has been trying to introduce checks and balances between the CBOs and the residents to minimize these kinds of allegations and to establish an accountability mechanism. Here, accountability mechanisms need to be rationalized, especially to the citizens. The institutionalization of accountability mechanisms, both internal and external, is likely to reinforce efficiency and effectiveness. Finally IGS (2009) suggests that "political will is the main catalyst that can bring a real change to make the institutions accountable and efficient in a democratic framework". This, in turn, is likely to ensure good governance for the society as a whole.

7.10 Women and Governance

The women-in-development debates of the 1980s and the focus on gender issues in the 1990s got momentous coverage globally. Singh (2005) explained that sanitation, which is a composite concept of keeping the environment clean and people healthy, could also be optimized only if women are educated. It is now a growing concern that women's contribution can make all the difference to determine the sanitation status of a country, which is possible by their comprehensive education and training, especially involving women in the local governance where most poor people live and suffer.

In most societies, women have primary responsibility for the management of household water, sanitation and health (Jordan and Wagner, 1993; Marlin et al, 2012). Due to the dependence on water, women have accumulated considerable knowledge about water resources, including location, quality, availability, storage, etc. However, efforts geared towards improving the management of safe drinking water and sanitation often overlooks the central role of women (Novo, 2012; UN Water, 2006). But it was evident that the success of WatSan projects has been better ensured where women actively took part in WatSan-related governance. Recently, women are involved in most of the development projects in Bangladesh including the GO- and NGO-managed WatSan projects in my selected study areas. Women are involved with the CBOs/CDCs to oversee WatSan-related activities and infrastructure management with their specific roles and responsibilities. In addition, several small groups of women are also in operation to deal their own water points, collection of installments, raising maintenance funds, etc. The inclusion of women and the governance mechanism is comparatively well established in the NGO-managed BB and BT

slums. The UNDP supported UPPR project in the GCC and MCC are still forming and their roles and responsibilities are not properly defined, but, in general, women who are engaged in different activities gave an enthusiastic impression about fulfilling their roles and present promptness in their duties. Most of them have a feeling about their empowerment while they are contributing in their society in terms of giving suggestions, decisions and moral support through their own understanding. But due to social and family resistance, sometimes women had to withdraw themselves from this kind of contributory activity while they are not getting paid by the service providers (Das, 2003). Despite this fact, women are enthusiastic to join such activities because they suffer most as the primary carriers of water for various household purposes and seek a level of privacy for their latrine use (Jordan and Wagner, 1993; Mahbub, 2011; Mehta, 2011; UN-Habitat, 2003). Nonetheless, some sense of empowerment as well as the power of leadership also makes some women become activists within the community (Bishnoi et al, 2012; CARE, 2010; CARE, 2011; GWTF, 2006; Muylwijk, 2006; UN, 2006a; WaterAid, 2012). I found several instances from all the GO-NGO-managed study areas where women are eager to be a part of the CDCs and CBOs respectively. A woman representative (aged 26) from the CBO in BT said:

> *"Without our active role towards operation and maintenance, nobody could implement WatSan projects successfully. It is not possible only with men to oversee this kind of projects where women are fully a part of the water and sanitation related activities. We also liked to be a part of the WatSan committees because we know better about our needs and priorities in WatSan related activities."*

Following the above quotation, I would like to raise an issue that I noticed just after the death of the CDC secretary in a road accident in front of their own MCC. I observed a silent determination among the women to own a CBO position. Regarding the enthusiasm and the role of women in governance, one of the DSK project executives said:

> *"Women's participation is part of the governance and is contributing a lot in overall management of our WatSan projects. Since the DSK projects are based on the participatory method, women were very responsive and increasingly share their needs and priorities with us. Their consultation and communication process indicates a commitment to transparency which helps to prevent conflict among the users. However, our consultation process is gender-sensitive since women may feel unable to speak out in public consultations. That is why we emphasize and include women in all segments of our projects for better governance."*

Here I believe, WatSan-related activities are not gender neutral, as women have different needs and priorities regarding their WatSan-related activities. In addition, women are seemingly more vulnerable than men in the society. For this reason, women's participation is increasingly visible in the study areas and I will symbolize them as an opportunist group in the sense that their problems could be addressed through their participation. Nevertheless, the decision-making power in our society always goes to men rather than women. Despite this, the service providers always appreciate the way women work in the community environment. Here, Akbar et al (2007) found that women's participation is very effective in the operation and maintenance of community-based WatSan infrastructures and their participation is an important social issue for development. Women can access all of their

neighbours' house instantly in a way that a man cannot (Marlin et al, 2012). This type of informal access allows women to deal the matters in a more effective way that enhances overall governance, which is also appreciated by the service provider organizations because women's contributions make their project work easier and also addresses their other project agendas.

7.11 Willingness to Pay

Willingness to pay (WTP) is a relatively new concept which can be defined as the maximum amount of desire one can willingly express for a certain commodity or service. One of the main reasons for a low WTP in the developing world is poverty, which leads to a disproportionate success rate of much of the national and international efforts undertaken for sanitation (Islam, Kitawaki and Rahman, 1994). Here, Whittington et al (1991) argue that "for most water utilities and donor agencies, the actual WatSan situation in the developing world is 'typically something of a mystery' with limited knowledge of the means by which households secure water, its use, cost and how much households might be willing to pay for improved services". In sanitation planning, the general rule-of-thumb is that "if the monthly charges are less than 3 percent of household income, it is often assumed that the household has the ability and willingness to pay for the improved service" (Whittington et al, 1992). However, engineers and planners tend to rely on this kind of simplistic assumption (Whittington et al, 1989) that often dematerializes the WTP schemes in the urban areas while the poor people are struggling with various socio-economic, technical, political, institutional and other problems in the first place.

This research couldn't explore the scenario of WTP at the household level. Because the respondents are facilitated by the improved sanitation services, where the BB and BT residents have already paid for the DSK-provided WatSan services; and GCC and MCC residents got WatSan infrastructures from DCC free of cost. Here, an attempt was made during the survey to identify the WTP for similar or improved WatSan services as they have a shortage of such facilities in all the study areas. Many answers came from the respondents' side across the study areas but there was a difference of opinion between the GO- and NGO-managed slums. Most of the respondents from BB and BT mentioned their poverty, income and the amount of payment during the interviews and FGD sessions. Some families have more than 7 members and some have only 2-3 members but they are paying the same amount of installment money, although the DSK has not received any official complaints about it. Some argued for a longer installment period (two or three months instead of one month) which will increase the rate of WTP among the users. On the other hand, GCC and MCC residents responded quite differently as they are not willing to pay for this service on the basis that they are very poor and government servants and government should support them. Most of them thought that if government wants, they could provide this kind of sanitation facility without charging them. Therefore, it could be said that financial matters together-with lack of demand from the community are the main barriers to people's

willingness to pay. While discussing this, it seems that the residents are paying monthly installments unwillingly because they have no alternative options to get these kinds of improved WatSan facilities at a competitive low cost. Even the KP residents, where there are no improved facilities and there is a critical sanitation problem, also discarded the WTP concept.

In the context of developing countries, national governments are more likely to underestimate the WTP concept, particularly for low-income groups (Rogerson, 1996). It is conjectured that one possible motivation for this is that in negotiations with donor agencies 'it may help to secure a higher level of external funding for the sector' (Cairncross, 1992). Besides, the government is not willing to assess this WTP in the low-income urban settlements for fear that the associated cost recovery will create another problem which is allied with the governance such as managing funds, collection, documentation, and so on. Casey et al (2006) argue that the project based on the assessment of WTP and cost recovery approach is somehow difficult and generalization is not viable as several socioeconomic, political and environmental variables are active determining factors in this regard. To avoid such problems, government always prefers to instigate the supply-driven schemes that I experience in GCC and MCC.

Regarding the assessment of the willingness to pay, the DSK hasn't adopted the Contingent Valuation (CV) method, which is widely used to evaluate the WTP of a particular community in order to implement a cost-recovery approach. Rather they have motivated people about the benefits of having improved WatSan services. The DSK has not made any comparison between these two processes but they find their strategy to be more people-oriented and grounded. The core criticism of the CV method is that for a variety of reasons 'respondents may not answer WTP related questions accurately and thus not reveal their true willingness to pay' (Whittington et al, 1990). One of the DSK project coordinators disagreed with the traditional master planning activities and said such a specific exercise could not solve urban sanitation problems in a productive way. He supported Briscoe et al (1990)'s understanding, where they tried to identify, under a range of socioeconomic and environmental conditions, the level of service that people want and for which they are willing to pay. In Bangladesh, there are no institutional means through with the urban poor can express this demand. Basically, different local, national and international NGOs play significant roles in exploring the issues and mitigating the problems. Nowadays, these NGOs assess WTP through their own strategies for delivering services and map out cost-recovery mechanisms with the urban poor, which are mutually agreed between the beneficiaries and benefactors. For instance, some of the poorest of the poor do not have the ability to pay even the user charge. In such cases under the DSK approach they are provided with water and latrine access in exchange for cleaning the infrastructure or doing other physical work that I mentioned in section 7.3.3. This additional arrangement is connected with the cost-recovery mechanism where the WTP and governance issues are mutually and significantly addressed.

7.12 Conclusion

From the above descriptive analysis it is found that there are a range of governance related issues exist in the WatSan sector but not all these issues are equally responsible for the current state of governance that are hampering project activities. However, it is clear that government contributions towards governance in the low-income urban settlements are not progressive, whereas the DSK claims that their working strategies unite the urban poor, empower the people especially women and create employment opportunities. The empirical evidence from the fieldwork clearly demonstrates that the local people get more benefits and services from NGOs than public institutions. Political turmoil and violence, the politicization of the public administration and concerns that corruption obstructs private sector investment and public service delivery, are key elements of what is widely deemed a 'crisis of governance' (Hasan et al, 2006) in Bangladesh. Here, I would argue that, 'governance' in a formal sense doesn't seem to work in the context of GO-managed slums as people living in those slums seem to have no understanding the benefits of it and on the other hand the government institutions are also not keen to make them understand the necessity of it. On the contrary, the governance system in the DSK project areas performs more like a small-scale enterprise rather a voluntary service delivery system and this kind of intervention strategy in the urban low-income settlements will eventually reduce the burden on the government and decrease the trend of taking illegal water connections and using unhygienic latrines. However, from the grassroots reality it can be said that, despite some limitations, the non-profit organizations are still playing a better role in the development of the urban low-income settlements than the public institutions through their participatory governance strategy. Here I would argue that the presence of this quality has better implications for sanitation policy planning for Dhaka as well as for other cities of developing countries. We have some lessons here to learn about the problem of public institutions in this WatSan sector.

The emergence of participatory approaches to sanitation was made possible through macro-level changes, such as the shift towards greater community reliance and the increasing popularity of participatory methods that generally implied greater responsibility was shifted onto NGOs and communities for dealing with WatSan issues (Movik and Mehta, 2010). Here I would say that when people have been given power, women for instance, are given some means of empowerment and a participatory role, things seem to work better because women are intensively involved in water related family activities. Therefore, we can see that the democratic participatory approach seems to have some promise but ultimately it will not work until people are given enough power. It is also a matter of concern how it will operate when people will get power to act. The obstructions are numerous. Firstly, because the political parties are reluctant to give power to people and secondly, Bangladesh has only had 40 years of independence and is still developing its institutions and arguably it is assumed that the country is not reached the stage yet where it is possible for the people to take over more power to act. After a discussion of policy and practice related issues in the next chapter, I will summerize the key challenges and development pathways in the last chapter where recommendations will also be accomplished.

Chapter Eight

Actors, Policies and Practices: Gaps and Remedies

Chapter Eight
Actors, Policies and Practices: Gaps and Remedies

8.1 Introduction

Despite the deterioration in environmental conditions in cities there has been a lack of consistent urban development policies in Bangladesh. However, since 1998, the 'National Policy for Safe Water Supply and Sanitation' has governed the WatSan sector in Bangladesh with the aim of ensuring that all people have access to safe water and sanitation services at an affordable cost. This policy objective for urban areas emphasizes the provision of a sanitary latrine within easy access of every urban household through technology options ranging from a low-cost pit latrine to a conventional sewage system (GoB, 2005). Together with the inclusion of WatSan issues in the 'Poverty Reduction Strategy Paper' (PRSP), the government of Bangladesh has undertaken different development initiatives in this sector such as a 'Sector Development Framework' (2004), a 'National Sanitation Strategy' (2005), a 'Cost Sharing Strategy' (2005), the establishment of a 'Policy Support Unit', a 'Pro-Poor Strategy', a 'Water Management Plan' (2004) and several sanitation-related policy decisions (2004), to help ensure adequate funds for accessible WatSan services for all in Bangladesh. But the urbanization trend of Dhaka city and existing limited facilities for employment, shelter, education, health, and utility services raise questions of crucial policy concern. In the event of 'expanding slums and shrinking cities', Singh (2005) has considered these kinds of cities as 'a microcosm of deprivation', 'economic decline' and of 'social disintegration of the country', which together amount to 'a dark side of the entire society'. Despite having adequate policy wording in the developing countries, most actors, researchers and other stakeholders haven't clarified the unjust distribution of resources or services while inequality, and inequity need to be recognized and addressed for a better outcome (Satterthwaite, 2011; Stephens, 2011). After the discussion of 'social-technological-governance' systems in the previous three chapters, it is necessary to analyze the existing policy and its working mechanism at the organizational and field level. The present study is an effort towards such an academic pursuit for policy options to identify pitfalls in the sanitation sector in urban poor neighbourhoods. Through the analysis of different policy-related issues, an attempt will be made in this chapter to explore the activities of different sectoral actors with particular emphasis to find the gaps between existing policy-wording and practices in urban Bangladesh, and guidelines will be offered to fill those gaps.

8.2 Urban Poor and Policy Dimensions

The linkage between poverty and sanitation is often overlooked in Bangladesh. Ahmed (2006) argues that the prevailing highly stratified, hierarchical and patriarchal social system systematically marginalizes the poorest and especially poor women and girls who are ascribed low social status. According to the existing sanitation strategy of 2005, the hardcore poor households are the prime target group of the subsidized programme of the government. However, the urban poor are not getting any benefits from this strategy, as evidence of improvement is only found in the rural areas. According to a DPHE official source, Dhaka city depends only on government's grants in the WatSan sector, which are unstable in nature. But each year the upazila level administration receives an average of 3000 million taka to improve the health facilities in Bangladesh, of which 30 percent is secured for water and sanitation. Therefore, the urban poor became a marginalized group, getting less attention from government and other parties.

Recently, under the 'Citizen's Charter' scheme, the poor people living in the urban informal settlements do have access to benefits as they are now able to get WatSan services through their CBOs. Undeniably, this opens the possibility of getting WatSan services but CBOs are not common in most of the slums. Though the 'Citizen's Charter' requires CBOs from the community end, an active organizational reference is also needed to gear up the whole process, as evident in the BB and BT slums. This is not a part of the official wording of the 'Citizen's Charter' but organizational involvement helps the CBOs to drive the whole scheme properly. However, getting attention from the organizations is another issue of discourse as organizations have their own agendas to choose the informal settlements as illustrated (section 7.3.1) in chapter seven. Moreover, relating to its pro-poor strategy for water and sanitation, the government supports NGO-led micro-credit programmes and encourages the extension of these programmes to the un-served and under-served areas (LGD, 2005a). But I found no sanitation project that is based upon an NGO-led micro-credit programme. Sanitation infrastructures are based only on investment without any visible returns, which might be the cause of non-existence of micro-credit programmes in the sanitation projects. The pro-poor strategy of 2005 also documented that the poor should be supported by subsidies for the overall well-being of society (LGD, 2005a) but the cost sharing strategy of 2005 and the sector development framework of 2004 give little attention to low income areas except for a little attention to the extremely poor (DPHE, DWASA and UPI, 2005; SDF, 2004). Their logic is simply that subsidies under the current system seldom reach the poor people and they argue that aiming at cost-recovery could institutionalize the rights of the poor to WatSan services (SDF, 2004). Lastly, WatSan issues received little attention in the PRSP of 2005, which focused on minor issues under infrastructure development (GoB, 2005; PRSP, 2005). Overall, the issues related to the urban poor in the field of sanitation are not presented in a well-coordinated manner in these policy documents; and their sometimes contradictory messages make the issues unsettled and create an avenue for corruption. Thus the overall state of coordination between different agencies should be established and

different strategic papers in the WatSan field should be developed through participation and concern from sectoral actors to make it harmonized and precise in its agendas.

8.3 Actors in the Sanitation Sector: Policy and Politics

Policy is a set of rules that guide the activities of government (Chehimi, Cohen and Valdovinos, 2011). Despite having recent policy guidelines from the government of Bangladesh the urban sanitation sector is not getting much attention. One reason is the extent of the problem. Another is different 'paper plans' (Islam, c2006), where field level development activities are not adequate to meet planning and implementation targets. A third issue is that development planning in Bangladesh has traditionally taken a sectoral rather than a regional or spatial approach (Islam, c2006). Overall, financial crises and incompetent governance systems, together with the extent of the problem make the city authority helpless to fight against the WatSan crisis. Here, government finds it difficult to maintain their reputation among the mass of the people. For instance, in sanitation policies urban informal settlements have been given little or no attention because they are still considered to be illegal settlements. On this basis, government institutions and their officials bypass questions related to the inadequacy and absence of WatSan facilities in informal settlements. Not only the government but also NGOs, donors and other development partner organizations also have their own agenda and they are involved in target-oriented activities applying their agenda and political ideology. In the following sub-sections, their policy and politics are presented in the context of urban areas, which are priorities for them.

8.3.1 Donor Policy and Politics

In the WatSan sector, the NGOs seem to be the central actors but in a deeper sense the donor agencies are really the core players (Akbar et al, 2007). For instance, in 1997, WaterAid Bangladesh started funding seven NGOs namely DSK, PSTC, Prodipan, Fulki, ASD, ARBAN, and BAWPA to implement WatSan projects in 150 different slums in the Dhaka city (Ahmed, 2006) and some of the projects are still running with the donor-imposed terms and conditions. One of DSK's officials and advocacy coordinators argues that:

> *"Donors didn't set any condition in choosing the project areas and they welcome projects that are designed for urban slum areas. But as a matter of fact they fear to fund 'urban-centric' WatSan projects as they are aware of the difficulties of working in cities like Dhaka, which are of course more challenging than rural areas.*

Considering this fact, UNICEF is now working at the advocacy level in Dhaka among other donor groups and NGOs. They intend to develop and impose project terms and conditions on their supporting organizations concerning their intentions for successful projects. For instance, WaterAid believes that without the participation of Local Government Institutions (LGIs), sustainable delivery of WatSan services to poor communities cannot be ensured

(WaterAid, 2005). Hence, they have adopted the policy of associating their partner organizations with LGIs in most instances. In the cities like Dhaka, WatSan projects are very challenging and the rate of successful projects is minimal while a UNICEF official stated that:

> *"Enormity of the problem in every aspect of metropolitan cities is responsible for disastrous project histories where addressing only one problem couldn't bring a sustainable result as all the problems are interlinked".*

Despite this understanding he added that they are expecting to fund Dhaka-based projects from the year 2012. Despite this encouraging initiative, a UN report (GLAAS, 2010) stated that the WatSan donors give less than half of their aid to the poorest countries because the countries that are most in need are the most difficult to invest in. From this point of view, it could be argued that the donor's politics is nothing but the intentions of getting positive results from their partner organizations through the proper use of their funds while the widespread recognition of those successful projects could help maintain their own policy and their political agenda. Here, I am not arguing that they are not on the right development path but it would be more constructive if they actively collaborate not only with the NGOs but also with the central government so that unjust distribution of resources, corruption, inadequate monitoring and unaccountable nature of the workforce is minimized.

8.3.2 NGO Policy and Politics

A successful 'model' of WatSan programmes in the urban slum areas has been introduced in Bangladesh through WaterAid and their partner organizations, and this has been recognized by different national and international agencies. Despite this achievement, some argue that a section of the extremely poor and marginalized people are still neglected and/or excluded due to their inability to pay (Ahmed, 2006). WaterAid agrees and has reported that their partner organizations choose project locations that are relatively stable in the sense that they will be able to implement a cost-recovery mechanism (Suzanne Hanchett's report, 2001 cited in Ahmed, 2006). As stated in section 7.3.1 of the previous chapter, NGOs are very selective in choosing project locations which is integral to their success as they always look for positive project outcomes; indeed a negative outcome from more challenging project locations may result in no further funding from donors. Besides, it is also a matter of an organization's reputation; hence they always try to show good outcomes to other related stakeholders.

Apart from their well-known choosiness, NGOs do have a 'spirit of experimentation' regarding the suitability and applicability of their working strategy and through the revision and authorization of project tasks. This flexibility allows them to work in different social contexts. However, their motivational campaigns are one of the most positive inputs in WatSan projects. For instance, based on the campaign, they motivate people about the cost-recovery approach and they are successful in making people understand that this approach will finally

bring the ownership of their infrastructures, although this revolving fund is usually used for further installation of WatSan-related infrastructures.

As hinted above, most NGOs try to disseminate only the success stories from their projects. One leading NGO-official source undeniably agreed and commenting on his own organization's publications, said that

> *"Researching through these published success stories will not reflect the real scenario".*

He agreed that even when the failure rates are high in a specified project, NGOs will try to dig out the success stories from the whole project. It is evident that some always try to market their organization through utilizing their so-called success story-based publications and voices of ordinary people. Some argue that NGOs train some people to talk deliberately in favour of the projects, programmes, service providers and other related issues. The NGOs are particularly keen to communicate with their related stakeholders to draw their attention. Not only this, they always try to raise issues that are related to urban slum areas and make the stakeholders understand that the slum peoples are most vulnerable regarding WatSan facilities. This is one of the DSK's approaches to raising the awareness of stakeholders about the extent of the problems in slum areas.

8.3.3 Government Policy and Politics

Despite a rising trend of NGO involvement in the WatSan sector in Bangladesh, government policy remains silent about public and private sector participation. Akbar et al (2007) demonstrated that the NGO involvement is rising due to encouraging project results around the country. Here, international agencies, NGOs and civil society are creating pressure on the government to enable multiple provider (either public or private) authorities for adequate WatSan options that particularly target urban poor people. Basically, the main focus of the government is to improve the health status of the country. So, considering the relationship between health and sanitation, they are favourable to health programmes where sanitation is an integral element. The Bangladesh government does not follow the 'neoliberal water and sanitation policy' (Castro, 2006) and does not agrees to refer reduced government role and a focus on markets whereas, this policy could be an option to overcome external pressures, policy emulation, pragmatism, bribery, etc (Castro, 2008). He also states that the NGOs can play a vital role, as they are not driven by market principles. On the other hand, the government considers slums as the forming ground of poverty and migration; and thus, they took strong position against the acknowledgement of legal rights of urban informal settlements (Joshi, Fawcett and Mannan, 2011). Despite this, the relevant ministries (through their respective departments and autonomous bodies) are trying to address the problems faced by slum dwellers, focusing broadly on issues such as in-situ development, slum upgrading, low-cost housing, relocation, eviction (Habib, 2009) or even a 'back to home' scheme in which the government encourages the people to return from the major

cities to their places of origin and receive a government loan or financial support to establish their own economic activity (DPHE official source, 2010). DPHE source also stated that this scheme is now in the planning phase but the intention of the government is to limit excess migration flow towards cities in order to minimize civic problems including water and sanitation. Since the government is trying to send people back to their villages, they ought to prioritize rural projects. A DPHE personnel also indicated the inability of the government to create income-generating possibilities in the rural areas. He was worried to see statistics of the number of slums and their population, services and government initiatives and he explained that the current level of WatSan interventions are not adequate to meet the existing policy requirements. But government officials remained silent when commenting about sanitation targets, as they knew that the target would not be achieved as announced. Off the record, they agreed that those are 'political targets' not 'target achieving targets'. Besides, a DPHE official believes that those targets are always over-ambitious but help the associated stakeholders to speed-up/gear-up development activities and interventions as a whole. More about government activities, project implementation strategies, policies and specific hidden political agendas will be highlighted in the later sections throughout this chapter.

8.4 Sanitation Policy and Strategy: Issues and Critiques

Upon reviewing the related policy documents, strategy papers and according to the extracts of several interviews with GO, NGO, donor personnel, I would also argue that policy often contradicts practice, while there are no clearly defined guidelines or links that can integrate policy and practice. For instance, WatSan service provider organizations are trying to educate people about hygiene behaviour in a situation where there is no adequate water. I got the following response from one of the BB residents about the issue:

> *"We don't need hygiene education. Give us water and we will teach you how to maintain hygiene".*

The current WatSan policy emphasizes elements of behavioural changes and sustainability through user participation at all levels of project implementation (SACOSAN III, 2008) but some leading NGO officials blame the government, saying that the WatSan problem has been created and promoted because the government doesn't have any control over migration from rural to urban areas. Some argue that there is no housing policy against the creation of the informal settlements. Government has no plans to extend services to urban informal settlements but at the same time they have no control over the rural-urban migration that accelerates the growth of informal settlements. Policy objectives for urban sanitation state that there should be easy access for every urban household through a range of technologies (i.e. from pit latrine to sewerage system) but the national sanitation strategy, 2005, suggests low-cost sewerage systems in urban areas. But the present national sanitation campaign for urban areas focuses on the promotion of individual pit latrines (SACOSAN III, 2008). I am not arguing the positive or negative side of the pit latrines or any other

technological options but my concern is that the inconsistencies between different policy documents where each document come up with different sets of ideas and different types of solution that couldn't be merged together. However, the most worrying issue of the national sanitation policy and practice in Bangladesh is the non-recoverable gap where policy reform might be the only option through considering entirely new, sustainable and sensible alternatives. More about these issues are presented in the following sub-sections describing the current state of affairs with precise indications of existing gaps between policy and practice in the WatSan sector.

8.4.1 'Paper Work' vs. 'Development Activities'

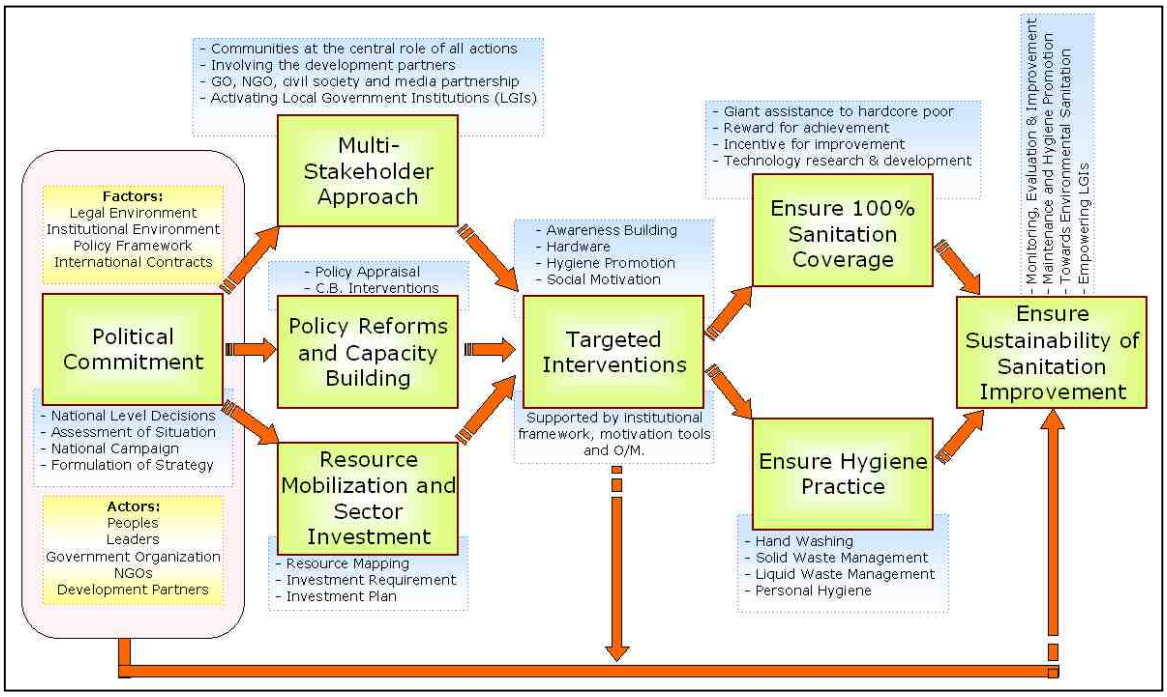
Before commencing the first South Asian Conference on Sanitation (SACOSAN) in 2003, the GoB was enthusiastic to achieve progress in the sanitation sector of the country and the major driving force was the political commitment of the ruling party. This was reflected in various policy decisions and the initiation of a number of important interventions that made a positive contribution in this sector. For instance, "they institutionalized interventions through the formation of a 'National Sanitation Secretariat', 'Task Forces' from national to grassroots level and observing the month of 'October' as sanitation month each year since 2003" (SACOSAN III, 2008, p.5). Moreover, the role of media and government's willingness to work in partnership with NGOs, development partners, civil society and private organizations have provided a wider platform in this sector to achieve the goal of 'sanitation for all'. Not only this, considering the available resources, government has taken different reform initiatives and formulated a number of policies and strategies that were effective for quicker achievement, such as government's reward initiative programme that accelerated progress through healthy competition and the recognition of success at the local level. All of these initiatives and field level interventions are compiled in Figure 8.1, which depicts a schematic framework model for sanitation improvement in Bangladesh (SACOSAN III, 2008).

It is encouraging that the framework model starts with political commitment and all the basic elements those are essential in the WatSan sector. One DSK official described the keenness of the framework model and opined that,

> *"If the system runs according to the stated model, the targets and achievements are obvious".*

However, as a matter of fact the model doesn't run according to its direction and a number of hindering elements obstruct the development pathways in which multi-dimensional paper work and conflicting or non-coordinated information make this sector a bit mysterious, and loads of documents conceal the field level development works. In another sense, the number of field-level development initiatives is not adequate to balance policies and targets with current projects and practices. The result is that Bangladesh has not been able to meet its national sanitation targets. The decision makers in this sector are generally biased by paper work that makes them optimistic. Arguably, government officials and their working strategies

Figure 8.1: Bangladesh framework model for sanitation improvement



Source: SACOSAN III, 2008

are not proactive and they maintain their existing practices and prefer to perform routine works.

In this situation, the government at the time of writing [2011-2012] wishes to do a baseline in their period as they have reviewed the previous target and set a new target of access to a latrine for every household by the year 2013 (Barkat et al, 2011). This target was one of the promises in the 2008 election manifesto of the ruling political party, although there was no consideration of the wider aspects of policy and implementation. Such manifestos are circulated publicly with a fanfare so that people are attracted to the programme but they rarely reflect the real situation on the ground. What is really needed in Bangladesh is long term, realistic, sustainable, sectoral, strategic planning to address the sanitation-related issues.

One donor representative stated that the government is not the only authority that can take decisions to manage their projects; there are other parties also involved. When the government alone is involved they don't have as much flexibility as the NGOs; instead, they have a structured approach to project management and operation while their traditional and structured working strategies make this sector a bit slow and less dynamic. However, government is literally not interested in implementing any sanitation projects in the informal urban settlements as GOs barely have permission to develop any structure in any illegal settlement. Because of the law of private property, any infrastructure built in illegal settlements might have to be demolished. As a result, the growing slums in the major cities are struggling to get sanitation services, as discussed further in the sections 8.4.2 and 8.4.3.

8.4.2 Metropolitan Cities: A Victim of 'Favouritism'

Sanitation interventions in metropolitan cities are a major challenge in Bangladesh. In the urban areas, sanitation is the responsibility of the municipalities and city corporations, who do not necessarily have the organization to take up such a huge role (SACOSAN III, 2008). Although everyone should have some water and sanitation provision to make a city healthy and livable, this has not proved to be possible in cities like Dhaka where millions of poor slum dwellers still lack basic provision. Despite this, there is a common misconception that urban populations have benefited more than rural people from development expenditure. On the contrary, expenditure on poor urban people is usually inadequate and we could argue that "the urban poor are ignored; just because there are more rural poor" (Editorial, 1999, p.3). Rural areas are favoured by all levels including government, NGOs, donors, development agencies in terms of project allocation, resource mobilization, implementation and so on. Therefore, I consider city slums to be a victim of bias in favour of the rural.

Regarding this claim, the contribution of NGOs in the WatSan sector is an example. While only a few NGOs are partly implementing urban WatSan projects in Dhaka, much bigger organizations and their regional partners are widely engaged in WatSan projects in rural areas. In some cases, several organizations work in one village but in city slums this is only evident in the relatively well-off ones where there is a minimal risk of failure and there is no horizontal project distribution strategy to consider the situation in under-served and over-served areas.

Another significant issue from the service providers' point of view is that WatSan interventions in the urban context are expensive, laborious and challenging. Moreover, there is an institutional vacuum because the DPHE is absent from metropolitan cities, making this sector relatively less-coordinated. The DPHE works as an implementer and watchdog in every upazila and district, overseeing government- and NGO-owned WatSan services and projects, but it has no functional responsibility for Dhaka city, which is handled by the DWASA. National water policy 1999 made a provision and proposed resource allocation for waterborne sanitation and storm water drainage in major cities (SACOSAN III, 2008) but there isn't much evidence yet of the achievement of time bound targets. "It is estimated that the annual requirement for urban and rural sanitation infrastructure stands at US$197 million and US$19 million respectively but the current annual investment is only US$7 million for urban and US$9 million for rural areas" (SACOSAN III, 2008, p.22). Here, I would argue that a per capita sanitation coverage plan should be introduced and infrastructure development sketched out on the basis of an integrated regional approach where the extent of the problem could be reduced and ultimately solved. This per capita concept would solve the resource allocation problem and urban areas would be allocated more funding due to their population size.

The trend of WatSan projects in Bangladesh simply gives an impression that, metropolitan cities are apparently victimized whereas, the project-focus basically determined by the organization's own skills, capacities, ideology and political stance, and they prefer to take over the rural-based projects. In the case of intellectual challenge, their defence is through their organizational mainframe working agendas. Most of the organizations working in rural areas have a belief that around 76 percent of the population living in villages (Barkat et al, 2011) have inadequate water sanitation and hygiene knowledge. Some argue that the WatSan problem in the villages is permanent whereas the problem in the urban slum areas is temporary because the nature of the settlements is temporary. In Bangladesh, it is well-known that the bigger organizations in the field of sanitation are not willing to work in urban areas. Regarding this issue, one NGO official tried to convince me stating that this statement is not true but later in the interview he admitted to that reality. He pointed to the fear of investment in the urban slum areas associated with the eviction threat (DiNino et al, 2006; WaterAid, 2001), land tenure (HI, 2011; Mitlin, 2003; Syagga et al, 2001), risk of failure, complex socio-economic and political setting that I have analyzed in previous chapters. NGOs want to promote integrated programmes and they like to invest, for instance, in micro credit, water and sanitation, housing, and education, all at once. According to a DSK official, this integration substantially increases the rate of programme success. Apart from this, some argue that rural areas are most vulnerable and the situation there has not been under control until now. They acknowledged the existence of numerous challenges in the urban areas but the challenges in the rural areas are different, such as natural hazards. I was also told that some organizations do not want to enter the urban areas as they might create problems for other existing organizations already working there. But in fact there are thousands of slums in Dhaka city not covered by any projects offered by GOs, NGOs and other organizations. Besides, some argue that organizational specialization is another factor that encourages them to work in their specialized field while the 'NGO Forum', a leader in the field of water and sanitation has determinedly set their focus on the rural areas.

Throughout these arguments and counter-arguments, one common issue came to the fore, that managing, implementing and getting positive results and achieving targets in WatSan projects in urban slum areas is much more challenging than for their rural counterparts. Summarizing from the interviews I did across different actors in both rural and urban projects, I found a sharp division between them regarding their activities. They try to attack each other through the issues of compatibility, experience, manageability, competency, risks and so on. Above all, in the existing policy and strategy documents the issues related to rural areas are more elaborative and specific whereas the guidelines related to the metropolitan cities like Dhaka are not so clear or informative, thus restricting even government attention towards urban sanitation interventions. Another reflection on the non-existence of urban issues could be acknowledged in the existing 'pro-poor strategy for water and sanitation sector in Bangladesh, 2005' where guidelines have not been documented for the betterment of the urban poor. Strategically, I would argue that there should be clear guidelines in all the policy and strategic documents concerning the urban areas with an indication on how to address the existing problem. However, discrimination between urban and rural poor could

be minimized rationally through incorporating specific agendas for the urban poor simultaneously with the rural poor. Since rural areas are home to almost 76 percent of the country's population, it is necessary to continue existing practices pragmatically so that a large portion of the population get the benefits of WatSan services.

8.4.3 Land Tenure and Service Provisions

It has already been acknowledged in the previous chapters that the lack of land tenure is one of the biggest concerns in upgrading the slum areas, including WatSan provision. In a true sense, urban areas have fallen far behind in hygienic sanitation coverage (SACOSAN III, 2008) and service provision generally is not adequate due to the insecurity of land or the legal status of the informal settlements. Although the national sanitation strategy 2005 suggested de-linking sanitation service provision from land tenure so that the utilities can extend their services to the slums, ironically there has been no implementation of that vital agenda. I found that poor communities are willing to invest incrementally in improving their living conditions, provided they have de facto security of tenure and can participate with the service providers. Abdul from BT opined that

> *"If government wants and helps us, we are willing to pay the price of this land. We had several discussions with the community people regarding this issue and most of the people are willing to join in this scheme. We don't need any other service from the government except the land. We don't want any permanent structure without having a permanent land. Alternatively, it is possible to welcome projects if government assured us that they would not evict us in a certain period of time; for instance, 10 years or something. In that case, we can contribute money and we don't have any obligation to participate with them."*

From Abdul's statement, it is clear that the most important issue that needs to be resolved is the tenure and security of land (Baharoglu, 2002) through different mechanisms. One of the mechanisms could be the community-based enumeration which will reduce the risk and protect the settlement from eviction (Arputham, 2012; GLTN, 2010; Patel and Baptist, 2012; Patel et al, 2012; Muller and Mbanga, 2012; Payne, 2005). Despite having this insecurity, some NGOs are working to promote sanitation services at their own risk. However, much of this investment is poorly implemented due to the absence of sound technical advice. The land tenure agenda is restricting not only government initiatives but other stakeholders are also keeping a safe distance from investing in large-scale WatSan projects in deprived areas. However, large-scale interventions are necessary to upgrade the informal settlements, not only with the WatSan projects but also with housing, which is dually important to improve living conditions. But, finance for housing the poor has never attracted social policy attention in Bangladesh (Begum, 2007), other than some individual endeavours and informal ways of management. Therefore, it is necessary gradually to legalize informal settlements prior to any planned intervention; this will help to rectify a raft of major and minor issues that are obstructing WatSan interventions. My own fieldwork experience suggests that the land ownership will make people quite enthusiastic to develop their surroundings and without this

tenure security people are not willing to participate in different permanent issues. In the above quotation, Abdul mentioned the term 'most of the people' to explain people's willingness to pay for the land but the matter is what happens to those who are not 'most of the people'. To address this issue, it is necessary to scrutinize and identify the really poor people and their practices because there is a possibility of selling their land immediately after getting it in order to generate cash for further opportunities. Besides, an especial arrangement such as conditional state-provided subsidy should be introduced for the 'poorest' group of the people.

8.4.4 'Sanitization' vs. 'Latrinization'

The concepts 'sanitization' and 'latrinization' are not an integral part of any policy documents but the origin of both words emerged when I examined the government's attitude towards achieving 100 percent sanitation coverage over the country. Derived from the last two decades of government activities, it is understandable that they have shifted their focus from 'sanitization' to 'latrinization' because they are now focusing more on latrine construction and emphasizing less the operation, maintenance and hygiene behaviour of the targeted community. Also, it is relatively easier to meet the target through 'latrinization' than 'sanitization' because 'sanitization' embraces 'safe water', 'disposal of human excreta', 'drainage', 'waste management' and 'proper hygiene behaviour'. These two concepts are different and I would argue that 'latrinization' is one of the activities within the broader process of 'sanitization'. From the experience of past few decades of government activities, it is arguable that 'latrinization' is a kind of one-time service delivery. Typically, it favours the concept of 'facilitation and forget' that I discussed in the previous chapters with some real-life examples. Besides, it can be linked with the renowned 'supply-driven' strategy. From the viewpoint of political parties and ruling government, a 'supply driven' strategy is most popular amongst them because it best captures the groundwork and investment of political leaders in their constituencies, which they can quote during a parliamentary election to secure their position. However, considering the definitional aspect, it is understandable that the sanitation coverage through the 'latrinization' is easier to achieve than that of 'sanitization'.

Government intention could be further identified through the review of previous and current national sanitation targets, which are over ambitious and criticized by most. These target wordings are reproduced in Box 8.1. It is understandable that through the current supply-driven strategy government realized that it is not possible to achieve the target in 2013 if they maintain the previous wording. Therefore, they changed the wording in order to smoothen their target achievement pathway.

Box 8.1: Wording of previous and current sanitation targets

Previous Target (expired in 2010)	Current Target (will expire in 2013)
"Sanitation for all by the year 2010"	"Access to latrine for every household by the year 2013"
Key points: Every household with latrine Ownership of latrine Supports hygiene behaviour Difficult to achieve Reduces sanitation coverage	Key points: Just access to latrine Shared latrine is encouraged No guidelines for hygiene Easier to achieve Amplifies sanitation coverage

In detail, the previous target was allied with every household who are owners of a latrine (LGD, 2005a) and the data were linked with the proportion of households with or without a latrine. Now, the definition of sanitation remains unchanged but the wording has remarkably changed and shifted the focus to 'access to latrine', which rigorously amplifies the nationwide sanitation coverage scenario. From my fieldwork experience I realized that people often care about their personal latrine and they try to maintain it properly and this strengthens the concept of 'sanitization'. However, government's current 'supply driven' strategy and official declaration of 'access to a latrine' through the target wording is encouraging the 'latrine sharing' concept. It is noteworthy that the government has shifted its focus from the 'total sanitation' concept and are keeping to a conventional 'supply driven' strategy that embraces the concept of 'latrinization'. Considering the ability of poor people the government is promoting and encouraging low-cost technology to increase the latrine coverage but they have not considered the service life of equipment and hygiene issues. Since Bangladesh is a country of flooding and high ground water level, the low-cost pit latrine is a great threat to the environment. Every year a considerable number of sanitation infrastructures are washed away and people are forced to return to their former open defecation practices[15]. However, it seems, as mentioned earlier, that the government is not interested to subtract such losses from their figures and hence the apparent increase of the sanitation coverage through low-cost latrines is not a reliable trend. More about low-cost technologies and associated issues are highlighted in the next section 8.4.5.

Finally, a gap has been identified while examining the current sanitation policy and strategy, which also relates to both 'sanitization' and 'latrinization'. It is true that the sanitation policy of 1998 didn't emphasize the issue and importance of hygiene behaviour that was later added in the national sanitation strategy of 2005, including the possible guidelines under the strategies for sanitation improvement section. Practically, these were only incorporated in the documents but there was no practical action from government; hence, the 'latrinization' concept is still in practice. This could be stated as either a gap or a violation of sanitation policy and strategy and this gap could be minimized through a sensible and realistic sanitation target with the spirit of achievement and promoting a sustainable solution. Recently, NGOs have been trying to provide improved latrines for a sustainable and durable superstructure in the longer-term remedies which are now appreciated by the government.

[15] http://susanbd.org/ (Accessed July 2011)

8.4.5 'Low-cost Technology' vs. 'Appropriate Technology'

According to the national sanitation strategy of Bangladesh 2005, government encourages viable, affordable and locally appropriate technology. Through this strategic document, government is encouraging low-cost technology in a sense that this option is much better than the long absence of expensive and sophisticated solutions. Afterwards, they highlighted the sewerage system with decentralized wastewater management option. Therefore, it is understood that the stance of the government is not straightforward towards technology selection because both low-cost technology and expensive sewerage system are under consideration. Besides, there is no indication regarding the cost of the technology in the existing sanitation policy 1998 where both of the documents finally ended with the term 'appropriate technology' (Diamant, 1984; Murphy et al, 2009; Rahman, 2006).

As there is no viable guidance in the topmost policy documents regarding technology selection, service providers and different actors in this sector have been implementing their own agendas, increasing the tendency to experiment; indeed Bangladesh is recognized as the leader in experimenting and implementing different approaches to rural sanitation (SACOSAN III, 2008). The informal settlements and the poor people have been used as experiment laboratories. Here, my argument is relatively straightforward towards long-term sustainability in urban areas. I have considered several issues in compiling the following.

Firstly, the top priority should be the construction of different dimensions of conventional sewerage systems on a phase-by-phase basis, emphasizing the most vulnerable areas of the city. This intervention should be implemented with a longer time frame and gradually this technology will solve most sanitation related problems in the added coverage areas. This is an expensive option but government has to adopt it as a long-term solution. In each financial year, they need to allocate a specific budget for the construction of the system from the Annual Development Programme (ADP) and they also need to provide and keep going with the low-cost technology for other vulnerable areas as a temporary arrangement. Government should take the necessary planning initiatives to track the budget allocation in this sector, as it is evident that a maximum of 8.5 percent of the allocated money for sanitation remained unspent in Fiscal Year (FY) 2003-2004 (Barkat et al, 2011). This trend is still noticeable and this unspent money should be incorporated in the areas in need through proper allocation prior to each FY. Here I would argue that we need to be opportunist as the conventional and simplified sewerage system is appropriate in the densely populated urban areas whereas we cannot build this in wider rural settings. It is also encouraging that different actors in the field of sanitation are interested to launch simplified sewerage system schemes, although the risk of slum eviction is hindering their willingness. Instead, they are helping through temporary low-cost technology with a philosophy that the slum dwellers may grow habits of using latrines.

Secondly, my position regarding the low-cost technology for urban settings is strategic and contradicts the current sanitation policy. This is because poor people live in environmentally vulnerable and damp low-lying areas where the sustainability of low-cost latrines is questionable. Besides, these low-cost solutions cannot support densely populated areas where the ratio between the number of users and latrines is very high. In my interviews with different key actors in the field of sanitation, many of them took a position against low-cost technologies. In the words of one of them,

> *"We always talk about the low-cost latrine and try to establish it as a sustainable solution for the poor people. But the situation is other way around. Low-cost simply means the less-service life with high maintenance, which is not viable for the poor people. We need to introduce sustainable technologies. The minimum latrine cost in Sri Lanka is 3000 taka but Bangladesh government offers 550 taka for a simple ring-slab pit latrine and it is evident that this type of government-provided latrine usually breaks down after a few months. Therefore, we shouldn't go for the low cost, instead, whatever the cost will be; we should adopt the sustainable technology."*

One consideration is that if a complicated and expensive latrine is offered in the first instance, people may not accept it because of a fear of associated costs. A sanitation expert stated that the cost of having a latrine that is connected with the sewerage system is relatively less than the proper maintenance of a low-cost technology. Actually, in the urban informal settlements, people are willing to pay for better sanitation options; but the main challenge so far is maintenance of the latrines, which could be bypassed through almost maintenance-free 'latrines with a sewerage connection'. Besides, those who cannot afford latrines, a subsidy scheme could be offered for 'poorest' group of the society. However, this type of proven technology should be acknowledged for further sanitation planning although there is no legal framework developed so far for improved sanitation (GoB, 2005) in different policy documents, which downgrade and delay the transformation of this sector.

Finally, sanitation planning should be developed considering two main agendas: one for the rural areas and another for the urban areas, because my fieldwork experience suggests that the socio-economic, political, environmental and local contextual issues are totally different in the rural and urban areas. Hence, it is necessary to develop a different policy and a different financial allocation strategy in urban and rural areas for future sanitation interventions.

8.4.6 State of Coordination between Stakeholders

The government of Bangladesh has expressed serious concerns regarding the coordination problem in the implementation of different projects in both urban and rural areas. Currently, the donor–government–municipality coalition is working in 185 slums in 25 urban centres, and the coalition was renamed the Urban Basic Services Delivery Project (USDBP) (Habib, 2009) but there is no information to be found regarding these projects. Ahsan (2010) argues that poor coordination among the agencies/departments/stakeholders has caused delays in

policy implementation and thereby the non-utility of allocated funds. Likewise, the WatSan sector in Dhaka city also lacks effective coordination, as described in a previous chapter (section 7.7). Despite the willingness of the government to support the involvement of other stakeholders, such as NGOs, market-oriented business organizations, and private organizations in WatSan development, there is so far no significant coordination that has effectively contributed to this sector. Most of the policy documents in the WatSan sector emphasize the partnership/collaboration approach but at the same time those documents such as the current national sanitation strategy also clarify the fact that the partnerships among public agencies, local government institutions, NGOs, private sector and development partners are very weak (GoB, 2005).

WatSan projects in Dhaka city require intensive coordination because the nature of work means the organizations need to be dependent on each other and it requires cooperation to achieve targets. However, the targets and objectives of different organizations restrict the usual pace of project implementation. Besides, a proper division of functions and responsibilities across the organizations is not maintained or simply the vital questions related to the projects, such as who will do what, how, when, and whom to contact, are not well coordinated or systematic and that hinders inter-organizational relationships. Moreover, in most cases the availability of financial and human resources also determines the state of coordination. For instance, Ahsan (2010) mentions that "an organization whose functions are dependent on resource cannot start functioning unless and until resource is disbursed, and hardly be able to continue unless the disbursed resource is adequate".

In Bangladesh, there are no institutional regulations for multi-provider involvement in WatSan projects in informal settlements. Akbar et al (2007) demonstrated that the cooperation and coordination between the NGOs and DWASA/DCC has now liberalized and institutional regulation may encourage many NGOs to invest in this sector. There are even some bottled water companies that are interested to build small-scale water supply systems in informal settlements. Privatization is a matter of long discourse and in my opinion, it will certainly not be viable in the case of Dhaka city. This may raise other problems within organizations like DWASA and DCC and the enormous strength and power of their trade unions may destabilize the whole sector. However, the government has adopted a sanitation policy and has already formulated a forum for coordination and a prepared sector development framework (SDF, 2004) where several guidelines have been offered to improve the context for sector coordination. But the activities are not updated so far, which might be regarded as a violation of the SDF.

It is now widely accepted that addressing the problem of WatSan issues require the participation of all of the actors involved, and this includes building consensus to design policies for the equitable and sustainable maintenance and expansion of the services (Hardoy et al, 2005). A DCC source I spoke to argue that contributions from targeted beneficiaries are necessary for development. He mentioned that a DCC proposal has been refused by the Dhaka University administration regarding the construction of a public latrine to minimize the

open urination practice in the university campus. Land values might be the issue for this refusal but local concerns and participation is necessary for greater success. As mentioned earlier, the launch of a 'Citizen's Charter' has opened channels of communication between DWASA and other NGOs that are working in urban WatSan sector. This type of mutual agreement between the stakeholders partly solves the coordination problem. From my fieldwork experience, I would argue that a one-stop service can change the whole scenario of bureaucratisation, coordination and cooperation problems in this WatSan sector; it is necessary to bring related activities under one roof with all decision-making powers. Whereas at the field level, I observed that the consciousness about using WatSan services and paying the bills had been raised and that the overall response from the community people was satisfactory, it is worth mentioning that if the people didn't receive any bills from the DWASA then they seek assistance from NGO field representatives to acquire them, which was not the case few years ago. Therefore, not privatisation (Hasan et al, 2005) but private sector participation is necessary between the public sector, NGOs, private sector and other stakeholders. At the same time, international and bilateral development organizations should be encouraged to continue their support not only for the urban WatSan development but also to assist government in other development sectors like poverty reduction, housing, institutional development, health, education and so on. To achieve policy agendas, the independent way of project implementation and activities by different organizations and agencies must be coordinated because the extent of the problem in WatSan sector is too diverse, large and complex to handle independently.

8.4.7 Finance, Corruption and Transparency

Development does not take place only with funds. Hasan (2008) argues that skills, self-reliance and dignity are essential as these factors can build relationships within communities, and between communities and government agencies. This is important for overall development and to combat sectoral corruption and non-transparent activities. It is often claimed that the sanitation sector is making gradual progress, and it is true that the regular contribution of the government subsidies through the ADP funds has now increased to 5.73 percent in FY 2010-11, almost double what was allocated two years back (Barkat et al, 2011). Yet, despite this positive trend, the sanitation sector is receiving only about 11 percent of the total allocation (Barkat et al, 2011), reflecting the government's weak commitment to sanitation. It should be added that, the loss to bribery in five public service delivery sectors including health was 7.9 percent of household income in 2005 (Iftekharuzzaman, 2005 cited in Zaman and Mahmud, 2008), which is burdensome for poor people. They also have to spend relatively more money because they need to purchase water from so-called water vendor or kiosks (Akbar et al, 2007) that are promoted through corruption and political influence. Though corruption is present in the public WatSan sector, logically the activities of the sector will not be transparent as many argue that the NGOs and other parties are also engaged in corruption and all are working behind the scenes against transparency. Arguably, the NGO-affairs bureau is at the centre of all these activities, one

reason being that it lacks manpower and hence NGOs try to get government approval by giving 'speed money'. More often, private vendors conspire with public officials to prevent network extension (Swyngedouw, 2004 cited in Sohail and Cavill, 2008) or the field officials intentionally cause system disruptions that create the opportunity of taking bribes, as I found in BT. Apart from the above, political corruption in the WatSan sector is also evident in Bangladesh, often leading to policy capture and influencing project selection. Regarding this issue, Sohail and Cavill (2008) argue in the Global Corruption Report (GCR) 2008 about undeniable facts of bribery that divert resources away from one place to influential constituencies. Besides, the political leaders may support non-viable, expensive and high-tech projects for their own individual financial gain. There have been several initiatives to minimize corruption and government reviewed the Public Procurement Act in 2006 and later established a financial intelligence unit in 2008 to establish comprehensive legal provisions to prevent corruption (Zaman and Mahmud, 2008). Despite this, the gap between the government commitment and project implementation in the WatSan sector remains below expectations.

Bangladesh has widely been recognized as a 'fertile ground of corruptions' (Gani, 2010) and the WatSan sector is implicated (Ljung, 2008). The moral fabric of society has been contaminated, as corruption became almost a 'way of life' (Zakiuddin, c2010). It is difficult to determine the scope and extent of corruption and Davis (2004) believes that getting relevant information is exceedingly challenging. Here, I believe, all the involved parties use their broad institutional identity to mask reality and manage it with fictitious/fabricated paperwork. In policy documents nothing is mentioned about how to tackle the existing state of corruption, but the outcomes from different WatSan projects nevertheless highlight the issue. Therefore, it is necessary to incorporate the agenda of corruption with strict regulations in policy documents to send a message to the implementation authorities and other involved parties about its consequences. The anti-corruption commission should be strengthened and involved in the whole process as currently this institution remains ineffectual due to political bias and a lack of commitment by its officials since 2004 (Zaman and Mahmud, 2008). Particularly, the anti-corruption efforts in the WatSan sector need to be intentionally pro-poor as was suggested by Sohail and Cavill (2008) and Shordt et al (2006). Finally, to prevent political interference and to establish corruption-free, autonomous, transparent and accountable public sector management, WatSan utilities must be designed and approved as separate entities where the operational management and budgets are alienated from the general administration. In this regard, Transparency International-TI (2008) stated that this kind of entity should be overseen by a multi-stakeholder board and audited independently to reduce the extent of corruption.

8.4.8 Sectoral Priority

Globally, many studies in the WatSan sector acknowledge that water is much more prioritized than sanitation, which I discussed in chapter two. However, in Bangladesh,

sanitation has been addressed through projects and programmes that combined water supply and sanitation. However, experience with such projects and programmes show that sanitation is still marginalized (Martin et al, c2003), whereas, detailed institutional, financial, implementation, operation and maintenance arrangements are presented for water. During the fieldwork, I looked at several national programmes, which are based on both water and sanitation, and I observed that water issues always came first. This may be because the people at the grassroots are themselves more interested in water than sanitation or that the service providers consider profits or ease of operation. It may also be a matter of fact that the taboos surrounding sanitation make most people and organizations more inclined to focus on water rather than sanitation (COHRE, AAAS, SDC and UN-Habitat, 2007; UNICEF, 1997). Besides, several actors in the WatSan field acknowledge the existence of underground politics about privatizing the water sector that may facilitate a specific group of people without considering the situation of the urban poor. All of the issues might be true but the government statistics dug out the reality that again goes to the water sector where sanitation remains as a sub-sub component of the broader health sector (Barkat et al, 2011). They also made it clear that sanitation generally remains a low priority sector compared to other areas and concerns over the years. The evidence can be found in one of the policy decisions where a government subsidy is available at 50 percent for hand tubewells, 75 percent for hand tubewells in low water table areas, 80 percent for deep tubewells and 0 percent for private latrines (DPHE, DWASA and UPI, 2005). Besides, the opinion remains the same from the viewpoint of a ground-level DSK official who mentioned that:

> *"There are two issues associated with this. One is organizational movement and another is people's perception. Organizations are always comfortable with water because it is easier to achieve the target through the pipelines, which elevate the impression and goodwill of the involved. Besides, it may benefit the organization through revenue generation. The sanitation issues are very challenging because they are associated with people's behaviour, practice, origin, affordability, gender, education and so on. Another understanding in relation to the priority needs is that while people will go for the water because it must be consumed and an integral part of life whereas the absence of latrines could be manageable anyway."*

Therefore, we can see that the agenda of 'prioritization' not only comes from the organizational end but the grassroots level equally embraces the priority of water and less demand for sanitation. However, psychologically ordinary people have considered human excreta as a 'pushing element' and tried to get rid of it anyway while, this kind of understanding makes the sectoral actors aware of the associated challenges. For instance, one top-level actor in the urban sanitation field stated that sanitation promotion would bring no result if the users have no basic education. Similarly, the hygiene promotion campaign will be fruitless if the targeted group has no money to build their own latrines. So, the intervention issues should be addressed with along with these interconnecting parameters for better outcomes. And finally, I would argue that sanitation should be considered as having equal importance to water in the WatSan sector, perhaps as a national priority while the programmes and projects should be promoted and implemented accordingly through the recognition of changes in the policy documents. Recently, the GoB declared cash rewards of

Tk 200,000 and Tk 500,000 for open defecation-free unions and upazilas respectively (Roy, 2009a cited in Uddin, 2011), which may impact the whole scenario.

8.5 Current Situation and Future Directions

Considering the current sanitation situation, a relevant question certainly apparent in the WatSan sector is 'where we are now?' followed by 'where do we want to be?'. Simply, the answer to this question is, as mentioned in section 1.3.3, that we are using unreliable statistics which are affecting our future planning. Current sanitation progress is undeniably below expected levels. Following 2010, the government is most likely to declare another target failure statement in 2013. In this situation, where most of the actors know about the poor state of sanitation coverage, the government still seems optimistic and ambitious in their existing targets, as reflected in the National Sanitation Conference 2011 (cited in Uddin, 2011). Therefore, the quality of our future predictions undeniably raises enormous questions whereas the planned future directions are far from straightforward. In this connection, one of the elected local government representatives stated at a national sanitation event that:

> *"Targets are set to meet the goal but it is difficult. We placed current target to gear-up the whole process. NGOs have a spirit of target achievement and they are good in project implementation. Perhaps, these ambitious targets could play a key role to create a movement in the sanitation sector through the participating NGOs, which may impact by raising the total sanitation campaign. We need to ignite the process, and here, NGOs may take the leading role."*

Here, I totally agree with his first sentence and I believe that targets as a reflection of policies, strategies and other formal official documents and if we are unable to meet the target then indirectly it is the violation of all those policy documents. Many alternative options exist to gear up the whole process like rewards, prizes, etc. Nevertheless, the rest of his statement acknowledges the contribution and expectations from NGOs. However, the sector actors, especially the NGOs, are still experimenting with the possibilities of different project strategies and approaches that would work effectively in urban slums. Moreover, current sanitation policy includes 'environmental integrity' where it is suggested that broader environmental issues should be considered through enactment of the Environmental Conservation Act (ECA), 1995 and the Environment Conservation Rules (ECR), 1997 (GoB, 1995; GoB, 1997); but no guidelines have ever been presented to address this issue. The fact is that most of the GO-NGO sanitation project documents initially show an interest in the environment where environmental health issues are tagged but necessary interventions are absent from the outset. From an ecological perspective, low-income people contribute less to waste generation or greenhouse gas emissions because, as Satterthwaite (2003) argues, they are the main re-claimers, re-users and recyclers of wastes from a variety of sources. Apart from this, current sanitation policy is gender-sensitive and the representation of women exists in different committees.

The NGOs in this field seem to be pro-active in managing their projects to maintain their performance, reputation and to meet their own targets, while the government interventions are inflexible and traditionalistic. Despite having this pro-active attitude of NGOs, the donor agencies are usually reluctant to provide funds for post-project monitoring, although it is vitally important, as recognized by several key actors in the WatSan sector. On the other hand, community responses from the grassroots level are unstable and depend on local context and project intervention strategies. Habib (2009) identified three basic obstacles in the WatSan sector, including rural-focused NGOs, eviction threats and coordination problems amongst government agencies where the DCC has failed to date to develop any proper inter-agency coordination. Here, Habib (2009, p.263) believes that "the long-term sustainability of NGO programmes largely depends on their capacity to co-ordinate among themselves as well as integrate their programmes with the government agencies, in order to get much-needed institutional and infrastructural support".

Because of unreliable statistics, there is little to say about the future directions. Poor people want to see direct benefits from each investment, including latrines. From the fieldwork experience, people often feel better to buy a mobile phone rather latrine installation in the sense that the latrine doesn't bring any direct benefits or returns, although they overlook the infectious diseases, the loss of working hours and the incurring of medical expenses that come without a latrine. Here, the issue of 'lack of demand' for sanitation again came to the fore. In theory, mobile phones may be recognized as a status symbol but my experience from the field suggests that it is no longer a matter of status but rather a necessity in the urban context. Jewitt (2002) in her book 'Environment, Knowledge and Gender' mentioned latrines as a status symbol in rural India which is also observed in Bangladesh. But in the urban context the necessity and use of mobile phone is regarded as safety and/or social needs. Apart from the issues related to 'lack of sanitation demand' and 'use of mobile phones', it is recognized that the hygiene education increases knowledge of the environmental health benefits of latrine use and the dangers of open defecation (Ahmed and Rahman, 2000; Black and Fawcett, 2008). Some NGOs like the DSK are currently working on one of their targeted philosophies to spread hygiene practices among the community and which help other people to get motivated and inspired on hygiene practices. Considering the above, I suggest that the future direction of WatSan programmes should be based on an integrated approach involving education, hygiene, health, and infrastructure simultaneously with water and sanitation to tackle the 21st century's urban sanitation problem. Moreover, sanitation should be taken as equal priority as water; and I believe that political commitment and political motivation can play a big role in creating demand and improving the overall sanitation scenario.

8.6 Conclusion

This chapter summarizes the fact that the gaps between the policy and practice are remarkable in Bangladesh while the current sanitation policy does not address any specific measure that would be credible and target-oriented (The Daily Star, 2008a). After assessing

the sanitation policies of the developing countries, Tayler and Scott (2005) came up with a thought that, "if sanitation is to be given due attention, it needs its own policy", which is also acknowledged by many sector actors in Bangladesh. However, a polarized/separate sanitation policy would ensure the attention it deserves and key planning and finance departments and ministries should own the policy more widely. To go forward, it is essential, first, to identify factors that underpin progress in this sector (Castro, 2008) and incorporate longer-term, target-oriented agendas in the policy documents such as prioritization of land tenure and associated subsidy issues, longer term sustainable projects and effective coordination system of different actors. Here, government should be proactive in implementing these policy agendas (Mwangi, 2000), which may help the required changes and support local initiatives.

I would like to conclude by stating the necessity for localized prescriptions of 'social-technological-governance' systems as well as the policy dimensions and reforms in the sustainability of urban infrastructures in the low-income settlements. While reviewing an article by Gandy (2009), which is based on his documentary film 'liquid city' released in 2007, a common and very general criticism raised by the viewers is why he didn't draw any conclusion on how to solve the WatSan crisis in Indian cities. His response was that, addressing the reality, it is not appropriate for a London-based academic or filmmaker to present a set of prescriptions for a city in which there is no shortage of ideas or expertise. Therefore, policy reform and guidelines should not flourish only at the intellectuals' desk but local experts' views and local knowledge should be incorporated in policy documents for a better outcome. Here, I believe, extending and improving WatSan interventions are only likely to happen if all actors are proactively involved, i.e. government, NGOs, development partners, private organizations, the regulator, civil society, politicians and the communities. Together with this general conclusion, the next and final chapter will illustrate precise ideas related to the possible recommendations in the sanitation field that could enhance the pace of GO-NGO-managed sanitation interventions in urban slum areas.

Chapter Nine

Summary and Conclusion: Options for Target Achievement and Recommendations

Chapter Nine

Summary and Conclusion: Options for Target Achievement and Recommendations

9.1 Introduction

This thesis has taken a qualitative approach to investigating the role of government and NGOs in managing the water and sanitation situation in the urban low-income communities of Dhaka city. Firstly, a livelihood based, bottom-up approach was taken to identifying the factors that facilitate or hinder sanitation interventions. In so doing, this thesis has analyzed the 'social-technological-governance' systems of 5 study areas from the position and perspective of both vulnerable people and service providers. The general objective of the study on which this thesis is based, has been to explore the factors that facilitate or hinder sanitation programmes through assessing the trends of sanitation programmes implemented by GOs and NGOs in Dhaka city. Moreover, an attempt has been made to explore the needs and deprivations faced by the urban poor with a view to assisting the government, NGOs and donors in designing programmes and policies to address the overwhelming slum sanitation agenda. Secondly, this research has explored the gap between policy and practice that exists in the WatSan sector and subsequently to offer guidelines for policy reform.

In the following section the outcome of this thesis is presented through categorizing the factors that facilitate and obstruct sanitation interventions in the slums of Dhaka city. A detailed background of these findings is documented in the previous chapters, notably answering the question 'what, and how do these factors facilitate or hinder urban sanitation programmes?' These have been demonstrated with real life examples from the beneficiaries' and benefactors' point of view. What this study has accomplished so far is an analysis of the diverse 'social-technological-governance' systems that are recognized as the most important factors in the WatSan field. The entire analysis has been based on the qualitative assessment of field data and the following sections summarize the outcome of this thesis in a brief format, including a possible set of solutions, to highlight the most crucial and impacting factors that ultimately contribute to existing knowledge and theory in the WatSan sector.

9.2 Facilitating Factors: Fuels for Ignition

Despite having plenty of evidence of wretchedly inadequate sanitation conditions over the study areas, the existence of some encouraging phenomena in these deprived neighbourhoods shows a pathway towards a better slum sanitation agenda. First and foremost, NGO service providers such as 'the DSK', who have gained local knowledge from their past WatSan projects implemented in urban slum areas, are proving effective in managing these mixed and diverse social contexts. Participatory approach and closeness to the grassroots are the main strength of DSK, which is both acknowledged and welcomed by the beneficiaries. My feeling is that this strategy could be used widely as it is one of the crucial steps towards site selection and successful project implementation. Satterthwaite (2003) is similarly in support of more partnerships which ensure better governance, as these strengthen the capacity of the urban authorities.

Secondly, there is potential for a collective community stance within the community where there are assurances for the improvement of their neighbourhood. I am not overlooking the regular tensions at the water points and toilet areas but my fieldwork experience demonstrates the fact that these confrontations are mostly temporary and don't affect any communal development. Here, the crucial issue is the local power structure; where 'musclemen' or *'mastaans'* are destabilisers of GO-NGO development projects. The DSK has found a role for these troublemakers, which is effective in their project sites and has minimized the problems. In extreme cases the service provider needs to seek help from local political leaders or other parties able to negotiate with troublemakers. Overall, it is these interlinked phenomena - closeness to the grassroots and social unity for collective community development - that may ignite the process of finding effective life-saving solutions to the mounting sanitation and hygiene challenges of Dhaka.

The impact of NGO-provided hygiene training is obvious on their client community. However, despite having consciousness about hygiene behaviour, some people are still not responsive in maintaining hygiene. This could obstruct the whole process but nowadays eagerness for basic education, NGO-provided hygiene training sessions, motivational campaigns and sensibly limited demands from the community are collectively escalating the trend towards project success. Through an assessment of DSK interventions at their various project locations, it is evident that their efforts are effective in convincing people to change their behaviour and improve their community environment (Figure 9.1). This is in stark distinction to the slums without any intervention, such as Kamar Para where all hygiene issues are neglected.

Another straightforward understanding gained throughout this research is the existence and contribution of CBOs in total community development. These may be considered not only as grassroots organizations that work for the community but also enable a level of governance which is essential for the operation and maintenance of urban WatSan infrastructures and

Figure 9.1: Posters (A,B,C) and cards (D,E) as one of the effective motivational strategies of DSK

Source: Field Survey, 2010

other issues related to community management. Moreover, as mediators, the CBOs have been solving local community problems effectively because they can combine their local perceptions and institutional guidance towards a particular problem where most of the social, financial, managerial, behavioural and political issues have been addressed. Recently, the DSK were involved in the legalization of the 'Citizens' Charter' in 2008; and now all informal settlements are eligible to get a legal water connection under the name of a CBO. This is a milestone and a positive contribution in broadening the horizons of good governance.

9.3 Land Tenure: A Central Concern

After investigating different GO-NGO-managed WatSan programmes in urban informal settlements in Dhaka, this research has found that obstructing factors outweigh those facilitating change. In particular, there are some major issues that subsequently generate other minor problems and it therefore makes sense to identify them and act responsibly to restrict the problem-breeding process. One of these major obstructing factors is associated with land tenure, where people have no legal rights to live in their settlements and are under the cloud of a future eviction threat. This invisible factor creates many visible barriers in WatSan projects. For instance, land tenure itself creates various impacts on people's minds including fears about investment, an identity crisis, demotivation for participation, the absence of self-help initiatives, and even impacts on the culture and design of living. This is seemingly the foremost, universally known, influence and widespread barrier (Agbola and Agunbiade, 2009; DiNino et al, 2006; FAO, 2002; HI, 2011; Mitlin, 2003; Syagga et al, 2001) obstructing WatSan development pathways in Dhaka. Not unreasonably, people consider any project to be temporary and the attitudes and responses from the users are rationally influenced and predisposed by this factor, often resulting in the failure or stagnation of projects. Both the government and NGOs are aware of this strong and influential obstruction but unfortunately, no initiatives have yet been taken to address this vital issue from either of these implementing agencies. Likewise, Clarke (2008) presented some interesting posters (Figure 9.2-A,B) in his research regarding the perception of slums by the slum dwellers, which have a big impact on the overall project management.

Figure 9.2-A,B: Slum dwellers' perception about their neighbourhood

Source: Clarke, 2008

Therefore, switching on to the land tenure agenda and people's associated perceptions and attitudes may considerably assist the process of social construction through changing minds towards the creation of a healthy living environment. This solution seems optimistic but not providing slum dwellers with legal title to their land means that only short-term solutions are possible, with long-term sustainability remaining unreachable. Despite this, WatSan projects continue to be temporary and permanent solutions are never offered in the informal settlements. The government's concern is always that legalizing and institutionalizing slum areas would encourage further migration to the cities and add to the existing burden of urban governance. In such a situation the government's role might be indirect facilitation through a framework of legal rights and encouraging more NGOs to come forward to work in the slum areas. Currently, governments of all stripes are deliberately avoiding the adoption of these settlements into their formal systems and NGOs are following by selecting suitably favourable project locations, keeping in mind principally their own survival and performance. For this reason some relatively well-off and non-vulnerable slums are repeatedly getting attention and surprisingly in some cases several organizations are implementing their projects in the same neighbourhood. This uneven distribution of GO and NGO services is making this sector unequal and fragmented, and obstructing the pace of achieving sanitation coverage throughout the slum areas. A central decision from the government would help, either to offer a timeline for eviction or giving the slum dwellers a legal right to live and use the land that could ultimately solve or minimize the extent of the related obstructing factors.

Another major obstruction lies within the services themselves, which are undeniably inadequate, and arguably inappropriate. This inadequacy and sometimes unequal distribution of services creates intra- and inter-community clashes, degrades the law and order situation, enables multi-dimensional community power and politics, grouping, and jealousy that end up even with the exploitation of each other's infrastructures. However, it is understood from the viewpoint of the grassroots that adequate access and facilities could solve these clashes and may improve their hygiene practices, design of living and eventually reduce the WatSan-related demands. Here, the concern is again interlinked with land tenure when it raises the

question of whether the benefactor organizations are willing to construct permanent infrastructure on temporary land. Even if they consider permanent infrastructure, service providers raise another concern regarding the responsibility towards fair use of communal facilities, and this will be highlighted in the following section.

9.4 Operation and Maintenance: Fragments Social Strength

It is undeniably evident from all the study areas that the existence of collective social strength for a new or improved alternative inspires the entire community. People are eventually very enthusiastic to see, help and participate in development initiatives. However, the first resistance usually comes when financial decisions have to be made. Once this has been overcome, it is the unique problem of operation and maintenance (O&M) activities that fragments the social strength that existed at the launch of the project. Disruptive phenomena such as clashes and disagreements often then lead to carelessness and exploitation of the infrastructures. My fieldwork experience suggests that a solution as simple as water availability and adequacy would be sufficient for most O&M-related problems and the installation of taps inside the latrines would be an added advantage as it may reduce the trend of leaving the latrine unclean after use. But the matter of fact is that the whole of Dhaka city is historically experiencing an overwhelming shortage of water and sewerage network that reasonably creates space for the city authorities to ignore the needs of illegal settlements. Most of the stories related to the provision of WatSan interventions ended up at the point where the city authorities or the associated provider couldn't offer adequate water and sewerage. In fact, the service providers are now having to 'cut their coat according to the cloth' due to inadequate environmental and financial resources that make them particularly helpless in the summer season.

In such a crucial situation, expensive water treatment plants are required in a context where the existing plant is currently not in full production and produces water of questionable quality. In this expanding megacity with the inadequate supply of commodities, the O&M activities of government infrastructures also sap the strength and cooperation between different related agencies, including the NGOs. In this situation, any solution based on the concept of 'low-cost' cannot offer longer-term sustainability; indeed, in my opinion, we need to go beyond 'low-cost' and adopt a new concept of 'affordable cost' to minimize the gap between the demand and supply of commodities which may ultimately reduce the effort towards O&M. My point here is that poor people are paying more than the government price for their water. So, why shouldn't they get institutionally legal water within the existing government payment system? Social consciousness needs to be raised and capitalized to make people understand about the obvious necessary cost of production and distribution of water and sanitation and so the government needs revenue to maintain and improve their service flow. In this regard, motivation towards legal connection should be introduced together with obvious benefits of having such commodities and, most importantly, hygiene education should be offered so that people willingly come forward with their affordable

investments for a healthier life. This new concept of political economy may offer the possibilities of new political ecology where the service providers including GO-NGOs would come together enthusiastically to mitigate the problem. Here, one related question is the respective roles of GOs and NGOs, as their practices, institutional culture, closeness to people and experience in handling field level development projects are different. This will be further explained in the section 9.5. However, derived from my fieldwork experience, I believe that once the poor people are able to get access to adequate water they themselves, or with a pocket-sized motivational campaign, they would be able to maintain hygiene practices as they already have a level of knowledge about hygiene. But due to irregular and inadequate water and the absence of other sanitation related facilities, they are reluctant to apply that knowledge which could be recovered by ensuring adequacy of commodities. At this point, another crucial issue needs to be ensured for the sustainability of the whole process, and this is further explained in the next section.

9.5 Good Governance: Shield against Failure

The causes of the WatSan crisis are many and complex. However, poor governance is regarded as a major and significant constraint to progress towards improved service delivery in developing countries. Many initiatives have been taken so far to address this issue but the solution to the problem is still incomplete and fragmented. For instance, despite having government willingness to go for more partnerships, it is unfortunate that there is no unique guideline for WatSan project implementation in terms of governance from top to bottom levels of the hierarchy. Here, I would argue that NGOs are quite strategic and opportunist in minimizing governance-related risks by assuring and choosing suitable project locations in the first place. Strategically they make sure that they are on the 'safe side' as discussed in chapter seven. Many NGOs have gained a level of people's trust through their structured, people-centered and target-oriented working strategies in their slum intervention areas, which could be labeled as 'effective practice' through their 'tailor-made', 'participatory' governance strategies. Despite this participatory intervention, NGOs have faced governance problems of a social, financial and managerial nature. The role of CBOs and other techniques offer possible solutions to those problems, such as the 'collection of bills' and 'lock and key' systems that partly ensure better infrastructure management. Actually, from my fieldwork experience, I realized that the small institutions like CBOs and their supportive small committees have proved effective in enhancing the performance of entire governance systems where most of the small community problems have been addressed. But in the broader context, the role of poor governance in the sanitation sector has not always been recognized or documented. Williams (2010) identified that the failures in the WatSan sector and in devising strategies to tackle these failures; the approach has largely been technological and environmental while political factors and policy have continued to be ignored.

The working strategies of government organizations are mostly formal, with NGOs much closer to the informal activities of ordinary people. Arguably, to improve sanitation to a large extent, government involvement is undeniably important. As we aware, the 'facilitate and forget' strategies of government institutions are literally formal and seem unable to create an avenue for poor people to respond when they need informal relations with the service provider organizations. My point here is that both types of organization are needed to minimize the gaps created by the government's inability to communicate with the grassroots and the NGOs inability to take on large-scale WatSan projects. Apart from the activities of different GOs and NGOs, people have a fear to talk with government officials and an invisible panic obstructs people's willingness in conveying any type of message. This may be because they are occupying government land illegally or just because they consider government officials as super-powered personnel who can take any decision regarding their lives. Pessimistically, they think of the worst case scenario in which they might be evicted or charged due to illegal occupancy.

9.6 Technology: A Silent Victim

As was highlighted in chapter six, technology is situated in the middle of all WatSan-related discourses and is continuously accused of inappropriateness, inefficiency and poor performance. However, I would argue that technology has been victimized by concerns that are really the result of poor construction, user carelessness and other related factors. Not only this, social, economic, political, environmental and other circumstances often impact WatSan technologies as these issues have often not been properly considered during project planning and implementation. During the discussion in chapter six, I raised the question of whether technology influences user practices or the other way around? Actually, the answer to this question is not straightforward, as many issues are interconnected with it. However, it is obvious that the user can determine the efficiency of a certain technology through proper use, operation and maintenance. What I understood from the field about the perception of sanitation technology is much associated with the concept of a 'fixed defecation place', 'disgusting and unclean areas of the neighbourhood', 'trouble makers', and so on. From further investigation of people's perceptions, it seems that the allegations are not the fault of the technology but the understanding of people where most of the argument is abstracted to ownership status (household or communal) rather than the technology (pit or septic tank). These types of mind set amongst slum dwellers continuously oblige them not to take even a minimum care of communal facilities (Anschutz, 1996; Smith and Ezzati, 2005; Werlin 1999). Moreover, the inadequate services often reflect badly on the technologies although they are not able to show their true performance without interrelated services and issues like water, sewerage connection, geology, ground water table, location, and so on. My field investigations revealed that the mainstream negative dimensions concerning the technology often return not only to the users' carelessness but also are associated with the quality of the infrastructure that ultimately tarnishes the technology.

In relation to this negative scenario, the term 'cost' and 'affordability' come to the front and these are considered among the most challenging constraints in the selection of durable and robust technologies. If a technology is not affordable, it is not suitable for the slum areas and I support Murphy et al's (2009) idea that the cost should closely match the willingness to pay and ability to pay of the users of that technology. On that point, I observed from the field that most of the people are currently using a very efficient septic tank in the GO-NGO slum interventions, which is a relatively expensive technology, and, most interestingly, the people who are paying for this service would sometimes prefer to have the more convenient technology of a water tap inside the latrine. According to the service providers' opinion, they had to spend considerable amount of time to motivate people to stay positive about the technology. But problems arise with user practices, maintenance activities and overall governance related to the infrastructure. One problem is associated with final excreta disposal, which is almost absent in the slum areas. Therefore, it is argued that slum dwellers, especially women, are mostly willing to pay for a good quality technology that can solve problems related to privacy, convenience, durability, aesthetics, minimizing queues, and so on. As it mentioned in chapter six that users should obviously be consulted before the introduction of any WatSan technology but my understanding is that many people are short of information and giving them ultimate decision-making power regarding the selection of a technology does carry potential risks. Because people's opinions are diverse, giving them decision-making power may create another social problem. Alternatively, after consultation with the people and, accordingly, considering their voices regarding a technology, it is fruitful to offer a locally sustainable technology (Murphy et al, 2009) with pre-designed motivational and convincing statements to the targeted community, which should also address the 'cost' and 'affordability' agenda. Here I would agree with Murphy et al's (2009) concept of incorporating both 'hard' and 'soft' aspects of technology, meaning not only the physical infrastructure but the knowledge transfer mechanisms, capacity building and communication methods as well as the social, cultural and gender implications of technology implementation.

9.7 A New Direction: 'More for Some'

There are many concepts, theories and models in the field of water and sanitation, and while most of them are effective in specific spatio-temporal settings, few are successful in all contexts. For instance, pit latrine technology is suitable for rural areas but it is not appropriate in the urban context. Similarly, ecosan latrines have become popular in Africa but are totally discarded by the Bangladeshi people. Therefore, it is quite difficult to generalize solutions to the urban sanitation agenda because there are such diverse socio-economic, political and spatio-temporal issues associated. Here, Zhang and Li (2011) have suggested that, to overcome the shortcomings of each individual approach, policy makers tend to combine different types of policy tool to address the challenges on several fronts. Despite this initiative, the problem still persists and the reason for the problem is not associated only with one party but with several interlinked issues from different

stakeholders, associated in the evolution of the problem to a great extent. Anyway, my contribution from the present research is not entirely to change existing knowledge in the urban WatSan sector but to make a small addition through my understanding derived entirely from my fieldwork activities and analysis of qualitative data. Together these may offer some possibilities toward sustainable and long-term solutions for urban water and sanitation in low-income settlements.

Through the grounded theory approach, what my study has unearthed so far is inadequate facilities, inappropriate technologies, ineffective governance systems, and diverse social atmospheres in the urban slum areas that in sum are obstructing the development pathways. On the other side of the coin, the presence of people's eagerness for development, their participation, and the efficiency of managing CBOs are the positive social forces that could help to demolish those obstructions. For two decades after the 'New Delhi Statement' (IELRC, 1990) in 1990, the concept of economy, i.e. 'Some for All', has dominated the WatSan sector, where 'low-cost' technologies have been offered to ordinary consumers. As mentioned earlier, my argument is that we should be more cautious about adopting the term 'low-cost', as it does not necessarily offer long term sustainability due to the short life span of projects. At the very least, projects offering the existing 'low-cost' technologies should be continued until sustainable solutions are in place; and Hasan et al (2005) argue that conventional water and sewerage services to unserved settlements is unrealistic in the short term. Here my understanding is that improving and extending WatSan services is only likely to happen if all the actors are involved. Simultaneously, a sustainable solution for urban areas should be introduced and promoted with greater force that can eliminate unhygienic practices from the most deprived settlements, perhaps in successive phases across the city. It might be worth constructing simplified sewerage systems or septic systems rather than household pit latrines in the most densely populated slum neighbourhoods and connect them to nearby sewerage networks which need to be constructed phase-wise across the city. This partly supports the concept of 'More for Some', i.e. more investment in some projects, which I believe could offer long-term sustainability through reinforcing a strong 'social-technological-governance' system. The concept of 'more' should be implemented, not only to cover technological aspects, but also as intensive motivational campaigns that can motivate people to understand the difference between 'illegal-insecure-overpriced-dirty' and 'legal-secure-affordable-clean' water and sanitation services. This type of new social norm, understanding and choice to change their current behaviour and decisions is more likely to pass when public awareness is garnered through community education efforts (Chehimi, Cohen and Valdovinos, 2011). However, this may lead the poor people to reach a sufficient level of empowerment and political capacity to demand such services from the government, supporting Chaplin's (2011) idea of alleviating the urban WatSan situation. Moreover, we should avoid looking at problems exclusively through the eyes of engineers, as Murphy et al (2009) stated that this may not be a sustainable solution if multi-stakeholder collaboration is not taken into account.

To get a better result from this new proposed integrated project implementation technique, a comprehensive participation from all parties should be ensured, where the government's role

would be providing legal rights to the land and support in the background for law and order, legal, financial and managerial matters. The NGOs' task would be developing and operating the field level activities. Here, it would be crucial for the government to ensure that their relevant departments are transparent, accountable and corruption free. If the GO-NGOs come forward together then there is a high possibility of the people enthusiastically joining in the above-mentioned 'new direction', where they may feel secure to invest money for their WatSan needs. Also needed is awareness regarding O&M, where the users respect their own duties and where there is regular institutional monitoring to inspect any necessary action that needs to be considered. All of these associated issues should be incorporated into WatSan policy, where the urban poor will get more attention from all of the stakeholders. Finally, the contribution of the political leaders and associated parties should be people-centred and development-oriented and I believe that, if they wish, they can make smooth ground for the development projects, including water and sanitation, in the slum areas because people have endless political passion and commitment for their leaders. All the above-mentioned activities could be labeled under 'good governance' which is difficult to achieve as the level of 'participation' between different stakeholders are still questionable in Bangladesh. Moreover, it is difficult to predict the upcoming development events as we are even unable to say where the most important land tenure debates are going and whether this issue likely to resolve in the years ahead in Bangladesh.

9.8 Recommendations

From the above discussion concerning the dimensions of 'social-technological-governance' systems in GO-NGO-managed WatSan projects in Dhaka city, I have several recommendations that I feel may ultimately help to identify and solve the shortcomings in this sector. There is no single blueprint for the WatSan sector that offers solutions suitable for all circumstances but the following issues should be taken into consideration when thinking of improvements to the existing sanitation scenario.

First and foremost, motivational campaigns encouraging legal access to WatSan services. Hygiene and different educational programme should be prioritized because I believe, and the evidence from the field suggests, that change is possible, we just need to inspire the people. This 'self-help' initiative is not only through the construction of their own latrines but also eagerness to raise voices for legal and uninterrupted WatSan options from the government. Moreover, enabling subsidies for the hardcore poor are important but need to be carefully planned, scrutinized, evaluated and monitored.

Second, regarding technology, my standpoint is optimistic. My proposal is to think beyond the 'low-cost' solution and to introduce the term 'affordable' for sustainable solutions to WatSan related problems across cities, as mentioned in section 9.7. This concept partly supports the 'self-help' concept that I introduced in the first instance. Further to this point, techniques of rain water harvesting should be introduced in the slum areas to minimize the chronic water scarcity. Harvested water from rain might be dirty but it could be used in the

toilets for flushing and clearing the drainage system or other related activities. We should capitalize upon people's willingness to change their livelihoods, as shown from my fieldwork experience, because a strong and continuous motivation can help to change people's minds towards healthy living environments.

Third, and most important, there is more to say about issues related to governance, although this issue is overlooked by all concerned, including every level of the benefactors and beneficiaries. The following issues should be recommended for better WatSan project interventions.

a) WatSan projects are associated with people's behaviour and it is not an easy task to change people's behaviour beyond the project duration. So, after the project implementation phase, an extra phase of project monitoring and evaluation should be introduced, which at the moment is in most cases absent and/or inadequate.
b) Not with unrealistic targets, not campaigning with sanitation day or month, we need longer-term targets, campaigns and activities. It would be worth going for a 'sanitation year' or decade to address all the influencing issues that are currently hindering sanitation projects, in order to achieve the goals within a specific and realistic time frame. This issue should be incorporated into policy as a 'non-conflictual' political agenda to include the mass of people in sustainable WatSan intervention campaigns.
c) As proposed earlier, from the perspective of an urban geographer (Islam, c2006), regarding better Dhaka city management, a separate committee for good governance and development for the city could be established under the Office of the Prime Minister (PM), to increase the efficiency of the WatSan sector and provide support for the 'non-conflictual' political agenda. From this strategy, better co-ordination among different ministries, agencies, and the DCC might be improved and, most importantly, the political parties could no longer to avoid the sector's development as it would under the PM's Office and the politicians would be enthusiastic to show that a PM from their party is keen for a high grade performance and contribution in this sector.
d) The governance related to the production and quality of the sectoral database is not currently trustworthy and needs to ensure a full coverage of 'who is doing what', 'where', 'how', 'when' and so on for better data management and improvement considering the historical trend of development.
e) The government could encourage and support NGOs that work to empower communities through providing training, awareness, and technical support. As Habib (2009) stated, the long-term solution to the slum problem largely depends on community awareness and cost-sharing by slum dwellers for the provision of utilities. Here, my argument is that once people are motivated, we should use those community concerns positively through disseminating guided development messages regarding WatSan projects. At that stage, people might be able to handle their own problems, which may ultimately help to improve the slum situation overall.
f) The involvement of CBOs and their active participation in disseminating development messages between the service providers and the users. It is also important to choose

the right person for the precise activity and it is necessary to ensure the responsibilities of the persons engaged with the CBOs.

g) The slums should be considered as integral parts of the city. It is worth identifying the main pitfalls in managing slum areas and accordingly find ways to resolve these through active collaboration from GOs-NGOs and other related parties. My point here is to identify the major problematic areas and accordingly by resolve these, I think, a major solution may resolve other interrelated problems.
h) According to my suggested 'new direction', the government, NGOs and other related agencies should motivate the donor agencies to provide financial support and engage themselves in longer-term urban WatSan projects.
i) According to Hasan's (2008) thesis, I would also recommend that organized and knowledgeable groups at the grassroots and their legal pressure could build "capacity and capability" in government institutions which is essential in the context of resolving urban WatSan problems, as suggested in my proposed 'new direction'.
j) From the grassroots' understanding, I would recommend that the local political leaders could play an active role in identifying problems, which they may then draw to the attention of central government and accordingly help to minimize their suffering through development activities.

The final section of recommendations pinpoints different policy-related issues. This is one of my objectives, and all the following policy-related recommendations are connected with different activities that need to be incorporated with the existing policy documents through appropriate wording. I am not asking for the reform of entire swathes of policy through these ideas, rather the incorporation of the following issues that may improve the performance of existing policy and ultimately resolve the extent of the problems in this sector.

a) In the management of WatSan programmes across the developing world, social issues are neglected but are nevertheless very important to address the issues. An interdisciplinary expert team is necessary to address the social, technological and governance systems and offer specific guidelines for sustainable sanitation programmes in both rural and urban contexts.
b) Decentralization, as well as the facilitation of village areas, can minimize the migration trend in Bangladesh and thereby minimize the problems in the urban areas. The proposed 'new direction', i.e. legal connection and paying for the improved, hassle-free and organized services, effectually may reduce the rate of migration trend to the informal urban settlements where the fear of promoting slums and risk of migration are the main government concerns.
c) Slums should not be promoted but poor people should be the focus of government rehabilitation programmes. Water, sanitation, hygiene and, most importantly, housing, health and basic education should be considered as 'a package programme' and for better project output it is necessary to provide all of these services together.
d) Regarding housing provision, slum eviction is not a solution to the problem because people will accommodate themselves elsewhere. As many researchers before, I would suggest that the government should either provide low-cost high-rise buildings to

accommodate poor people in different locations in the city or provide land ownership to them so that they could build their structure. This recommendation is based on my fieldwork experience where most of my respondents were willing to pay for such arrangement on a suitably long-term instalment plan. The outcome of this thesis sheds light on the land tenure agenda and suggests that the 'right to live' or 'the ownership of land' may change the whole WatSan scenario as field experience determines that the security of tenure potentially could impact the 'social-technological-governance' systems in the slum areas. Here, land tenure issues should be solved by identifying the ultra poor, which can be managed through a strong database so that the land title cannot be abused or sold afterwards.

e) As adopted in India, the *'Rashtriya Swasthya Bima Yojana'*, a national health insurance pilot scheme that provides financial protection for catastrophic health expenses to individuals below the poverty line (Butala et al, 2010). This type of scheme, together with additional incentives, for instance that those who have and maintain hygienic latrines and clean sources of water will receive a reward or financial protection, may encourage people to maintain a level of cleanliness and hygiene.
f) Slum eviction should be announced at least 5 years in advance and short-term WatSan infrastructures offered in the meantime. The implementing agencies will be encouraged to broaden their horizons in the selection of project areas so that the concentration of most service providers on some selected slums can be reduced.
g) Despite having no detailed discussion about the public provision and private entrepreneurship, I would like to flag up the privatization issue at this point where I think, it is not viable in Dhaka where most of the people are facing poverty. One of the mainstream arguments from World Bank for instance, suggests that sanitation lies not with public provision but with private entrepreneurship (Solo, 1999). This kind of neo-liberal sanitation policy has been promoted worldwide by international financial institutions, OECD countries, donors and other actors (Castro, 2008). According to Baruah (2007) I am making this alternative recommendation focusing the policy on private sector participation between the public sector, NGOs, and other related stakeholders. I am making this argument based on my fieldwork realities where people in the grassroots were very keen to see both government and NGOs working together for their betterment. The private water companies are known as 'water sharks' and I believe, through privatisation, these private companies will get benefits and the poor people will remain un-served due to their usurious rates.

9.9 Avenues of Further Research

This section is interlinked with the recommendation section above. This is because the recommendations require further investigation and research to examine their viability and sustainability and I would like to present guidelines for further research that could potentially be important to explore detailed insights into the proposed and hypothetical issues. This is particularly needed for any WatSan related development, especially while analyzing the dimensions of diverse 'social-technological-governance' systems.

a) First and foremost, a detailed 'SWOT' analysis is necessary in the urban sanitation sector to find strengths, weakness, opportunities and threats through relevant in-depth research, with the active participation of technical experts and academicians.
b) The outcome of this research and moves towards sustainable urban sanitation partially support the existing concept of CLTS (Community Led Total Sanitation), where the community takes action for their betterment. This has proved its efficiency in the rural setting in many developing countries. However, a detailed assessment of the CLTS approach, together with the other findings of my research, such as motivational campaigns to establish legal WatSan services, need to be experimented with to assess the effectiveness of these issues in urban slum areas.
c) The viability of my 'new direction' of legal access of water and sanitation and of the 'more for some' concept that I have suggested, need to be experimented with given that these approaches may not be welcomed by the poor people at their inception. Moreover, people's 'willingness to pay' should be investigated in different slums to assess the viability of the 'new direction' as the present research didn't draw a definitive conclusion on these issues.
d) It might be possible to set up additional water vendors in the DCC area but this would only increase the water charges and therefore be unaffordable for poor people. Understandably, water vendors are not willing to run their business on a not-for-profit basis because they only come forward if they can make a living. Therefore, the market for legal privatized water vending should be reassessed with detailed research among the communities of the different types of informal settlement.
e) A detailed, unique, standardized and homogeneous WatSan-related data format should be created for urban, rural and national contexts to capture the richness of historical data, improve the efficiency of data handling, and be helpful for further research. An interdisciplinary team is needed for research on this issue.
f) Regarding governance, detailed research could be carried out to investigate the gaps and reasons for coordination problems between different government agencies in the WatSan sector and how this major issue can be resolved.
g) This research recommends that NGOs act as a field level implementers; in so doing, research regarding the interests of NGOs in the field of urban sanitation should assess why most of the bigger organizations are currently not involved in urban projects.
h) The proposed 'new direction' would impact on the existing political economy and may change the political ecology of this sector. As a result, there is a large avenue for further research and detailed assessment of the impacts amongst communities and different GOs-NGOs and grassroots institutions.
i) The land tenure agenda should be further investigated, while detailed analysis of people's attitudes might be a matter of policy concern once they are offered land ownership.
j) Considering the outcome of this thesis, my argument apparently going towards 'good governance'. Here, I am aware that this is very difficult to achieve, and it is not necessarily the case that partnership and participation between different stakeholders are effective in all cases (e.g. from construction to maintenance and hygiene). In line

with the Cooke and Kothari's (2002) book about critical contemporary debates about participation, a potential avenue for further research could be established to explore the difficulties around good governance whereas the possibilities of privatization should also be evaluated in the WatSan sector in Bangladesh.

9.10 Conclusion

According to the objectives of the research, there are several factors identified that facilitate and hinder different GO-NGO sanitation interventions in the slums of Dhaka city. Most of these factors are interrelated to each other therefore it is not possible to create a bullet-list of them. Instead a descriptive outcome has been carefully presented following the grounded theory approach, which was based upon the multiple realities that I encountered during my field investigation.

The role of government institutions in managing water and sanitation in the urban informal settlements is not really progressive and is measureable in terms of paper work rather than field-level development activities. Despite this, some of their initiatives, such as the implementation of a 'Citizen's Charter', have opened the horizon for informal settlements and thus NGOs are now getting more space to implement their WatSan projects. On the other hand, the NGOs are more 'people oriented' and 'field level activists' and thus the rate of success stories amongst the NGOs are relatively more than that of government institutions. From the grassroots reality it can be said that, despite some limitations, the NGOs are playing a better role in the development of the urban low-income settlements than the public institutions by implementing their participatory governance strategy. Through the detailed analysis of 'social-technological-governance' systems, this research has identified some generalized facilitating and hindering factors that influence the WatSan projects in which the prime positive force towards the successful operation of WatSan projects is the 'participatory strategy' of the NGOs and, on the other hand, 'land tenure' is found to be the most influential obstruction. Here, considering the most and least influencing factors, I offered possible guidelines to resolve this issue according to the priorities and the speediest outcome of the problem.

Finally, the outcome of this research doesn't fully reflect the pain of the poor people as I have suggested that they pay for the legal water and sanitation services. Although, ironically, my positionality may appear to be against their financial interests, at the same time my observation was that the poor not only experience hassle related to their water and sanitation but also pay more than the holders of legal connections. What I am trying to say through this research is that there are solutions through long-term, sustainable, hassle-free and legalised WatSan services for poor people that could wash away the government official's comment that

"Nobody could be found without access to a latrine but it is difficult to find any hygienic latrine".

References

References

ADA. 2008. *Solutions in Sanitation: Planning Principles*. Austrian Development Agency.

Adhikari, B. 2001. *Property Rights and Natural Resources: Impact of Common Property Institutions on Community-based Resource Management. Research Proposal on Impact of CPR Institutions on Community-based Forest Management in Nepal.* Third Annual Global Development Network Conference, December 9-12, Rio de Janerio.

Adler, P.A; Adler, P. 1994. Observational Techniques. NK Denzin and YS Lincoln (eds.) *Handbook of Qualitative Research*. 377-393, SAGE Publications, London.

Adnan, W. 2012. *Photograph of The Korail Slum*. Positive Light: A Travel Photography Project. [http://photography.crowdsourced.travel/photo- Accessed January 2012].

Agarwal, A. 2001. *Commons Resources and Institutional Sustainability.* Department of Political Science, Yale University, Mimeo.

Agbola, T. and Agunbiade, E.M. 2009. Urbanization, Slum Development and Security of Tenure: The Challenges of Meeting Millennium Development Goal 7 in Metropolitan Lagos, Nigeria. De Sherbiniin et al (eds.) *Urban Population-Environment Dynamics in the Developing World: Case Studies and Lessons Learned.* CICRED, Paris.

Aguilar, M.D. and Fuentes, A.G.D. 2007. Barriers to Achieving the Water and Sanitation–related Millennium Development Goals in Cancun, Mexico at the Beginning of the Twenty-First Century. *Environment and Urbanization*. Vol. 19, No. 1: 243-260, SAGE Publications.

Ahmed, M. c2000. *Governance, Structural Adjustment and the State of Corruption in Bangladesh.* [http://www.saprin.org/bangladesh/research/ban_corruption.pdf- Accessed May 2012].

Ahmed, M.F. and Rahman, M.M. 2000. *Water Supply and Sanitation: Rural and Low-income Urban Communities*. ITN-Bangladesh, Dhaka.

Ahmed, M.M. 2002. *NGO Field Workers in Bangladesh*. Ashgate.

Ahmed, R. 2006. *A Case Study on Reaching the Poorest and Vulnerable*. Paper presented in 32nd WEDC Conference at Colombo, Sri Lanka.

Ahmed, R. 2006a. *Achieving 100% Sanitation: WaterAid Bangladesh and VERC Approach*. Paper presented in WSSCC Workshop 'Women and Sanitation' at Rajiv Gandhi Foundation, New Delhi.

Ahmed, S. 2006. *NGO Perception of Poverty in Bangladesh: Do their Programmes Match the Reality?* M.Phil Thesis, Department of Administration and Organization Theory, University of Bergen, Norway.

Ahmed, S. 2008. *An Assessment of the Impacts of Floods on Sanitation in Rural Bangladesh.* Working Paper no. 7, Research and Evaluation Division, BRAC, Dhaka.

Ahmed, T. 1987. *Decentralization and People's Participation in Bangladesh: A Political Perspectives*. Bangladesh Academy for Rural Development (BARD), Comilla.

Ahsan, A.H.M.K. 2010. *Problems of Coordination in Local Administration in Bangladesh*. M.Phil Thesis, Department of Administration and Organization Theory, University of Bergen, Norway.

Aitken, S.; Mitchell, D. and Staeheli, L. 2006. Urban Geography. Gary L. Gaile and Cort J. Willmott (eds.) *Geography in America at the Dawn of the 21st Century.* Chapter 17: 237- 263, Oxford University Press.

Akash, M.M. and Singha, D. 2011. *Provision of Water Points in Low Income Communities in Dhaka, Bangladesh*. Dushtha Shasthya Kendra (DSK), Dhaka.

Akbar, H.M.D. 2005. *Accessibility of Urban Water Supply to the Poor in Developing Countries: The Case of Dhaka, Bangladesh*. PhD Thesis, School of Geography, Planning and Architecture, The University of Queensland, Brisbane.

Akbar, H.M.D. et al. 2007. Community Water Supply for the Urban Poor in Developing Countries: The Case of Dhaka, Bangladesh. *Habitat International*. Vol. 31: 24-35, Elsevier Ltd.

Alam, H. 2010. DCC Sleeps as Roads Dug 6 Months Ago. *The Daily Star*. Online Archive, Saturday, 28 August 2010, Dhaka.

Alam, M. And Rabbani, M.G. 2007. Vulnerabilities and Responses to Climate Change for Dhaka. *Environment and Urbanization*. Vol. 19: 81-97, SAGE Publications.

Allison, M.C. 2002. Balancing Responsibility for Sanitation. *Social Science & Medicine.* Vol. 55: 1539-1551, Elsevier Science Ltd.

Alt, J.E. and Alesina, A. 1996. Political Economy: An Overview. RE Goodin and HD Klingemann (eds.) *A New Handbook of Political Science.* 645-674, Oxford University Press.

Altaf, M.A. and Hughes, J.A. 1994. Measuring the Demand for Improved Urban Sanitation Services: Results of a Contingent Valuation Study in Ouagadougou, Burkina Faso. *Urban Studies.* Vol. 31, No. 10: 1763-1776.

Anisuzzaman, M. 1985. Administrative Culture in Bangladesh: The Public Bureaucratic Phenomenon. MM Khan and SA Hossain (eds.) *Bangladesh Studies: Politics, Administration, Rural Development and Foreign Policy*. Centre for Administrative Studies, University of Dhaka.

Anschutz, J. 1996. *Community-based Solid Waste Management and Water Supply Projects: Problems and Solutions Compared.* A UWEP Working Document 2, Urban Waste Expertise Programme, Gouda, The Netherlands.

Ara, F. and Khan, M.M.R. 2006. Good Governance: Bangladesh Perspectives. *The Social Sciences.* Vol. 1, No. 2: 91-97, Medwell Online.

Arby, G. 2008. Killing Fields: The Shame Approach Hobbles the Big Killer- Open Defecation. *Sanitation Now.* Special Edition 2008 UN International Year of Sanitation, Stockholm Environment Institute.

ARGOSS. 2001. *Guidelines for Assessing the Risk to Groundwater from On-site Sanitation*. British Geological Survey Commissioned Report CR/01/142, BGS Keyworth, England.

Arif, T. and Ahmed, S. 2010. *Exploring Reasons of Variation in Target Achievement in Sanitary Latrine Construction under School Sanitation Programme of BRAC WASH*. Working Paper No. 12, Research and Evaluation Division, BRAC, Dhaka.

Arputham, J. 2012. How Community-based Enumerations Started and Developed in India. *Environment and Urbanization,* Vol. 24, No. 1: 27-30, SAGE Publications.

Asaduzzaman, M. 2008. *Governance in Practice: Decentralization and People's Participation in the Local Development of Bangladesh*. PhD Thesis, Department of Management Studies, University of Tampere, Finland.

ASEH. 2004. *ASEH Governance Policy*. Policy Paper, Advancing Sustainable Environmental Health Programme.

Asthana, S. 1998. Integrated Slum Improvement in Visakhapatnam, India: Problems and Prospects. RL Sehgal (ed.) *Slum Upgradation, Emerging Issues and Policy Implications*. Book Well Publications, New Delhi.

Atkinson, P. and Delamont, S. 2006. Editor's Introduction: Narratives, Lives, Performances. Paul Atkinson and Sara Delamont (eds.) *Narrative Methods*. Sage Benchmarks in Social Research Methods, Vol. I, SAGE Publications.

Atkinson, R. 1998. *The Life Story Interview.* Qualitative Research Methods Series, Thousand Oaks, California, SAGE Publications.

Avvannavar, S.M. and Mani, M. 2008. A Conceptual Model of People's Approach to Sanitation. *Science of the Total Environment*. Vol. 390: 1-12, Elsevier Ltd.

Ayee, J. and Crook, R. 2003. *"Toilet Wars": Urban Sanitation Services and the Politics of Public-Private Partnerships in Ghana.* IDS Working Paper No. 213, Institute of Development Studies, Sussex, England.

Baharoglu, D. 2002. *World Bank Experience in Land Management and The Debate on Tenure Security.* Housing and Land Background Series No. 16, The World Bank.

Baity, H.G. 1958. A Forward Look in World Sanitation. *The Journal of the Royal Society for the Promotion of Health*. Vol. 78: 351-356, SAGE Publications.

Balamir, M. and Payne, G. 2001. *Legality and Legitimacy in Urban Tenure Issues.* Paper submitted to the ESF/N-AERUS Conference, 23-26 May, Katholiek Universiteit, Leuven, Belgium.

Banglapedia. 2006. National Encyclopaedia of Bangladesh. Sirajul Islam (ed.) *Banglapedia*. Asiatic Society of Bangladesh, Dhaka.

Bapat, M. and Agarwal, I. 2003. Our Needs, Our Priorities; Women and Men from the Slums in Mumbai and Pune Talk about their Needs for Water and Sanitation. *Environment and Urbanization.* Vol. 15, No. 2: 71-86, SAGE Publications.

BAPPENAS. 2007. *Urban Sanitation: Portraits, Expectations and Opportunities. It's Not a Private Matter Anymore!* Third Edition, National Development Planning Agency.

Barkat, A. et al. 2009. *Advancing Sustainable Environmental Health (ASEH): Impact Study*. Human Development Research Centre (HDRC), Dhaka.

Barkat, A. et al. 2011. *Study on Allocation, Targeting and Effectiveness of Sanitation Subsidy in Bangladesh*. Human Development Research Centre (HDRC), Dhaka.

Barreto, M.L. et al. 2007. Effect of City-wide Sanitation Programme on Reduction in Rate of Childhood Diarrhoea in Northeast Brazil: Assessment by Two Cohort Studies. *The Lancet*. Vol. 370: 1622-1628. Elsevier Ltd.

Bartram, J. et al. 2005. Focusing on Improved Water and Sanitation for Health. *The Lancet.* Vol. 365: 810-812, Elsevier Ltd.

Baruah, B. 2007. Assessment of Public-Private-NGO Partnerships: Water and Sanitation Services in Slums. *Natural Resources Forum*. United Nations, Vol. 31: 226-237, Blackwell Publishing Ltd.

Baszanger, I. and Dodier, N. 1998. Ethnography: Relating the Past to the Whole. David Silverman (ed.) *Qualitative Research: Theory, Method and Practice.* 8-23, SAGE Publications.

Baud, I. and Nainan, N. 2008. "Negotiated Spaces" for Representation in Mumbai: Ward Committees, Advanced Locality Management and the Politics of Middle-class Activism. *Environment and Urbanization*. Vol. 20, No. 2: 483-499. SAGE publications.

BBS. 1999. *Census of Slum Areas and Floating Population, 1997*. Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of Bangladesh, Dhaka.

BBS. 2001. *Bangladesh Population Census 2001: Analytical Report.* Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of Bangladesh, Dhaka.

BBS. 2002. *Analysis of Basic Needs Dimensions of Poverty (Vol. 3) Statistical Yearbook of Bangladesh 2000.* Bangladesh Bureau of Statistics, Ministry of Planning, Government of Bangladesh, Dhaka.

BBS. 2003. *Preliminary Report: Population Census 2001.* Bangladesh Bureau of Statistics, Ministry of Planning, Government of Bangladesh, Dhaka.

BBS. 2011. *Statistical Terms/Concepts/Definitions Used in Census/Surveys of BBS and Other National/International Agencies.* Bangladesh Bureau of Statistics, Dhaka.

Beaglehole, R. 2003. *Global Public Health: A New Era.* Robert Beaglehole (ed.), Oxford University Press, Oxford.

Beaugrande, R. 2011. Text Linguistics. Jan Zienkowski, Jan-Ola Ostman and Jef Verschueren (eds.) *Discursive Pragmatics: Handbook of Pragmatics Highlights*. John Benjamins Publishing Company.

Begum, A. 2007. Urban Housing as an Issue of Redistribution Through Planning? The Case of Dhaka City. *Social Policy and Administration*. Vol. 41, No. 4: 410-418, Blackwell Publishing Ltd.

Bilton, T. et al. 1984. *Introductory Sociology: Contemporary Social Theory*. Macmillan Publishers Ltd.

Bishnoi, A. et al. 2012. Identification of Crucial Messages Related to Social Empowerment of Women. *Studies on Home and Community Science.* Vol. 6, No. 1: 39-43, Kamla-Raj.

Black, M. and Fawcett, B. 2008. *The Last Taboo: Opening the Door on the Global Sanitation Crisis*. Earthscan, London.

Black, R. et al. 2010. Global, Regional and National Causes of Child Mortality in 2008: A Systematic Analysis. *The Lancet*. Vol. 375: 1969-1987, Elsevier Ltd.

Bloomquist, A. 1992. *Dividing the Waters: Governing Groundwater in Southern California.* San Francisco: ICS Press.

Boonyabancha, S. 2009. Land for Housing the Poor- by the Poor: Experiences from the Baan Mankong Nationwide Slum Upgrading Programme in Thailand. *Environment and Urbanization*. Vol. 21, No. 2: 309-329, SAGE Publications.

Botting, M.J. et al. 2010. Water and Sanitation Infrastructure for Health: The Impact of Foreign Aid. *Globalization and Health*. 6:12, BioMed Central Ltd.

Bouma, G.D. and Ling, R. 2004. *The Research Process* (Fifth Edition). Oxford University Press.

Brannen, J. 1988. The Study of Sensitive Subjects. *Sociological Review.* Vol. 36: 552-563.

Briscoe, J. et al. 1990. Toward Equitable and Sustainable Rural Water Supplies: A Contingent Valuation Study in Brazil. *World Bank Economic Review*. Vol. 4: 115-134, Oxford University Press.

Brocklehurst, C. 2009. *Bangladesh: Civil Society Organisation Involvement in Urban Water Sector Reform*. Case Study Publication, WaterAid, London.

Bromley, D.W. and Cernea, M.M. 1989. *The Management of Common Property Natural Resources: Some Conceptual and Operational Fallacies.* Discussion Paper No. 57, The World Bank.

Bruijne, G.D; Geurts, M and Appleton, B. 2007. *Sanitation for All?* Thematic Overview Paper 20, IRC International Water and Sanitation Centre, The Netherlands.

Bruner, J. 2006. Life as Narrative. Paul Atkinson and Sara Delamont (eds.) *Narrative Methods.* Sage Benchmarks in Social Research Methods, Vol. I, SAGE Publications.

Bryman, A. 1988. *Quantity and Quality in Social Research*. Unwin Hyman, London.

Bryman, A. 1996. *Quantity and Quality in Social Research*. Routledge, London.

Bryman, A. 2004. *Social Research Methods*. Oxford University Press, Oxford.

Burra, S; Patel, S. and Kerr, T. 2003. Community-designed, Built and Managed Toilet Blocks in Indian Cities. *Environment and Urbanization.* Vol. 15, No. 2: 11-32, SAGE Publications.

Burton, S. 1999. Evaluation of Healthy City Projects: Stakeholder Analysis of Two Projects in Bangladesh. *Environment and Urbanization*. Vol. 11, No. 1: 41-52, SAGE Publications.

Butala, N.M. et al. 2010. Improved Health Outcomes in Urban Slums through Infrastructure Upgrading. *Social Science & Medicine*. Vol. 71: 935-940, Elsevier Ltd.

Cairncross, S. 1992. *Sanitation and Water Supply: Practical Lessons from the Decade*. Discussion Paper No. 9, UNDP-World Bank Water and Sanitation Program, The World Bank, Washington DC.

Calabrese, D. 2008. *Strategic Communication for Privatization, Public-Private Partnerships, and Private Participation in Infrastructure Projects.* Working Paper No. 139, The World Bank.

Calaguas, B. and Roaf, V. 2001. *Access to Water and Sanitation by the Urban Poor.* Paper presented to Development Studies Association Conference, 10 September 2001, Manchester, UK.

Caldwell, B.K. et al. 2002. Why Do the Children of the Poor Die in Dhaka, Bangladesh? *Population Research and Policy Review*. Vol. 21, No. 3: 159-178, Springer in cooperation with the Southern Demographic Association.

CARE. 2010. *How Water, Sanitation and Hygiene Interventions Empower Women: A Study from Ethiopia.* CARE.

CARE. 2011. *Women and Water: A Relationship Both Obvious and Subtle.* CARE USA Headquarters, Atlanta.

Casey, J.F.; Kahn, J.R. and Rivas, A. 2006. Willingness to Pay for Improved Water Service in Manaus, Amazonas, Brazil. *Ecological Economics*. Vol. 58: 365-372, Elsevier Ltd.

Castro, J.E. 2006. *Water, Power and Citizenship: Social Struggle in the Basin of Mexico*. Palgrave Macmillan.

Castro, J.E. 2008. Neoliberal Water and Sanitation Policies as a Failed Development Strategy: Lessons from Developing Countries. *Progress in Development Studies*. Vol. 8, No. 1: 63-83, SAGE Publications.

Chadwick, E. 1965. *Report on the Sanitary Condition of the Labouring Population of Great Britain.* Edinburgh University Press, Edinburgh (first published in 1842).

Chaplin, S.E. 1999. Cities, Sewers and Poverty: India's Politics of Sanitation. *Environment and Urbanization.* Vol. 11, No. 1: 145-158, SAGE Publications.

Chaplin, S.E. 2011. Indian Cities, Sanitation and the State: The Politics of the Failure to Provide. *Environment and Urbanization*. Vol. 23, No. 1: 57-70, SAGE Publications.

Chaplin, S.E. 2011a. *The Politics of Sanitation in India: Cities, Services and the State*. Orient BlackSwan.

Charmaz, K. 2005. Grounded Theory in the 21st Century: Applications for Advancing Social Justice Studies. NK Denzin and YS Lincoln (eds.) *The Sage Handbook of Qualitative Research*. Third Edition, 507-535, SAGE Publications.

Chauhan, S.K. 1983. *Who Puts the Water in the Taps? Community Participation in Third World Drinking Water, Sanitation and Health.* International Institute for Environment and Development, Earthscan, London.

Chehimi, S.; Cohen, L. and Valvovinos, E. 2011. In the First Place: Community Prevention's Promise to Advance Health and Equity. *Environment and Urbanization*. Vol. 23, No. 1: 71-89, SAGE Publications.

Chekki, D. (ed.) 1980. *Participatory Democracy in Action: International Profiles of Community Development.* Vikas Publications, New Delhi.

Chen, P. and Hinton, S.M. 1999. Realtime Interviewing Using the World Wide Web. *Sociological Research Online*. Vol. 4, No. 3. [http://www.socresonline.org.uk/socres online/4/3/chen .html- Accessed June 2009].

Chopra, K. et al. 1989. *People's Participation and Common Property Resources*. *Economic and Political Weekly*. Vol. 24: A.189-A.195.

Choudhury, Z. 2011. The Great Partition of Dhaka City. *The Daily Star.* Online Archive, Tuesday, 6 December 2011, Dhaka.

Chowdhury, F.J. and Amin, A.T.M.N. 2006. Environmental Assessment in Slum Improvement Programs: Some Evidence from a Study on Infrastructure Projects in Two Dhaka Slums. *Environmental Impact Assessment Review*. Vol. 26: 530-552, Elsevier Ltd.

Clarke, R. 2008. Household Sanitation in Urban Slums: Contributing Factors. Paper presented in 1st Sanitation Community of Practice Meeting: *Sanitation at the Household Level in Low-income Countries*. January 28th 2008, WEDC, Loughborough University.

COHRE, AAAS, SDC and UN-Habitat. 2007. *Manual on the Right to Water and Sanitation.* Centre on Housing Rights and Evictions, Geneva, Switzerland.

Cook, I. and Crang, M. 1995. *Doing Ethnographies.* University of East Anglia, Norwich.

Cooke, B. and Kothari, U. 2002. *Participation: The New Tyranny?* Zed Books Ltd, London and New York.

Corbin, J. and Strauss, A. 2008. *Basics of Qualitative Research. Techniques and Procedures for Developing Grounded Theory*. 3rd Edition, SAGE Publications.

Cortazzi, M. 1999. Narrative analysis. A Bryman and R Burgess (eds.) *Methods of Qualitative Research.* Vol. II, SAGE Publications, Thousand Oaks, California.

CPD. 2001. *Report of the Task Force on Administrative Reform and Strengthening of Local Government System in Bangladesh*. Centre for Policy Dialogue, Dhaka.

Crang, M. and Cook, I. 2007. *Doing Ethnographies.* SAGE Publications Ltd.

Crush, J. 1991. The Discourse of Progressive Human Geography. *Progress in Human Geography.* Vol. 15: 395-414.

CUE. 2010. *Land Tenure Issues in Slum Free City Planning.* Workshop Concept Note, 30-31 August, Centre for Urban Equity, CEPT University, Ahmedabad, India.

CUS. 1988. *Slums and Squatters in Dhaka City*. Centre for Urban Studies, Dhaka.

CUS. 1989. *The Urban Poor in Bangladesh*. Phase 1, Comprehensive Summary Report, Centre for Urban Studies, Dhaka.

CUS. 1992. *Slums in Dhaka Metropolitan Area 1991*. Conducted for Urban Volunteer Program, ICDDR-B, Center for Urban Studies, Dhaka.

CUS. 1996. *Survey and Mapping of Slums and Squatter Settlements in Dhaka Metropolitan Area*. Urban Poverty Reduction Project, Asian Development Bank-LGED, Dhaka.

CUS; NIPORT and MEASURE Evaluation. 2006. *Slums of Urban Bangladesh: Mapping and Census, 2005*. Dhaka, Bangladesh and Chapel Hill, USA.

D'Souza, J. et al. 2009. *The Changing Face of a Slum Community*. Case Study Report. Community Based Sanitation and Slum Development Project, Tamil Nadu, India.

DAM Report. 2005. *Sanitation for All by 2010: Strategic Options.* Report of the Round Table Discussion, Dhaka Ahsania Mission, Dhaka.

Das, T.K. 2003. *Culture of Slum Dwellers: A Study of Slum in Dhaka.* Boipatro, Banglabazar, Dhaka.

Davis, J. 2004. Corruption in Public Service Delivery: Experience from South Asia's Water and Sanitation Sector. *World Development*. Vol. 32, No. 1: 53-71. Elsevier Ltd.

Davis, J. et al. 2008. Improving Access to Water Supply and Sanitation in Urban India: Microfinance for Water and Sanitation Infrastructure Development. *Water Science & Technology*. Vol. 58, No. 4: 887-891, IWA Publishing.

Davis, M. 2006. Slum Ecology: Inequity Intensifies the Earth's Natural Forces. *Orion Online*. 16 March 2006, Ogden Publications Inc., Kansas. [www.orionmagazine.org/index.php /articles/article/167- Accessed January 2011].

De Forest, P.H. 1980. Technology Choice in the Context of Social Values– A Problem of Definition. FA Long and A Oleson–(eds.) *Appropriate Technology and Social Values- A Critical Appraisal*. 11-25, Ballinger Publishing Company.

Denzin, N.K and Lincoln, Y.S. 2000. Introduction: The Discipline and Practice of Qualitative Research, Norman K Denzin and Yvonna S Lincoln (eds.) *Handbook of Qualitative Research* (2nd Edition). 1-29, SAGE Publications.

Denzin, N.K and Lincoln, Y.S. 2008. Introduction: The Discipine and Practice of Qualitative Research. Norman K Denzin and Yvonna S Lincoln (eds.) *Collecting and Interpreting Qualitative Materials* (3rd Edition). 1-44, Sage Publications.

Denzin, N.K. 1989. *The Research Act* (3rd Edition). Englewood Cliffs, Prentice Hall.

Denzin, N.K. 1997. *Interpretive Ethnography: Ethnographic Practices for the 21st Century*. Thousand Oaks, SAGE Publications, California.

Denzin, N.K. and Lincoln, Y.S. 2011. Introduction: The Discipline and Practice of Qualitative Research. N.K Denzin and Y.S. Lincoln (eds.) *The SAGE Handbook of Qualitative Research*. Page 1-19, SAGE Publications.

Derman, B. and Ferguson, A. 2000. *The Value of Water: Political Ecology and Water Reform in Southern Africa.* Paper prepared for the Panel on Political Ecology for the Annual Meetings of the American Anthropological Association, 15-19 November, San Francisco, USA.

Dey, I. 2004. Grounded Theory. Clive Seale et al (eds.) *Qualitative Research Practice.* SAGE Publications.

Dey, I. 2007. Grounded Theory. Clive Seale et al (eds.) *Qualitative Research Practice.* SAGE Publications.

DFID. 2008. *Africa: Water and Sanitation. Fact Sheet of Reducing Poverty in Africa*. Department for International Development, UK.

DFID. 2012. *Water, Sanitation and Hygiene Portfolio Review.* Department for International Development. [http://www.dfid.gov.uk/Documents/DFID%20WASH%20Portfolio%20Review.pdf- Accessed May 2012].

Diamant, B.Z. 1984. Appropriate Sanitation Technology for the Decade in Africa. *The Journal of the Royal Society for the Promotion of Health.* Vol. 104, No. 3: 85-90, SAGE Publications.

Dierdorff, E.C. and Ellington, J.K. 2008. It's the Nature of the Work: Examining Behavior-based Sources of Work-Family Conflict across Occupations. *Journal of Applied Psychology*. Vol. 93, No. 4: 883-892, American Psychological Association.

Dietvorst, C. 1994. Issues: 2: Information on Water and Sanitation: Who Needs It?. *Information Development*. Vol. 10: 149-151, SAGE publications.

DiNino, J. et al. 2006. *Negotiating Secure Land Tenure Through Community Redevelopment: A Case Study from the Klong Toey Slum in Bangkok.* Unpublished BSc project report, Worcester Polytechnic Institute.

DMDP. 1997. *Structure Plan, Master Plan and Detailed Area Plan for Dhaka City (1995-2015)*. Vols. I and II. Dhaka Metropolitan Development Plan, Dhaka.

Douglas, M. and Wilddavsky, A. 1982. *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers.* University of California Press, Berkeley.

DPHE, DWASA and UPI. 2005. *Cost Sharing Strategy for Water and Sanitation in Bangladesh*. Prepared by Department of Public Health Engineering, Dhaka WASA and Unit for Policy Implementation, Dhaka.

DPHE. 2009. *Progress Report towards 100% Sanitation by the Year 2010* (October 2003-June 2009). Sanitation Secretariat, Department of Public Health Engineering, Dhaka.

Drangert, J.O. 2004. *Norms and Attitude towards Ecological Sanitation and Other Sanitation Systems*. EcoSanRes publication series, Stockholm.

DSK. 1997. *Activity Report of DSK*. December 1997. Dushtha Shasthya Kendra, Dhaka.

DSK. 2005. *Activity Report of DSK.* 2005. Dushtha Shasthya Kendra, Dhaka.

DSK. 2009. *DSK Activity Report 2009*. Dushtha Shasthya Kendra, Dhaka.

DSK. 2010. *DSK Activity Report 2010*. Dushtha Shasthya Kendra, Dhaka.

Dublin Principle. 1992. *Dublin Statement on Water and Sustainable Development.* Guiding Principles' and Action Agenda Paper, Dublin.

Dwyer, C. and Limb, M. 2001. Introduction: Doing Qualitative Research in Geography. M Limb and C Dwyer (eds.) *Qualitative Methodologies for Geographers: Issues and Debates*. Oxford University Press, New York.

Dye, J.F. et al. 2000. Constant Comparison Method: A Kaleidoscope of Data. *The Qualitative Report*. Vol. 4, Nos. ½. [http://www.nova.edu/ssss/QR/QR4-1/dye.html- Accessed September 2010].

Eawag. 2005. *Household-Centred Environmental Sanitation: Implementing the Bellagio Principles in Urban Environmental Sanitation*. Provisional Guideline for Decision-Makers, Swiss Federal Institute of Aquatic Science and Technology.

Editorial. 1999. Healthy Cities, Neighbourhoods and Homes. *Environment and Urbanization*. Vol. 11, No. 1: 3-10, SAGE Publications.

Eisner, E.W. 1991. *The Enlightened Eye: Qualitative Inquiry and the Enhancement of Educational Practice.* Macmillan, New York.

Elledge, M.F. 2003. *Sanitation Policies: Thematic Overview Paper*. International Water and Sanitation Centre, IRC, The Netherlands.

Elledge, M.F. et al. 2002. *Guidelines for the Assessment of National Sanitation Policies.* Environmental Health Project, Strategic Report 2, USAID, Washington DC.

Elliott, J. 2006. *Using Narrative in Social Research: Qualitative and Quantitative Approaches.* SAGE Publications.

Emmel, N.D. and D'Souza, L. 1999. Health Effects of Forced Evictions in the Slums of Mumbai. *The Lancet*. Vol 354: 1118.

Evans, B. 2004. *Whatever Happened to Sanitation? Practical Steps to Achieving a Core Development Goal*. The Millennium Project, Task Force on Water and Sanitation.

Faisal, I.M. et al. 1999. Non Structural Flood Mitigation Measures for Dhaka City. *Urban Water*. Vol. 1, No. 2: 112.

FAO. 2002. *Land Tenure and Rural Development.* FAO Land Tenure Studies No. 3. Food and Agricultural Organization, Rome.

Fariduddin, K.M. and Khan, A.U. 1996. Health Profile of the Urban Poor. Nazrul Islam (ed.) *The Urban Poor in Bangladesh*. Centre for Urban Studies, Dhaka.

Fielding, N. 1993. Ethnography. N Gilbert (ed.) *Researching Social Life*. SAGE Publications, London.

Filho, F.M.A and Abreu, L.M. 2007. An Alternate Methodology for the Evaluation of the Performance of Basic Sanitation: Application of the Factorial Analysis. *Management of Environmental Quality: An International Journal*. Vol. 18, No. 1: 22-35. Emerald Group Publishing Limited.

Finch, J. and Mason, J. 1999. Decision Taking in the Fieldwork Process: Theoretical Sampling and Collaborative Working. Alan Bryman and Robert G Burgess (eds.) *Qualitative Research* (Volume I), SAGE Publications.

Flick, U. 1998. *An Introduction to Qualitative Research*. SAGE Publications, London.

Flick, U. 2002. *An Introduction to Qualitative Research*. 2nd Edition: 226-227, SAGE Publications, London.

Floor, W. 2004. *Public Health in Qajar Iran*. Mage Publishers, Washington DC.

Francis, D. and Hester, S. 2004. *An Invitation to Ethnomethodology: Language, Society and Interaction*. SAGE Publications.

Frankish, J. et al. 2007. Addressing the Non-medical Determinants of Health: A Survey of Canada's Health Regions. *Canadian Journal of Public Health*. Vol. 98: 41-47.

François, D. et al. 2010. Cost Recovery in the Water Supply and Sanitation Sector: a Case of Competing Policy Objectives? *Utilities Policy*. Vol. 3: 135-141, Elsevier Ltd.

Frenierre, J.L. and Szyliowicz, J. 2008. *When Appropriate Isn't Enough: The Risk of Ignoring the Social and Cultural Implications of Technology.* INTS 4965: Technology and Sustainable Development.

Gandy, M. 2004. Water, Modernity and Emancipatory Urbanism. Loretta Lees (ed.) *The Emancipatory City? Paradoxes and Possibilities.* SAGE Publications, London.

Gandy, M. 2004a. Rethinking Urban Metabolism: Water, Space and the Modern City. *City.* Vol. 8, No. 3: 363-379, Taylor and Francis Ltd.

Gandy, M. 2008. Landscape of Disaster: Water, Modernity, and Urban Fragmentation in Mumbai. *Environment and Planning (A).* Vol. 40, No. 1: 108-130.

Gandy, M. 2009. Liquid City: Reflections on Making a Film. *Cultural Geographies*. Vol. 16, No. 3: 403-408, SAGE Publications.

Gani, M. 2010. Containing Corruption in Bangladesh. *Weekly Blitz*. Friday, 22 January 2010, Dhaka. [http://www.weeklyblitz.net/426/containing-corruption-in-bangladesh – Accessed February 2011].

Garbutt, C. 2010. *The Implications of a Household Sanitation Subsidy Scheme for Future Work in Antananarivo, Madagascar*. Thesis Prepared for the International Journal of Environmental Health Research. [http://www.wsup.com/sharing/documents/Theimplicationsofahouseholdsanitationsubsidyschemeforfutureworkin Antananarivo2010.pdf- Accessed January 2011].

Garfinkel, H. 2003. *Studies in Ethnomethodology* (First published in 1967). Prentice-Hall Inc.

GCR. 2008. *Global Corruption Report 2008: Corruption in the Water Sector*. Cambridge University Press, New York.

Gee, J.P. et al. 1992. Discourse Analysis. M D LeCompte, W L Millroy and J Preissle (eds) *The Handbook of Qualitative Research in Education*. Academic Press, San Diego.

GEPSP. c2010. *Gender in Education: Knowledge, Attitude and Practice (KAP) Assessment.* Gender in Education Policy Support Project. [i-saps.org/Publications/KAP%20Assessment%20in%20Education.php- Accessed May 2012].

Ghafur, S. 2000. Entitlement to Patronage: Social Construction of Household Claims on Slum Improvement Project, Bangladesh. *Habitat International,* Vol. 24: 261-278, Elsevier Science Ltd.

Ghosh, G. 2012. Some for All Rather Than More for Some: A Myth or a Reality? *IDS Bulletin*. Vol. 43, No. 2: 10-12, Institute of Development Studies, Sussex University, UK.

GLAAS. 2010. *UN-Water Global Annual Assessment of Sanitation and Drinking Water: Targeting Resources for Better Results*. World Health Organization (WHO), Switzerland.

Glaser, B. and Strauss, A. 1967. *The Discovery of Grounded Theory*. Aldine, Chicago.

GLTN. 2010. *Tackling Tenure Security in Slums Through Participatory Enumerations.* Global Land Tool Network, Brief 1. [www.gltn.net- Accessed May 2012].

GoB and ADB. 1996. *Study of Urban Poverty in Bangladesh*. Vols. 1 and 2, Planning Commission, Government of Bangladesh and Asian Development Bank, Dhaka.

GoB and UNDP. 2008. *Urban Partnership for Poverty Reduction*. Project Document, Government of Bangladesh and United Nations Development Programme.

GoB. 1995. *The Environment Conservation Act (in Bengali)*. Ministry of Environment and Forest, Government of Bangladesh, Dhaka.

GoB. 1997. *The Environment Conservation Rules (in Bengali).* Ministry of Environment and Forest, Government of Bangladesh, Dhaka.

GoB. 2005. *National Sanitation Strategy.* Local Government Division, Ministry of Local Government, Rural Development and Cooperatives, Government of Bangladesh.

Gobo, G. 2004. Sampling, Representativeness and Generalizability. Clive Seale et al (eds.) *Qualitative Research Practice.* 435-456, SAGE Publications.

GoI. 2011. *Towards More Inclusive Cities…* Ministry of Housing and Urban Poverty Alleviation, Government of India. [http://www.mhupa.nic.in- Accessed May 2012].

Gold, R.L. 1958. Roles in Sociological Field Observations. *Social Forces*. Vol. 36, No. 3: 217-223.

Goldblatt, M. 1999. Assessing the Effective Demand for Improved Water Supplies in Informal Settlements: A Willingness to Pay Survey in Vlakfontein and Finetown, Johannesburg. *Geoforum.* Vol. 30: 27-41, Elsevier Science Ltd.

Goodman, N. 1978. *Ways of Worldmaking*. Hackett, Indianapolis.

Gopakumar, G. 2009. Developing Durable Infrastructures: Politics, Social Skill, and Sanitation Partnerships in Urban India. *Review of Policy Research*. Vol. 26, No. 5: 571-587.

Griffin, C.B. 1999. Watershed Councils: An Emerging Form of Public Participation in Natural Resource Management. *Journal of the American Water Resource Association.* Vol. 35, No. 3:505–518.

Griffiths, S. and Hunter, D.J. c2007. *New Perspectives in Public Health* (2nd Edition). Sián Griffiths and David J Hunter (eds.), Radcliffe Publishing, UK.

Grown, C.; Gupta, G.R. and Kes, A. 2005. *Taking Action: Achieving Gender Equality and Empowering Women.* UN Millennium Project 2005, Task Force on Education and Gender Equality. Earthscan.

Gubrium, J.F. and Holstein, J.A. 2002. *Handbook of Interview Research: Context & Method.* SAGE Publications.

Gulyani, S. 1999. *Demand-side Approaches to Planning Water Supply Provision.* The World Bank. [http://info.worldbank.org/etools/docs/library/115504/toronto99/assets/t-gulyani-mod04.pdf- Accessed May 2012].

Gupte, J. 2008. Linking Urban Vulnerability, Infra-power and 'Communal' Violence: extralegal security and policing in South Central Mumbai. Paper presented at the 9th Annual Global Development Network Conference, *'Security for Development: Confronting Threats to Survival and Safety'*, January 29 – 31, Brisbane, Australia.

GWTF. 2006. *Gender, Water and Sanitation: A Project Brief.* Task Force on Gender and Water, UN Water.

Habib, E. 2009. The Role of Government and NGOs in Slum Development: The Case of Dhaka City. *Development in Practice*. Vol. 19, No. 2: 259-265, Routledge.

Hadi, A. 2000. A Participatory Approach to Sanitation: Experience of Bangladeshi NGOs. *Health Policy and Planning*. Vol. 15, No. 3: 332-337, Oxford University Press.

Hadi, A. and Nath, S.R. 1996. Raising Sanitary Latrine Use in Rural Bangladesh: Can BRAC Play a Role? *Watch Report.* No. 22, BRAC, Dhaka.

Hanchett, S. et al. 2001. *WaterAid Bangladesh Urban Evaluation 2001*. WaterAid Bangladesh, Dhaka.

Hanchett, S. et al. 2003. Water, Sanitation and Hygiene in Bangladeshi Slums: An Evaluation of the WaterAid-Bangladesh Urban Programme. *Environment and Urbanization,* Vol. 15, No. 2: 43-56, SAGE Publications.

Hanchett, S. et al. 2011. *Scaling Up Rural Sanitation: Long-Term Sustainability of Improved Sanitation in Rural Bangladesh*. Technical Report, Water and Sanitation Program.

Handzic, K. 2010. Is Legalized Land Tenure Necessary in Slum Upgrading? Learning from Rio's Land Tenure Policies in the Favela Bairro Program. *Habitat International.* Vol. 34: 11-17, Elsevier Ltd.

Hansen, T.B. and Verkaaik, O. 2009. Introduction Urban Charisma: On Everyday Mythologies in the City. *Critique of Anthropology.* Vol. 29, No. 1: 5-26, SAGE Publications.

Haq, S.A. 2005. Ensuring Environmental Sustainability toward Reaching Millennium Development Goals: Perspective Dhaka City. Millennium Development Goals and the City, *Souvenir*, Published in the World Habitat Day 2005, Centre for Urban Studies (CUS) and Bangladesh Institute of Planners (BIP), Dhaka.

Hardin, G. 1968. The Tragedy of the Commons. *Science.* Vol. 162, No. 3859: 1243-1248.

Hardoy, A. and Schusterman, R. 2000. New Models for the Privatization of Water and Sanitation for the Urban Poor. *Environment and Urbanization.* Vol. 12, No. 2: 63-75, SAGE Publications.

Hardoy, A. et al. 2005. Governance for Water and Sanitation Services in Low-income Settlements: Experiences with Partnership-based Management in Moreno, Buenos Aires. *Environment and Urbanization*. Vol. 17, No. 1: 183-200, SAGE Publications.

Hardoy, J.E. and Satterthwaite, D. 1995. Environmental Problems in Third World Cities–in the Home, Workplace and Neighbourhood (Chapter 6: 146-178). *Squatter Citizen: Life in the Urban Third World.* Earthscan Publication Ltd, London.

Hardoy, J.E. et al. 2001. *Environmental problems in Cities of Africa, Asia and Latin America*. Earthscan Publications, London.

Hardoy, J.E. et al. 2001a. *Environmental Problems in an Urbanizing World: Finding Solutions for Cities in Africa, Asia and Latin America.* Earthscan Publications, London.

Harper, D. 2008. What's New Visually? Norman K Denzin and Yvonna S Lincoln (eds.) *Collecting and Interpreting Qualitative Materials* (3rd Edition). 1-44, SAGE Publications.

Harris, D. et al. 2011. *Analysing the Governance and Political Economy of Water and Sanitation Service Delivery.* Working Paper No. 334. Overseas Development Institute, London.

Harvey, L. 1990. *Critical Social Research.* Unwin, London.

Harvey, P. et al. 2002. *Emergency Sanitation: Assessment and Programme Design*. WEDC, Loughborough University, UK.

Hasan, A. 2006. Orangi Pilot Project; The Expansion of Work Beyond Orangi and the Mapping of Informal Settlements and Infrastructure. *Environment and Urbanization*. Vol. 18, No.2: 451-480, SAGE Publications.

Hasan, A. 2008. Financing the Sanitation Programme of the Orangi Pilot Project-Research and Training Institute in Pakistan. *Environment and Urbanization*. Vol. 20, No. 1: 109-119, SAGE Publications.

Hasan, A. et al. 2005. How to Meet the Millennium Development Goals (MDGs) in Urban Areas. *Environment and Urbanization*. Vol. 17, No. 1: 3-19, SAGE Publications.

Hasan, M. 2007. *Public Sector Corruption in Bangladesh: Political and Bureaucratic*. Paper Prepared for the Victory Day Commemorative Seminar, Bangladesh Institute of International and Strategic Studies, Published by IGS, BRAC University, Dhaka.

Hasan, M. et al. 2006. *The State of Governance in Bangladesh 2006: Knowledge, Perceptions, Reality.* Centre for Governance Studies, BRAC.

Hasan, S. and Mulamoottil, G. 1994. Environmental Problems of Dhaka City: A Study of Mismanagement. *Cities*. Vol. 11, No. 3: 195-200, Butterworth-Heinemann Ltd.

Hassan, M.M. 2009. *Monitoring and Evaluation Protocol for the National Sanitation Program in Bangladesh.* Final Report. Water and Sanitation Program.

Have, P.T. 2004. *Understanding Qualitative Research and Ethnomethodology*. SAGE Publications.

Heller, L. 2007. Basic Sanitation in Brazil: Lessons from the Past, Opportunities form the Present, Challenges for the Future. *Journal of Comparative Social Welfare.* Vol. 23, No. 2: 141-153, Routledge.

Henderson, N.R. 2009. *Managing Moderator Stress: Take a Deep Breath. You can Do This!* Marketing Research, Vol. 21, Issue 1: 28-29. [Cited in http://en.wikipedia.org/ wiki/Focus_ group#cite_note-0 – Accessed June 2010].

Hepburn, A. and Potter, J. 2007. Discourse Analytic Practice. Clive Seale et al (eds.) *Qualitative Research Practice*. SAGE Publications.

Heynen, N. et al. 2006. *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism.* Nik Heynen, Maria Kaika and Erik Swyngedouw (eds.) Routledge, London.

HI. 2011. *How Do Land Tenure Issues Affect Sanitation Provision for the Urban Poor?* Learning Brief No. 1. Homeless International, UK.

Hilhorst, D. 2003. *The Real World of NGOs: Discourses, Diversity and Development.* Zed Books Ltd.

Hobson, J. 2000. Sustainable Sanitation: Experiences in Pune with a Municipal-NGO-Community Partnership. *Environment and Urbanization.* Vol. 12, No. 2: 53-62, SAGE Publications.

Hodder, R. 2000. *Development Geography*. Routledge, London.

Holden, R. 2008. Urban Sanitation Technologies: The Challenges of Reaching the Urban Poor. IRC Symposium on *'Sanitation for the Urban Poor: Partnerships and Governance',* 19-21 November, Delft, The Netherlands.

Holstein, J.A. and Gubrium, J.F. 1995. *The Active Interview, Qualitative Methods Series*. SAGE Publications.

Hoque, B.A. et al. 1994. Sanitation in a Poor Settlement in Bangladesh: A Challenge for the 1990s. *Environment and Urbanization*. Vol 6, No 2: 79-85, SAGE Publications.

Hossain, M. et al. 2004. *A Nature and Impact of Women's Participation in Economic Activities in Rural Bangladesh.* CDP-IRRI policy brief 7, IRRI, Dhaka.

Hossain, S. 2005. Poverty, Household Strategies and Coping with Urban Life: Examining 'Livelihood Framework' in Dhaka City, Bangladesh. *Bangladesh e-Journal of Sociology*. Vol. 2, No. 1.

Hossain, S. 2008. Rapid Urban Growth and Poverty in Dhaka City. *Bangladesh e-Journal of Sociology*. Vol. 5, No. 1.

Howard, G. et al. c2004. *Human Excreta and Sanitation: Control and Protection.* World Health Organization. [http://www.who.int/water_sanitation_health/resourcesquality/en/groundwater22.pdf- Accessed May 2012].

Huber, J. 1995. Centennial Essay: Institutional Perspectives on Sociology. *American Journal of Sociology.* Vol. 101, No. 1: 194-216, The University of Chicago Press.

Hussain, A. 2003. Local Governance in Bangladesh: The Emerging Role of the Development Partners. *Asian Affairs.* Vol. 25, No. 4: 5-22, CDRB Publication.

IDS. 2011. *Some for All? Pathways and Politics in Water and Sanitation since New Delhi, 1990*. Liquid Dynamics II. STEPS Centre Water and Sanitation Symposium. 22-23 March 2011, Institute of Development Studies, Sussex University.

IELRC. 1990. *New Delhi Statement, Global Consultation on Safe Water and Sanitation, 1990*. International Environment House, Geneva, Switzerland.

Iftekharuzzaman. 2005. *Corruption and Human Insecurity in Bangladesh*. Paper Presented at a seminar on International Anti-Corruption Day in 2005, Dhaka.

IGS. 2008. *The State of Governance in Bangladesh 2007: Expectations, Commitments, Challenges.* Institute of Governance Studies, BRAC University, Dhaka.

IGS. 2009. *The State of Governance in Bangladesh 2008: Confrontation, Competition, Accountability.* Institute of Governance Studies, BRAC University, Dhaka.

IHS. 1997. *Integrated Low Cost Sanitation: Indian Experience.* Sulabh International Institute of Technical Research and Training, Institute for Housing and Urban Development Studies, Rotterdam, The Netherlands.

Innes, M. 2001. Exemplar: Investigating the Investigators- Studying Detective Work. N. Gilbert (ed.) *Researching Social Life.* Second Edition, SAGE Publications, London.

IRC. 1997. *Operation and Maintenance of Sanitation Systems in Urban Low-income Areas in India and Thailand: Report on a Joint Research Programme, 1989-1993.* Project and Programme Papers, International Water and Sanitation Centre, IRC, Delft, The Netherlands.

IRC. 2006. *The Value of Environmental Sanitation: Case Studies.* Occasional Paper Series 42, IRC International Water and Sanitation Centre, Delft, The Netherlands.

Islam, N. 1996. *Dhaka: From City to Mega City.* Urban Studies Program, Department of Geography, University of Dhaka.

Islam, N. 1996a. The Urban Poor: Definition and Magnitude. Nazrul Islam (ed.) *The Urban Poor in Bangladesh*. Centre for Urban Studies, Dhaka.

Islam, N. 1999. Dhaka City: Some General Concerns. Paper Presented in 'Reforming Dhaka City Management' Seminar in Dhaka. N Hamid and S Huq (eds.) *Asian Cities in the 21st Century.* Vol. 3, Asian Development Bank. –

Islam, N. 2005. *Status of Data and Information Towards Effective Urban Planning, Management and Good Governance in Dhaka and Khulna, Bangladesh*. Paper presented at the World Bank-SDS organized Asian Regional Seminar on Knowledge Infrastructure Movement toward Effective Urban Management and Governance, 10-11 March 2005, Mumbai, India.

Islam, N. and Nazem, N.I. 1997. Delivery of Land, Housing and Environmental Services and the Urban Poor in Bangladesh. N Islam, N Huda, F B Narayan & P B Rana (eds.) *Addressing the Urban Poverty Agenda in Bangladesh: Critical Issues and 1995 Survey Findings.* 117–143, Asian Development Bank, Dhaka.

Islam, N. c2006. Bangladesh. In...*Urbanization and Sustainability in Asia*, Chapter 3: 43-69. [http://www.adb.org/documents/books/urbanization-sustainability/chapter03.pdf, Accessed August 2010].

Islam, N. et al. 1997. Other Indicators of Urban Poverty. N Islam, N Huda, F B Narayan & P B Rana (eds.) *Addressing the Urban Poverty Agenda in Bangladesh: Critical Issues and 1995 Survey Findings.* 239–253, Asian Development Bank, Dhaka.

Islam, N. et al. 2003. Reforming Governance in Dhaka, Bangladesh, Chapter 8. Patricia L McCarney and Richard E Stren (eds.) *Governance on the Ground: Innovations and Discontinuities in Cities of the Developing World*. 194-219, Woodrow Wilson Center Press, Washington D.C.

Islam, N.; Kitawaki, H. and Rahman, M.H. 1994. *Willingness to Pay/Use for Water Supply and Sanitation.* 20th WEDC Conference on Affordable Water Supply and Sanitation, Colombo, Sri Lanka.

Islam, Q.T. 2000. *Defining Pro Poor Intervention in Urban Health and Sanitation with and Emphssis on NGOs Experience: The Case of Dhaka City.* CPD-UNFPA paper 13, Centre for Policy Dialogue, Dhaka.

Islam, S.A. 2005a. Sociology of Poverty: Quest for a New Horizon. *Bangladesh e-Journal of Sociology.* Vol. 2, No. 1.

Iwugo, K.O. 1979. Factors Affecting the Implementation of Improved Sanitation in Africa. *The Journal of the Royal Society for the Promotion of Health.* Vol. 99: 28-30, SAGE Publications.

Iyenger, S. 1989. Common Property Resources in Gujarat: Some Findings about their Size, Status and Use. *Economic and Political Weekly*. June 24, pp. A67-A77.

Jaquette, J.S. 1982. Women and Modernization Theory: A Decade of Feminist Criticism. *World Politics*. Vol. 34, No. 2: 267-284, Cambridge University Press.

Jewitt, S. 2011. Geographies of Shit: Spatial and Temporal Variations in Attitudes towards Human Waste. *Progress in Human Geography*. Vol. 35, No. 5: 608-626, SAGE Publications.

Jewitt, S. 2011a. Poo Gurus? Researching the Threats and Opportunities Presented by Human Waste. *Applied Geography*. Vol. 31: 761-769. Elsevier Ltd.

Jick, T.D. 1983. Mixing Qualitative and Quantitative Methods: Triangulation in Action. John Van Maanen (ed.) *Qualitative Methodology*. 135-148, SAGE Publications.

Jinnah, S.I.A. 2007. *Bangladesh: A Successful Case of Negotiating Water Connection for the Poor in Big Cities. Rights of Water Connections for Urban Slum Dwellers in Bangladesh: A Study on DSK's Experience in Three Slums of Mirpur, Dhaka.* Advancing Sustainable Environmental Health (ASEH) Case Study, WaterAid, Bangladesh.

JMP. 2011. *Report of the First Consultation on Post-2015 Monitoring of Drinking-Water and Sanitation.* WHO-UNICEF Joint Monitoring Programme for Water Supply and Sanitation. WHO and UNICEF, Berlin.

John, T.J. and White, F. 2003. Public Health in South Asia. Robert Beaglehole (ed.) *Global Public Health: A New Era.* 172-190, Oxford University Press.

Johns, G. 2006. The Essential Impact of Context on Organizational Behaviour. *Academy of Management Review.* Vol. 31, No. 2: 386-408, Academy of Management.

Jordan, S. and Wagner, F. 1993. Meeting Women's Needs and Priorities for Water and Sanitation in Cities. *Environment and Urbanization.* Vol. 5, No. 2: 135-145, SAGE Publications.

Jordhus-Lier, D. 2010. *The Urban Challenge: Researching the Politics of the Urban Environment in the Global South.* EADI Policy Paper, European Association of Development Research and Training Institutes.

Jorgensen, D.L. 1989. *Practical Observation: A Methodology for Human Studies*. SAGE Publications, London.

Joshi, D. et al. c2005. *Sanitation for the Urban Poor: Whose Choice, Theirs or Ours?* Research Report, Engineering for Development (IIDS), University of Southampton and Department for International Development (DFID).

Joshi, D.; Fawcett, B. and Mannan, F. 2011. Health, Hygiene and Appropriate Sanitation: Experiences and Perceptions of the Urban Poor. *Environment and Urbanization.* Vol. 23, No. 1: 91-111, SAGE Publications.

K. Eckman and Walker, R. 2008. *Knowledge, Attitudes and Practice (KAP) Survey- Summary Report for the Duluth Lakeside Storm-water Reduction Project (LSRP)*. Saint Paul, Water Resources Center, University of Minnesota.

Kacker, S.D. and Joshi, A. 2012. Pipe Dreams? The Governance of Urban Water Supply in Informal Settlements, New Delhi. *IDS Bulletin*. Vol. 43, No. 2: 27-36, Institute of Development Studies, Sussex University, UK.

Kaika, M. and Swyngedouw, E. 2000. Fetishizing the Modern City: The Phantasmagoria of Urban Technological Networks. *International Journal of Urban and Regional Research*. Vol. 24: 120-138, Blackwell Publishers.

Kar, K. 2003. *Subsidy or Self-respect? Participatory Total Community Sanitation in Bangladesh.* IDS Working Paper 184, Institute of Development Studies, Brighton, UK.

Kar, K. 2005. *Practical Guide to Triggering Community-Led Total Sanitation (CLTS).* Institute of Development Studies, University of Sussex, UK.

Kar, K. 2012. Why not Basics for All? Scopes and Challenges of Community-led Total Sanitation. *IDS Bulletin*. Vol. 43, No. 2: 93-96, Institute of Development Studies, Sussex University, UK.

Kar, K. and Bongartz, P. 2006. *Update on Some Recent Developments in Community-Led Total Sanitation.* Institute of Development Studies, University of Sussex, UK.

Kar, K. and Chambers, R. 2008. *Handbook on Community-Led Total Sanitation*. Plan International and Institute of Development Studies, University of Sussex, UK.

Kar, K. and Pasteur, K. 2005. *Subsidy or Self-respect? Community-Led Total Sanitation*. An Update on Recent Developments, IDS Working Paper 257, Institute of Development Studies, University of Sussex, UK.

Katukiza, A.Y. et al. 2010. Selection of Sustainable Sanitation Technologies for Urban Slums: A Case of Bwaise III in Kampala, Uganda. *Science of the Total Environment.* Vol. 409: 52-62, Elsevier B.V.

Katukiza, A.Y. et al. 2012. Sustainable Sanitation Options for Urban Slums. Research Review Paper. *Biotechnology Advances.* Published Online, Elsevier Inc.

Kauffmann, C. 2007. Access to Drinking Water and Sanitation in Africa. *Policy Insights*. No. 41. Published by the African Development Bank and the OECD Development Centre.

Keil, R. 2005. Progress Report- Urban Political Ecology. *Urban Geography*. Vol. 26, No. 7: 640-651, V.H. Winston and Son.

Kellert, S.R. et al. 2000. Community Natural Resource Management: Promise, Rhetoric and Reality. *Society and Natural Resources.* Vol. 13: 705-715.

Kerlin, B.A. 1998. *Pursuit of the PhD: Is it Good for your Health?* Paper presented at the 4th International Multidisciplinary Qualitative Health Research Conference, February 19-21, Vancouver, British Columbia.

Khan, M. 2004. Slum Dwellers to Swell to 10m in Five Years: Lack of Rural Jobs Makes Situation Worse. *The Daily Star*. Star City, 26 December 2004, Vol. 5, No. 212. Dhaka.

Khan, M.I. 2005. Challenges in Constructing the Sociological Concept of Poverty. *Bangladesh e-Journal of Sociology*. Vol. 2, No. 1.

Khan, M.U. 1987. Limitation of Communal Latrines in Changing the Prevalence of Parasites and Diarrhoeal Attack Rate in Dhaka Peri-urban Slums. *Environmental Pollution.* Vol. 47: 187-194, Elsevier.

Khan, M.U. and Shahidullah, M. 1982. Role of Water Supply and Sanitation in the Incidence of Cholera in Refugee Camps. *Transaction of Royal Society of Tropical Medicine and Hygiene*, Vol. 73. No. 3: 373-377, Elsevier.

Kitchin, R. and Tate, N.J. 2000. *Conducting Research in Human Geography: Theory, Methodology and Practice*. Pearson, London.

Klawitter, S. c2006. *Poverty-oriented Water and Sanitation Subsidies*. Final Draft, GTZ: Private Sector Participation in Infrastructure, Berlin.

Kolsky, P. 1999. Engineers and Urban Malaria: Part of the Solution, or Part of the Problem? *Environment and Urbanization.* Vol. 11, No. 1: 159-163, SAGE Publications.

Konteh, F.H. 2009. Urban Sanitation and Health in the Developing World: Reminiscing the Nineteenth Century Industrial Nations. *Health and Place*. Vol. 15: 69-78, Elsevier Ltd.

Korten, D.C. 1980. Community Organisations and Rural Development: A Learning Process Approach. *Public Administration Review.* Vol. 52, No.5: 480–511.

Korten, F.F. 1981. Community Participation: A Management Perspective on Obstacles and Options. David C Korten and Felipe B Alfonso (eds.) *Bureaucracy and the Poor: Closing the Gap*. McGraw-Hill, Singapore.

Krause, M. 2007. *The Political Economy of Water and Sanitation in Developing Countries: Cross-country Evidence and a Case Study on Colombia*. Doctor of Economics thesis, Department of Economics, Liebig University of Giessen.

Krause, M. 2009. *The political economy of water and sanitation.* Routledge.

Krueger, R.A. 1998. *Analyzing and Reporting Focus Group Results*. Focus Group Kit 6, SAGE Publications, London.

Kurian, M. 2010. Planning Clinics: A Primer. Mathew Kurian and Patricia McCarney (eds.) *Peri-urban Water and Sanitation Services: Policy, Planning and Method*. Springer.

Landell-Mills, P. and Serageldin, I. 1991. *Governance and the External Factor*. Proceeding of the World Bank Annual Conference on Development Economics, Washington DC.

Landon, J.; Fairclough, N. 1998. Sanitation Comes to the Slums. *The Independent*. Online Archive, Thursday, 26 March 1998, London.

Lane, J. 2012. Barriers and Opportunities for Sanitation and Water for All, as Envisaged by the New Delhi Statement. *IDS Bulletin.* Vol. 43, No. 2: 13-20, Institute of Development Studies, Sussex University, UK.

Langergraber, G. And Muellegger, E. 2005. Ecological Sanitation- A Way to Solve Global Sanitation Problems? Review Article. *Environment International.* Vol. 31: 433-444, Elsevier Ltd.

Larson, E.A. 2010. *The Political Ecology of Water: Globalization and Transboundary Water Management.* Project Paper, Macalester College.

Leftwich, A. 1994. Governance: The State and the Politics of Development. *Development and Change*. Vol. 25, No. 2: 363-386, Blackwell Publishers.

Levison, M.M. et al. 2011. Knowledge, Attitudes and Practices to Water-health in a Rural Kenyan Community. *East African Journal of Public Health.* Vol. 8, No. 2: 103-111.

Lewis, O. 1968. *A Study of Slum Culture*. Random House, New York.

LGD. 1998. *National Policy for Safe Water Supply and Sanitation 1998*. Local Government Division, Ministry of Local Government Rural Development and Cooperatives, Government of Bangladesh.

LGD. 2005. *Sector Development Programme: Water and Sanitation Sector in Bangladesh.* Volume I, Main Report. Local Government Division, Ministry of Local Government, Rural Development and Cooperatives, Government of Bangladesh.

LGD. 2005a. *Pro Poor Strategy for Water and Sanitation Sector in Bangladesh*. Local Government Division, Unit for Policy Implementation, Ministry of Local Government Rural Development and Cooperatives, Government of Bangladesh.

LGD. 2008. *Sanitation in Bangladesh: Bangladesh Country Paper*. Presented in Third South Asian Conference on Sanitation, SACOSAN-III. Local Government Division, Ministry of Local Government, Rural Development and Cooperatives, Government of Bangladesh.

Lincoln, Y.S and Guba, E.G. 1985. *Naturalistic Inquiry*. SAGE Publications, London.

Ljung, P. 2008. *The Nature of Corruption in the Water Supply and Sanitation Sector*. Paper Presented in the 13th International Anticorruption Conference, Athens, Greece.

Lopez, A.D. et al. 2006. *Global Burden of Disease and Risk Factors.* Oxford University Press and The World Bank.

Lovell, C.H. 1992, *Breaking the Cycle of Poverty. The BRAC Strategy.* University Press Limited, Dhaka.

Luby, S.P. et al. 2011. Using Child Health Outcomes to Identify Effective Measures of Handwashing. *American Journal of Tropical Medicine and Hygiene*. Vol. 85, No. 5: 882-892.

Maanen, J.V. 1979. The Fact of Fiction in Organizational Ethnography. *Administrative Science Quarterly*. Qualitative Methodology, Vol. 24, No. 4: 539-550, Cornell University. –

Mabud, M.A. 2008. *Bangladesh Population: Prospects and Problems*. Paper Presented at the National Seminar on Bangladesh Population Held on December 15, at the National Economic Council's Auditorium, Dhaka.

Macnaghten, P. and Myers, G. 2004. Focus Groups. Clive Seale et al (eds.) *Quantitative Research Practice.* 65-79, SAGE Publications.

Mahamud, A.M. 2005. *Assessment of Knowledge, Attitudes, and Practice (KAP) on Water, Sanitation and Non Food Items among Internally Displaced Populations in Zalingie, West Darfur, Sudan*. Mercy Corps.

Mahbub, A. 2011. Exploring the Social Dynamics of CLTS in Bangladesh: The Inclusion of Children, Women and Vulnerable People. Lyla Mehta and Synne Movik (eds.) *Shit Matters: The Potential of Community-led Total Sanitation*. Practical Action Publishing Ltd, UK.

Mahbub, A.Q.M. and Islam, N. 1991. The Growth of Slums in Dhaka City: A Spatio Temporal Analysis. S U Ahmed (ed.) *Dhaka: Past Present Future*. 508-521, Asiatic Society of Bangladesh, Dhaka.

Majumder, P.P. et al. 1996. *The Squatters of Dhaka City: Dynamism in the Life of Agargaon Squatters*. University Press Limited, Dhaka.

Makau, W.K. and Opiyo, R. 2007. *Somali Knowledge Attitude and Practices Study (KAPS): Infant and Young Child Feeding and Health Seeking Practices.* Food Security Analysis Unit, Somalia.

Manikutty, S. 1998. Community Participation: Lessons from Experiences in Five Water and Sanitation Projects in India. *Development Policy Review.* Vol. 16: 373-404, Overseas Development Institute, Blackwell Publishers.

Mara, D. 2012. Sanitation: What's the Real Problem? *IDS Bulletin*. Vol. 43, No. 2, Page 86-92, Institute of Development Studies, Sussex University, UK.

Marcuse, P. and van Kempen, R. 2000. *Globalising Cities: A New Spatial Order?* Blackwell, Oxford.

Marlin, A. et al. 2012. Sustainable Community-based Solutions: Source to Tap and Back Again. *The Journal of Gender and Water.* Vol. 1, No. 1, The University of Pennsylvania.

Marshall, C. and Rossman, G.B. 1995. Recording, Managing and Analyzing Data. *Designing Qualitative Research*. 2nd Edition: 108-119, SAGE Publications.

Martin, M. et al. c2003. *An Analysis of Sanitation Policies in Southern Africa: The Case of Gender Policies in Sanitation in South Africa, Zambia and Zimbabwe*. Water, Engineering and Development (WEDC).

Maslow, A.H. 1954. *Motivation and Personality*. Harper, New York.

Maslow, A.H. 1970. *Motivation and Personality* (3rd Edition). Harper Collins Publisher, New York.

Mason, J. 1996. *Qualitative Researching*. SAGE Publications, London.

McFarlane, C. 2008. Sanitation in Mumbai's Informal Settlements: State, 'Slum', and Infrastructure. *Environment and Planning.* Vol. 40: 88-107.

McFarlane, C. 2008a. Governing the Contaminated City: Infrastructure and Sanitation in Colonial and Post-Colonial Bombay. *International Journal of Urban and Regional Research.* Vol. 32, No. 2: 415-435.

McFarlane, C. and Rutherford, J. 2008. Political Infrastructures: Governing and Experiencing the Fabric of the City. *International Journal of Urban and Regional Research.* Vol. 32, No. 2: 363-374, Blackwell Publishing.

McGranahan, G. et al. 2001. *The Citizens at Risk. From Urban Sanitation to Sustainable Cities.* Earthscan Publications.

McKelvey, B. 2002. Postmodernism vs. Truth in Management Theory. Ed Locke (ed.) *Post: Modernism and Management: Pros, Cons, and Alternatives.* Elsevier.

McMichael, T. and Beaglehole, R. 2003. The Global Context for Public Health. Robert Beaglehole (ed.) *Global Public Health: A New Era.* 1-23, Oxford University Press Inc., New York.

Mehta, L. 2011. Introduction: Why Shit Matters: Community-led Total Sanitation and the Sanitation Challenge for the 21st Century. Lyla Mehta and Synne Movik (eds.) *Shit Matters: The Potential of Community-led Total Sanitation*. Practical Action Publishing Ltd, UK.

Mehta, L. et al. 2007. *Liquid Dynamics: Challenges for Sustainability in Water and Sanitation*. STEPS Working Paper 6, STEPS Centre, Brighton.

Miah, M.A.Q. and Weber, K.E. 1990. Feasible Slum Upgrading for Dhaka. *Habitat International*. Vol. 14, No. 1: 145-160, Pergamon Press Plc., UK.

MICS. 2007. *Bangladesh: Monitoring the Situation of Children and Women: Progotir Pathey 2006*. Multiple Indicator Cluster Survey, Volume I: Technical Report, Prepared by Bangladesh Bureau of Statistics and UNICEF, Dhaka.

MICS. 2010. *Bangladesh: Monitoring the Situation of Children and Women. Progotir Pathey 2009*. Multiple Indicator Cluster Survey, Volume I: Technical Report, Prepared by Bangladesh Bureau of Statistics and UNICEF, Dhaka.

Miguel, E. and Gugerty, M.K. 2005. Ethnic Diversity, Social Sanctions, and Public Goods in Kenya. *Journal of Public Economics.* Vol. 89: 2325-2368, Elsevier.

Miles, M. and Huberman, A. 1994. *Qualitative Data Analysis*. SAGE Publications, London.

Mishler, E.G. 1995. Models of Narrative Analysis: A Typology. *Journal of Narrative and Life History.* Vol. 5, No. 2: 87-123.

Mission East and KIRDARC. 2009. *Clean Water, Improved Sanitation and Hygiene Promotion in Rural Villages of Humla and Mugu, Mid West Nepal.* ECHO funded project report, Mission East and EU Humanitarian Aid Department.

Mitlin, D. 2003. A Fund to Secure Land for Shelter: Supporting Strategies of the Organized Poor. *Environment and Urbanization.* Vol. 15, No. 1: 181-192, SAGE Publications.

Mitlin, D. and Satterthwaite, D. 2004. The Role of Local and Extra-local Organizations. Diana Mitlin and David Satterthwaite (eds.) *Empowering Squatter Citizen: Local Government, Civil Society and Urban Poverty Reduction.* 278-306, Earthscan, London.

Monstadt, J. 2009. Conceptualizing the Political Ecology of Urban Infrastructures: Insights from Technology and Urban Studies. *Environment and Planning*. Vol. 41: 1924-1942.

Morella, E.; Foster, V. and Banerjee, S.G. 2008. *Climbing the Ladder: The State of Sanitation in Sub-Saharan Africa.* Africa Infrastructure Country Diagnostic (AICD) Background Paper 13 (Phase I), The World Bank.

Morella, E.; Foster, V. and Banerjee, S.G. 2010. Sanitation: Moving Up the Ladder (Chapter 17). Vivien Foster and Cecilia Briceno-Garmendia (eds.) *Africa's Infrastructure: A Time for Transformation*. The Agence Francaise de Developpement and the World Bank.

Morrison, S. 2011. World's Poor to Wait '200 Years' for Sanitation. *The Independent*. 13 November 2011, London.

Movik, S. and Mehta, L. 2010. *The Dynamics and Sustainability of Community-led Total Sanitation (CLTS): Mapping Challenges and Pathways*. STEPS Working Paper 37, STEPS Centre, Brighton.

Mukhopadhyay, B. 2006. Crossing the Howrah Bridge: Calcutta, Filth and Dwelling- Forms, Fragments, Phantasms. *Theory, Culture & Society.* Vol. 23, No. 7-8: 221-241, SAGE Publications.

Muller, A. and Mbanga, E. 2012. Participatory Enumerations at the National Level in Namibia: The Community Land Information Programme (CLIP). *Environment and Urbanization.* Vol. 24, No. 1: 67-75, SAGE Publications.

Murphy, H.M.; BcBean, E.A. and Farahbakhsh, K. 2009. Appropriate Technology- A Comprehensive Approach for Water and Sanitation in the Developing World. *Technology in Society*. Vol. 31: 158-167, Elsevier Ltd.

Muylwijk, J. 2006. Gender Mainstreaming in Integrated Water Resource Management: Gender, Efficiency and Sustainability. 3rd Arab Water Regional Conference on '*Mainstreaming Gender in Water Resource Management: Monitoring and Evaluation'.* 09-11 December, Cairo, Egypt.

Mwangi, S.W. 2000. Partnerships in Urban Environmental Management: An Approach to Solving Environmental Problems in Nakuru, Kenya. *Environment and Urbanization*. Vol. 12, No. 2: 77-92, SAGE Publications.

Nawab, B. et al. 2006. Cultural Preferences in Designing Ecological Sanitation Systems in North West Frontier Province, Pakistan. *Journal of Environmental Psychology*. Vol. 26: 236-246, Elsevier Ltd.

Naylor, A. c2011. *Development and Implementation of Sanitation Survey: Using a Knowledge Attitudes Practices (KAP) Model.* University of South Florida.

Nelson, C.; Treichler, P.A. and Grossberg, L. 1992. Cultural Studies: An Introduction. L Grossberg, C Nelson and P A Treichler (eds.) *Cultural Studies.* 1-16, Routledge, New York.

Neuman, W.L. 1994. *Social Research Methods: Qualitative and Quantitative Approaches*. Allyn and Bacon, Needham Hights.

Newborne, P. 2008. Sanitation and the MDGs: Making the Politics Work. *ODI Opinions* (September 2008). Overseas Development Institute, UK.

NGO Forum. 2008. *What is a Slum?* Discussion Note, NGO Forum for Urban Water and Sanitation, Nepal.

Nicol, A.; Mehta, L. and Allouche, J. 2012. Introduction: 'Some for All Rather than More for Some'? Contested Pathways and Politics Since the 1990 New Delhi Statement. *IDS Bulletin*. Vol. 43, No. 2:1-9, Institute of Development Studies, Sussex University, UK.

Nijssen, S. 2007. *Public Toilets in Urban India: Doing Business Differently*. Field Note, Water and Sanitation Program (WSP)- South Asia, World Bank, India.

Nilsson, D. 2006. A Heritage of Unsustainability? Reviewing the Origin of the Large-scale Water and Sanitation System in Kampala, Uganda. *Environment and Urbanization.* Vol. 18, No. 2: 369-385, SAGE Publications.

Novo, F.G. 2012. Moral Drought: The Ethics of Water Use. *Water Policy*. Vol. 14: 65-72, IWA Publishing and the Botin Foundation.

Ntim, B. 1988. Introduction. Buatsi A (ed.) *Technology Transfer–Nine Case Studies*. IT Publications, London.

Nurse, M. et al. 2004. Towards Pro-poor Community Forestry- Recent Experiences from Dolakha and Okhaldhunga District of Nepal. Paper Presented to National Workshop on '*Management of Common Property Resources and Equity: Exploring Lessons from Nepal'.* 28 May, Kathmandu, Nepal.

Omishakin, A. 1986. Attitudes of Adults to Sanitation Facilities in Ibadan. *The Journal of the Royal Society for the Promotion of Health*. Vol. 106: 63-65, SAGE Publications.

OPP. 1995. Orangi Pilot Project: NGO Profile. *Environment and Urbanization*. Vol. 7, No. 2: 227-236, SAGE Publications.

Osman, F.A. 2008. Health Policy, Programmes and System in Bangladesh: Achievements and Challenges. *South Asian Survey*. Vol. 15, No. 2: 263-288, SAGE Publications.

Ould-Mey, M. 2003. Currency, Devaluation and Resource Transfer from the South to the North. *Annals of the Association of American Geographers*. Vol. 93, No. 2: 463-484.

Oxfam. c2012. *Improve Health in Liberia's Urban Slums.* Oxfam, UK.

PAHO. 2006. *The Challenge in Disaster Reduction for the Water and Sanitation Sector: Improving Quality of Life by Reducing Vulnerabilities*. Pan American Health Organization, Washington DC.

Pandit, N.R. 1996. The Creation of Theory: A Recent Application of the Grounded Theory Method. *The Qualitative Report*. Vol. 2, No. 4. [http://www.nova.edu/ssss/QR/QR2-4/pandit.html- Accessed March 2011].

Paramasivan, S. and Calaguas, B. c2002*. Meeting the Sanitation and Hygiene Challenge: Experience of WaterAid in India*. 1-5, Sustainable Development International [http://infohouse.p2ric.org/ref /40/39728.pdf- Accessed January 2009].

Parkinson, J. 2003. Drainage and Stormwater Management Strategies for Low-income Urban Communities. *Environment and Urbanization*. Vol. 15, No. 2: 115-126, SAGE Publications.

Pasteur, K. 2005. *Community Led Total Sanitation as a Livelihoods Entry Point – A Brief Introduction*. Institute of Development Studies, University of Sussex, UK.

Patel, S. and Baptist, C. 2012. Editorial: Documenting by the Undocumented. *Environment and Urbanization.* Vol. 24, No. 1: 3-12, SAGE Publications.

Patel, S. et al. 2012. Knowledge is Power- Informal Communities Assert their Right to the City through SDI and Community-led Enumerations. *Environment and Urbanization.* Vol. 24, No. 1: 13-26, SAGE Publications.

Patel, S.; d'Cruz, C. and Burra, S. 2002. Beyond Evictions in a Global City: People-Managed Resettlement in Mumbai. *Environment and Urbanization.* Vol. 14, No. 1: 159-172, SAGE Publications.

Paterson, C.; Mara, D. and Curtis, T. 2007. Pro-poor Sanitation Technologies. *Geoforum.* Vol. 38: 901-907, Elsevier Ltd.

Pathak, B. 1999. Sanitation is the Key to Healthy Cities: A Profile of Sulabh International. *Environment and Urbanization.* Vol. 11, No. 1: 221-229, SAGE Publications.

Pathak, B. 2006. *Road to Freedom: A Sociological Study on the Abolition of Scavenging in India.* Xtreme Office Aids (Pvt.) Limited, New Delhi.

Patwary, M.A. et al. 2010. Domes and the Dead: An Example of Extreme Fatalism among Mortuary Workers in Bangladesh. *Kaleidoscope*. 10-18, Postgraduate Journal of the Institute of Advanced Study, Durham University.

Paul, S. 1987. *Community Participation in Development Projects: The World Bank Experience*. World Bank, Washington, DC.

Payne, G. 2005. Getting Ahead of the Game: A Twin-track Approach to Improving Existing Slums and Reducing the Need for Future Slums. *Environment and Urbanization.* Vol. 17, No. 1: 135-145, SAGE Publications.

Peal, A. et al. 2010. *Hygiene and Sanitation Software: An Overview of Approaches.* Water Supply and Sanitation Collaborative Council, Geneva, Switzerland.

Penn, C. 2005. *Technology Notes*. WaterAid, London.

Petersen, A. 1996. The 'Healthy' City, Expertise, and the Regulation of Space. *Health and Place.* Vol. 2, No. 3: 157-165, Elsevier Science Ltd.

Petersen, A. and Lupton, D. 1996. *The New Public Health: Health and Self in the Age of Risk.* SAGE Publications.

Podymow, T. et al. c2006. *Health and Social Conditions in the Dhaka Slums*. Pilot Study, Approved by the Ottawa Hospital Research Ethics Board.

Postnote. 2002. Access to Sanitation in Developing Countries. *Postnote.* December Issue, No. 190, Parliamentary Office of Science and Technology, UK.

Potter, J. 1997. Discourse Analysis as a Way of Analysing Naturally Occurring Talk. David Silverman (ed.) *Qualitative Research: Theory, Method and Practice*. 144-160, SAGE Publications.

Powell, R.A and Single, H.M. 1996. Methodology Matters-V: Focus Groups. *International Journal for Quality in Health Care*. Vol. 8, No. 5: 499-504.

PRSP. 2005. *Bangladesh: Poverty Reduction Strategy Paper*. IMF Country Report No. 05/410, International Monetary Fund, Washington DC.

PSTC. 2005. Poverty Reduction through Environmental Water Sanitation and Hygiene (PREWASH) Project, PSTC, Supported by WaterAid Bangladesh. M Nurun Nabi (ed.) *Annual Report*. July 2004 - June 2005, Dhaka.

Pugh, C. 1996. *Sustainabiligy, the Environment and Urbanization*. Earthscan Publications Ltd, London.

Punch, K.F. 1998. *Introduction to Social Research: Quantitative and Qualitative Approaches*. SAGE Publications, London.

Raeburn, J. and Macfarlane, S. 2003. Putting the Public into Public Health: Towards a More People-Centred Approach. Robert Beaglehole (ed.) *Global Public Health: A New Era.* 243-252, Oxford University Press. –

Rahman, M. 2003. *Situation Analysis: Water Supply and Sanitation Sector Research in Bangladesh.* ITN Bangladesh, Centre for Water Supply and Waste Management, Bangladesh University of Engineering and Technology (BUET), Dhaka.

Rahman, M. 2003a. *Dhaka: A City of, Dirt, Darkness and Deprivation*. News Network, Dhaka.

Rahman, M. 2005. Role of NGOs in urban housing for the poor in Dhaka, *GBER*, Vol. 5, No. 1: 16–29.

Rahman, M.M. 2006. *Investigation of Appropriate Sanitation Technology for the Slum Areas of Dhaka City: A Study on Two Onsite Options*. M.Sc. Thesis, Urban Environmental Management, Wageningen University, The Netherlands.

Rahman, M.M. 2006a. Community Based Sanitation Systems in Dhaka City Slums : A Qualitative Enquiry. *Oriental Geographer*, Vol. 50, Issue 2. The Bangladesh Geographical Society, Department of Geography and Environment, University of Dhaka.

Rahman, M.M. 2009. *Sanitation Sector Status and Gap Analysis: Bangladesh*. Published by Global Sanitation Fund and Water Supply & Sanitation Collaborative Council.

Rahman, M.M.; Haughton, G. and Jonas, A.E.G. 2010. The Challenges of Local Environmental Problems Facing the Urban Poor in Chittagong, Bangladesh: A Scale-sensitive Analysis. *Environment and Urbanization*. Vol. 22, No. 2: 561-578, SAGE Publications.

Ranis, G. 1980. Appropriate Technology and the Development Progress. Long F A and Lleson A (eds.) *Appropriate Technology and Social Values – A Critical Appraisal*. 99-120, Ballinger Publishing Company.

RASSU. 2002. *An Assessment on the Uprooted Slum Dwellers of Dhaka City*. Published by Research and Social Survey Unit, Democracywatch, Dhaka.

Ratcliff, D. 1999. *Qualitative Research Resources: Data Analysis (Part V)*. [Available at http://don.ratcliff.net/qual- Accessed January 2009].

Ray, D. 2006. Aspirations, Poverty and Economic Change. A Banerjee, R Benabou and D Mookherjee (eds.) *Understanding Poverty.* Oxford University Press, Inc., New York.

Reardon, T. and Vosti, S.A. 1995. Links Between Rural Poverty and the Environment in Developing Countries: Asset Categories and Investment Poverty. *World Development.* Vol. 23, No. 9: 1495-1506, Elsevier Science Ltd.

RGNDWM. 2003. *Sanitation in India: Small Steps to Meet the Challenge Ahead*. Agenda Note for National Level Workshop Sanitary Ware Manufacturers, Department of Drinking Water, Ministry of Rural Development, India.

Rhodes, R.A.W. 1997. *Understanding Governance: Policy Networks, Governance, Reflexivity and Accountability.* Open University Press, Buckingham.

Rhodes, T. 1995. Theorizing and Researching 'Risk': Notes on the Social Relations of Risk in Heroin Users' Lifestyles. P Aggleton, P Davies and G Hart (eds.) *AIDS: Safety, Sexuality and Risk*. Taylor and Francis, London.

Rich, M. and Ginsburg, K.R. 1999. The Reason and Rhyme of Qualitative Research: Why, When, and How to Use Qualitative Methods in the Study of Adolescent Health. *Journal of Adolescent Health*, Vol. 25, No. 6: 371-378, Elsevier Science Inc., New York.

Riessman, C.K. 1993. *Narrative Analysis Qualitative Research Methods.* SAGE Publications, Thousand Oaks (CA).

Rigg, J.D. 2007. *An Everyday Geography of the Global South*. Taylor and Francis, London.

Robinson, J. 2006. *Ordinary Cities: Between Modernity and Development. 'World Cities, or a World of Ordinary Cities'.* Routledge, Oxon, UK.

Rogerson, C.M. 1996. Willingness to Pay for Water: The International Debates. *Water SA*. Vol. 22, No. 4: 373-380.

Rosenquist, L.E.D. 2005. A Psychosocial Analysis of the Human-Sanitation Nexus. *Journal of Environmental Psychology.* Vol. 25: 335-346.

Roy, A.M. 2009a. *Bangladesh: Country Presentation on Sanitation*. Local Government Division, Ministry of Local Government Rural Development and Cooperatives, Dhaka.

Roy, G.S. and Abdullah, A.Q.M. 2005. Assessing Needs and Scopes of Upgrading Urban Squatters in Bangladesh. *BRAC University Journal*. Vol. II, No. 1: 33-41.

Roy, M. 2009. Planning for Sustainable Urbanisation in Fast Growing Cities: Mitigation and Adaptation Issues Addressed in Dhaka, Bangladesh. *Habitat International*. Vol. 33: 276-286, Elsevier Ltd.

Royal, A.H. 2011. Number of Slum Dwellers Going Up in Dhaka. *The Independent*. Online Archive, Tuesday, 04 January 2011, Dhaka.

Rubel, M. 2010. Slums in Dhaka City: Life of Misery. *Perspective*. Online Archive, Monday, 17 May 2010, Dhaka.

Ruiters, G. 2005. *Knowing your Place: Urban Services and New Modes of Governability in South African Cities*. Paper for Centre for Civil Society Seminar, 6 October, University of KwaZulu Natal.

Ryan, G.W. and Bernard, H.R. 2000. Data Management and Analysis Methods, N K Denzin and Y S Lincoln (eds.) *The Handbook of Qualitative Research*. Second Edition, SAGE Publications, London.

Rybczynski, W. et al. 1982. Low-cost Technology Options for Sanitation: State of the Literature. *Journal of Information Science*. Vol. 5: 97-101, North-Holland Publishing Company.

Sachs, J. 2007. China's Lessons for the World Bank. *Economist's View*. Online Archive, Sunday, 24 May 2007.

SACOSAN III. 2008. *Sanitation in Bangladesh. Country Paper in Third South Asian Conference on Sanitation (SACOSAN III), New Delhi*. Prepared by Local Government Division, Ministry of Local Government Rural Development and Cooperatives, Government of Bangladesh.

Sanday, P.R. 1983. The Ethnographic Paradigm(s). John Van Maanen (ed.) *Qualitative Methodology*. 19-36, SAGE Publications.

Sandhu, R.S. 1998. The Infrastructure Development in Slums: An Experience of a Medium Size City in Punjab. Sehgal R L (ed.) *Slum Upgradation, Emerging Issues and Policy Implications*. 141-156, Book Well Publications, New Delhi.

Sano, J.C. 2007. *Urban Environmental Infrastructure in Kigali City Rwanda: Challenges and Opportunities for Modernised Decentralised Sanitation Systems in Poor Neighbourhoods.* M.Sc Thesis, Environmental Sciences, Wageningen University, The Netherlands.

Sastry, N. and Burgard, S. 2005. The Prevalence of Diarrhoeal Disease among Brazilian Children: Trends and Differentials from 1986 to 1996. *Social Science and Medicine*. Vol. 60: 923-935.

Satterthwaite, D. 2003. The Links Between Poverty and the Environment in Urban Areas of Africa, Asia and Latin America. *The ANNALS of the Americal Academy of Political and Social Science*. Vol. 590, No. 1: 73-91, SAGE Publications.

Satterthwaite, D. 2009. Getting Land for Housing; What Strategies Work for Low-income Groups? *Environment and Urbanization*. Vol. 21, No. 2: 299-307, SAGE Publications.

Satterthwaite, D. 2011. Editorial: Why is Urban Health so Poor even in Many Successful Cities? *Environment and Urbanization*. Vol. 23, No. 1: 5-11, SAGE Publications.

Saxena, S. and Prakash, A. 2008. Sanitation and Health. Sawalia Bihari Verma, Sant Gyaneswar Singh and Shib Kumari Singh (eds.) *Rural Infrastructure: Sanitation, Housing, Health Care*. Sarup & Sons, New Delhi, India.

Schuringa, M.W. and Kodo, T. 1997. Tenancy and Sanitation Provision in Informal Settlements in Nairobi: Revisiting the Public Latrine Option. *Environment and Urbanization*. Vol. 9, No. 2: 181-190, SAGE Publications.

SDF. 2004. *Sector Development Framework: Water Supply and Sanitation.* Unit for Policy Implementation, Local Government Division, Ministry of Local Government Rural Development and Cooperatives, Government of Bangladesh.

SEHAB. c2004. *Integrating the Poor: Urban Upgrading and Land Tenure Regularisation in the City of Sao Paulo.* The Cities Alliance.

Seraj, T.M and Sadeque, C.M.Z. 2005. Cities of Bangladesh Towards Achieving the Environment Related Millennium Development Goals. *Millennium Development Goals and the City.* Souvenir, Published in the World Habitat Day 2005, Centre for Urban Studies (CUS) and Bangladesh Institute of Planners (BIP), Dhaka.

Shailo, I. 1995. *Water and Sanitation in Bangladesh: An Overview*. WatSan, Special Issue, June 1994-March 1995.

Shamsuzzoha, M. 2002. Dhaka City's Waste and Waste Management Scenario. M F Ahmed, S A Tanveer and A B M Badruzzaman (eds.) *Bangladesh Environment 2002.* Vol. 2: 818-829, Bangladesh Poribesh Andolon, Dhaka.

Shordt, K. et al. 2006. *About Corruption and Transparency in the Water and Sanitation Sector*. Thematic Overview Paper 16, IRC International Water and Sanitation Centre, Delft, The Netherlands.

Sidaway, J.D. 1992. In Other Worlds: On the Politics of Research by 'First World' Geographers in the 'Third World'. *Area*. Vol. 24, No. 4: 403-408, Blackwell Publishing.

Siddique, Q.I. et al. 1998. *Case Study on a Slum Improvement Project in Dhaka Metropolitan City*. Second International Expert Panel Meeting on Urban Infrastructure Development, UNCRD Proceedings Series, Vol. 26: 203–229, Bangkok.

Siddiqui, K. et al. 2000. *Overcoming the Governance Crisis in Dhaka City*. The University Press Limited, Dhaka.

Siddiqui, N.A. 1999. Financial Management of Dhaka City Corporation. Paper Presented in 'Reforming Dhaka City Management' Seminar in Dhaka. Naved Hamid and Saleemul Huq (eds.) *Asian Cities in the 21st Century*. Vol. 3, Asian Development Bank. -

Silverman, D. 1993. *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction.* SAGE Publications, Thousand Oaks (CA).

Silverman, D. 2005. *Doing Qualitative Research: A Practical Handbook.* Second Edition, SAGE Publications, London.

Singh, G.S. and Ram, S.C. 1997. Prospects of Sustainable Development of Kullu Valley in North-Western Himalaya. *Journal of Rural Development*. Vol. 16, No. 2: 359-368.

Singh, K. et al. 1996. Utilization and Development of Common Property Resources – A Field Study in Punjab. *Indian Journal of Agricultural Economics*. Vol. 51, No. 1-2: 249-259.

Singh, S.P. 2005. *Sulabh Sanitation Movement: Vision-2000 Plus.* Sulabh International Social Service Organization, New Delhi.

Sinnatamby, G. 1990. Low Cost Sanitation. Sandy Cairncross, Jorge E Hardoy and David Satterthwaite (eds.) *The Poor Die Young: Housing and Health in Third World Cities.* 127-157, Earthscan Publications Ltd, London.

Siswanto, S. and Sopacua, E. 2011. Reviving Health Posts as an Entry Point for Community Development: A Case Study of the Gerbangmas Movement in Lumajang District, Indonesia. Erik Blas, Johannes Sommerfeld and Anand Sivasankara Kurup (eds.) *Social Determinants Approaches to Public Health: From Concept to Practice.* 63-76, World Health Organization.

Smith, K.R. and Ezzati, M. 2005. How Environmental Health Risks Change with Development: The Epidemiologic and Environmental Risk Transitions Revisited. *Annual Reviews of Environmental Resources.* Vol. 30: 291-333.

Sohail, M. and Cavill, S. 2008. Water for the Poor: Corruption in Water Supply and Sanitation. Dieter Zinnbauer and Rebecca Dobson (eds.) *Global Corruption Report, 2008: Corruption in the Water Sector*. Cambridge University Press, New York.

Solo, T.M. 1999. Small-scale Entrepreneurs in the Urban Water and Sanitation Market. *Environment and Urbanization.* Vol. 11, No. 1: 117-131, SAGE Publications.

Squire, C.; Andrews, M. and Tamboukou, M. 2008. What is Narrative Research? Molly Andrews, Corinne Squire and Maria Tamboukou (eds.) *Doing Narrative Research.* 1-21, SAGE Publications.

Sridhar, M.K.C and Omishakin, M.A. 1985. An Evaluation of the Water Supply and Sanitation Problems in Nigeria. *The Journal of the Royal Society for the Promotion of Health*. Vol. 105: 68-72, SAGE Publications.

Stanton, B.F. et al. 1987. An Educational Intervention for Altering Water-Sanitation Behaviours to Reduce Childhood Diarrhoea in Urban Bangladesh: Formulation, Preparation and Delivery of Educational Intervention. *Journal of Social Science and Medicine.* Vol. 24, No. 3: 275-283, Pergamon Journals Ltd.

Stanton, B.F. et al. 1987. Twenty-Four-Hour Recall, Knowledge-Attitude-Practice Questionnaires, and Direct Observations of Sanitary Practices: A Comparative Study. *Bulletin of the World Health Organization.* Vol. 65, No. 2: 217-222, WHO.

Stedman, R. et al. 2009. Cleaning Up Water? Or Building Rural Community? Community Watershed Organizations in Pennsylvania. *Rural Sociology.* Vol. 74, No. 2: 178-200, Rural Sociological Society.

Stein, A. 2004. Participation and Sustainability in Social Projects: The Experience of the Local Development Programme in Nicaragua. Diana Mitlin and David Satterthwaite (eds.) *Empowering Squatter Citizen: Local Government, Civil Society and Urban Poverty Reduction.* 112-138, Earthscan, London.

Stephens, C. 2011. Revisiting Urban Health and Social Inequalities: The Devil is in the Detail and the Solution is in All of Us. *Environment and Urbanization.* Vol. 23, No. 1: 29-40, SAGE Publications.

Stephens, C.R. et al. 1994. *This is My Beautiful Home: Risk Perceptions Towards Flooding and Environment in Low-Income Urban Communities: Case Study in Indore, India*. Urban Health Programme Publication, London School of Hygiene & Tropical Medicine, London.

Stern, P.N. 1980. Grounded Theory Methodology: Its Uses and Processes. *Journal of Nursing Scholarship.* Vol. 12, No. 1: 20-23.

Strauss, A.L. and Corbin, J. 1990. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. SAGE Publications, London.

Strauss, A.L. and Corbin, J. 1998. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.* SAGE Publications, Thousand Oaks.

Sun, Q. 2007. *Rebuilding Common Property Management: A Case Study of Community-based Natural Resource Management in Rural Guizhou, China.* PhD Thesis, Wageningen University, The Netherlands.

Swyngedouw, E. 2004. *Social Power and the Urbanization of Water: Flows of Power*. Oxford Geographical and Environmental Studies, Oxford University Press, Oxford.

Swyngedouw, E. 2006. Circulations and Metabolisms: (Hybrid) Natures and (Cyborg) Cities. *Science as Culture.* Vol. 15, No. 2: 105-121, Routledge.

Swyngedouw, E. 2006a. Metabolic Urbanization: The Making of Cyborg Cities. N Heynen, M Kaika, E Swyngedouw (eds.) *Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism*. 21-40, Routledge, London.

Syagga, P.M. et al. 2001. *Slum Upgrading: Lessons Learned in Nairobi.* Consultative Report, Government of Kenya and UNCHS.

Tayler, K. and Scott, R. 2005. *Maximizing the Benefits from Water and Environmental Sanitation: Assessing National Sanitation Policy for Effectiveness- Lessons from Nepal and Ghana.* Paper Presented in the 31st WEDC International Conference, Kampala, Uganda.

Tayler, K. et al. 2003. *Urban Sanitation: A Guide to Strategic Planning*. ITDG Publishing, London.

Terrefe, A. and Edstrom, G. 2007. *Ecological Sanitation History, Sweden-Ethiopia.* [www.ecosan.ph/index.php?option=com- Accessed May 2012].

Thakre, S.B. et al. 2011. Menstrual Hygiene: Knowledge and Practice among Adolescent School Girls of Saoner, Nagpur District. *Journal of Clinical and Diagnostic Research.* Vol. 5, No. 5: 1027-1033.

The Daily Star. 2008. 900 Children Die of Malnutrition a Day: Expert. *The Daily Star*. Online Archive, Monday, 28 January 2008, Dhaka. [http://www.thedailystar.net/story.php ?nid=20965- Accessed September 2010].

The Daily Star. 2008a. Bangladesh Election Manifestos and WatSan Sector Priority. *The Daily Star*. Online Archive, Thursday, 25 December 2008, Dhaka.

TI. 2008. The Public and Private Faces of Corruption in Water. Dieter Zinnbauer and Rebecca Dobson (eds.) *Global Corruption Report, 2008: Corruption in the Water Sector*. Cambridge University Press, New York.

Toomey, B. 2010. Slums of Hope: Land Tenure Reforms, Local Economic Development and Environmental Improvement in a Kenyan Shanty Town. *Local Economy.* Vol. 25, No. 3: 234-239, Routledge.

Tremolet, S. et al. 2010. *Financing On-site Sanitation for the Poor: A Six Country Comparative Review and Analysis.* WSP Technical Paper, Water and Sanitation Program, The World Bank.

Tsiagbey, M. 2004. *Rural Sanitation in Ghana. Ecosan–Closing the loop*. Proceedings of the 2nd International Symposium, 7-11 April 2003, Lubeck, Germany, Eschborn.

Tyler, S. 2006. Community-based Natural Resource Management: A Research Approach to Rural Poverty and Environmental Degradation. S. Tyler (ed.) *Communities, Livelihoods, and Natural Resources: Action Research and Policy Change in Asia* (pp.13-30). Warwickshire, Ottawa: International Technology Publications and International Development Research Centre.

Uddin, M.S. 2011. *Assessment of UDDTs as a Flood Resilient and Affordable Sanitation Technology, and their Potential to Contribute to the Fertilizer Demand*. M.Sc Thesis, UNESCO-IHE Institute for Water Education, Delft, The Netherlands.

Ullah, AKM.A. 2004. Bright City Lights and Slums of Dhaka City: Determinants of Rural-Urban Migration in Bangladesh. *Migration Letters*. Vol. 1, No. 1: 26-41.

UN Water. 2006. *Gender, Water and Sanitation: A Policy Brief*. UN Gender and Water Task Force (GWTF), UN-Water and Interagency Network on Women and Gender Equality (IANWGE), International decade for Action 'Water for Life 2005–2015', United Nations, New York. -

UN Water. 2008. *Tackling a Global Crisis: International Year of Sanitation 2008.* The UN Water Task Force on Sanitation.

UN Water. 2009. *Sanitation For All*. Interview Clarissa Brocklehurst, Chief Water, Environment and Sanitation, UNICEF, New York, USA.

UN. 2006. *World Urbanization Prospects: The 2005 Revision*. United Nations, New York.

UN. 2006a. *Gender, Water and Sanitation: Case Studies on Best Practices.* Advance Version. United Nations.

UN. 2007. *The Millennium Development Goals Report 2007*. United Nations, New York. [http://www. un.org/millenniumgoals/pdf/mdg2007.pdf- Accessed August 2010]

UN. 2008. *Millennium Development Goals: End Poverty 2015- Make it happen*. Fact Sheet, Published by UN Department of Public Information.

UNB. 2003. Sanitation-Dhaka Declaration*. United News of Bangladesh*. Online Archive, Thursday, 23 October 2003, Asia Pulse Ltd.

UNB. 2006. Water supply, sanitation still challenge for Bangladesh*. United News of Bangladesh.* Online Archive, Wednesday, 22 March 2006, Asia Pulse Ltd.

UNEP. 2006. *Dhaka City: State of Environment 2005*. A Atiq Rahman and Mozaharul Alam (eds.) Published by the United Nations Environment Programme.

UNESCAP. c2012. *What is Good Governance?* United Nations Economic and Social Commission for Asia and the Pacific. Thailand.

UN-Habitat. 2003. *Water and Sanitation in the World's Cities: Local Action for Global Goals.* United Nations Human Settlements Programme, Earthscan Publications Ltd, London.

UN-Habitat. 2003a. *The Challenges of Slums: Global Report on Human Settlements*. United Nations Human Settlements Program, Earthscan Publications Ltd, London.

UN-Habitat. 2003b. Security of Land Tenure Today. Regional Seminar on *'Secure Tenure'.* 12-13 June, Safari Park Hotel, Nairobi.

UN-Habitat. 2008. *State of the World's Cities 2010/2011: Bridging the Urban Divide.* Earthscan, London.

UN-Habitat. 2010. *Water and Sanitation in Latin America and the Caribbean*. Grafica Color Gil, Brazil.

UN-Habitat. 2010a. *Sao Paulo: A Tale of Two Cities*. Cities and Citizens Series, SEADE, Nairobi, Kenya.

UNICEF and WHO. 2008. *A Snapshot of Drinking Water and Sanitation in South-Eastern Asia and the Pacific*. A Regional Perspective Based on the 2008 Report of the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. UNICEF and World Health Organization, New York.

UNICEF. 1997. *Towards Better Programming: A Sanitation Handbook.* Water, Environment and Sanitation Technical Guidelines Series-No. 3. United Nations Children's Fund, New York.

UNICEF. 2003. *Sanitation, Hygiene Education and Water Supply in Bangladesh*. UNICEF Field Note*,* Dhaka.

UNICEF. 2011. *Concerted Efforts to Ensure the Rights of Safe Water*. Release from Online Media Centre, for World Water Day 2011, Dhaka, Bangladesh.

UNU INWEH. 2010. *Sanitation as a Key to Global Health Voices from the Field*. United Nations University, Institute for Water, Environment and Health.

Uphoff, N. 1987. *Decentralization and Good Governance: A Framework of Decentralization for Sustainable Community Development.* Cornell International Institute for Food Agriculture and Development, New York.

Uphoff, N. 1993. Grassroots Organizations and NGOs in Rural Development: Opportunities with Diminishing States and Expanding Markets. *World Development.* Vol. 21, No. 4: 515-530.

Uphoff, N. 1995. Why NGOs are not the Third Sector: A Sectoral Analysis with Some Thoughts on Accountability, Sustainability and Evaluation. M Edwards and D Hulme (eds.) *Non-Governmental Organizations- Performance and Accountability: Beyond the Magic Bullet.* Earthscan Publications, London.

UPPR. 2009. Urban Partnerships for Poverty Reduction Project. *Annual Progress Report 2008*. UPPR Project, Local Government Engineering Department (LGED), Dhaka.

Uzma, A. et al. 1999. Postpartum Health in a Dhaka Slum. *Social Science & Medicine*. Vol. 48: 313-320, Elsevier Science Ltd.

Uzun, B. and Colak, H. 2007. *Providing Formal Property Rights to Slum Owners through Tenure Legalization Process in Turkey.* [http://www.fig.net/pub/fig2007/papers/ts_8d/ts08d_02_uzun_colak_1407.pdf- Accessed May 2012].

Veron, R. 2010. Small Cities, Neoliberal Governance and Sustainable Development in the Global South: A Conceptual Framework and Research Agenda. *Sustainability.* Vol. 2: 2833-2848.

Verweij, M. and Dawson, A. 2007. The Meaning of 'Public' in 'Public Health'. Angus Dawson and Marcel Verweij (eds.) *Ethics, Prevention, and Public Health.* Oxford University Press Inc., New York.

Vivas, A. et al. 2010. Knowledge, Attitudes, and Practices (KAP) of Hygiene among School Children in Angola, Ethiopia. *Journal of Preventive Medicine and Hygiene.* Vol. 51, No. 2: 73-79.

Voorden, C.V.D. and Eales, K. 2002. *Mainstreaming Gender in South African Sanitation Programmes: A Blind Spot or Common Practice?* Paper Presented in the AfricaSan Conference, July 2002.

WAB; ITN-BUET and DSK. 2006. *Sanitation Options for Slums over Water Bodies or in Low-Lying Areas*. Draft ASEH Mid Term Report, WaterAid, ITN-BUET and DSK, Dhaka.

Wainwright, D. 1997. Can Sociological Research Be Qualitative, Critical and Valid? *The Qualitative Report*. Vol. 3, No. 2: 1-12. [http://www.nova.edu/ssss/QR/QR3-2/wain.html- Accessed July 2010].

Walnycki, A. 2011. *The Right to Water in Peri-Urban Bolivia: Interpretations and Implications for Water Committees and Communities*. Paper Presented in STEPS Centre Water and Sanitation Symposium, 'Liquid Dynamics II: Some for All? Pathways and Politics in Water and Sanitation since New Delhi, 1990', IDS, Sussex University, March 22-23, 2011.

Walt, G. and Gilson, L. 1994. Review Article: Reforming the Health Sector in Developing Countries: The Central Role of Policy Analysis. *Health Policy and Planning*. Vol. 9, No. 4: 353-370.

WASA. 1991. *Dhaka Regional Ground Water and Subsidence Study*. Vol 1, Engineering and Planning Consultant Ltd, Bangladesh.

WaterAid. 2001. *Land Tenure.* WaterAid. [http://www.ucl.ac.uk/dpu-projects/drivers_urb_change/urb_infrastructure/pdf_land%20tenure/WaterAid_Land_Tenure.pdf- Accessed May 2012].

WaterAid. 2005. *ASEH Programme: Framework for a Governance Strategy*. Final Report, WaterAid Bangladesh, Dhaka.

WaterAid. 2008. *Improving Water and Sanitation Governance through Citizens' Action*. A WaterAid in Nepal Publication. [www.wateraid.org/Nepal- Accessed November 2011].

WaterAid. 2008a. *Tackling the Silent Killer: The Case for Sanitation*. WaterAid, London.

WaterAid. 2010. *African Union Summit Document.* Online Resource, WaterAid. [http://www.wateraid. org/documents/wa_african_union_2pp_proof_2.pdf- Accessed July 2010].

WaterAid. 2011. *Sanitation Crisis in South Asia*. Discussion Paper, WaterAid, London.

WaterAid. 2012. *Empowering Women and Girls: How Water, Sanitation and Hygiene Deliver Gender Equality.* WaterAid Eastern Africa Region, Ethiopia.

Watters, G. 1994. Monitoring: A Tool for Improving National Water Supply and Sanitation Sector Planning and Management. *Information Development*. Vol. 10, No. 2: 79-85, SAGE Publications.

Werlin, H. 1999. The Slum Upgrading Myth. *Urban Studies.* Vol. 36, No. 9: 1523-1534, SAGE Publications.

Werna, E. et al. 1998. *Healthy City Projects in Developing Countries: An International Approach to Local Problems*. Earthscan Publications Ltd, London.

Whittington, D. et al. 1990. Estimating the Willingness to Pay for Water Services in Developing Countries: A Case Study of the Use of Contingent Valuation Surveys in Southern Haiti. *Econ. Dev. Cult. Change*, Vol. 38: 293-312.

Whittington, D. et al. 1992. *Household Demand for Improved Sanitation Services: A Case Study of Kumashi, Ghana.* UNDP-World Bank Water and Sanitation Program, Report No. 3, Washington DC.

Whittington, D.; Lauria, D.T. and Mu, X. 1989. *Paying for Urban Services: A Study of Water Vending and Willingness to Pay for Water in Onitsha, Nigeria*. World Bank Infrastructure and Urban Development Department Report, Washington DC.

Whittington, D.; Lauria, D.T. and Mu, X. 1991. A Study of Water Vending and Willingness to Pay for Water in Onitsha, Nigeria. World Development. Vol. 19: 179-198.

WHO and UNICEF. 2006. *Meeting the MDG Drinking Water and Sanitation Target: The Urban and Rural Challenge of the Decade*. World Health Organization and United Nations Children's Fund.

WHO and UNICEF. 2010. *Progress on Sanitation and Drinking-Water: 2010 Update*. World Health Organization and UNICEF Joint Monitoring Programme Report for Water Supply and Sanitation, World Health Organization and United Nations Children's Fund, Printed in France.

WHO. 2003. *The Solid Facts: Social Determinants of Health.* Richard Wilkinson and Michael Marmot (eds.) World Health Organization.

WHO. 2004. *The Sanitation Challenge: Turning Commitment into Reality.* World Health Organization, Geneva, Switzerland.

WHO. 2005. *Health and the Millennium Development Goals*. World Health Organization.

WHO. 2008. *Sanitation Matters! 5 Steps for Planning and Evaluating World Water Day Activities*. Advocacy Guide for Celebrating World Water Day 2008, World Health Organization and UNICEF.

WHO. 2011. *Disaster Risk Management for Health: Water, Sanitation and Hygiene*. Global Platform Fact Sheet, World Health Organization, United Kingdom.

Wieneke, F. 2005. *Acceptance Analysis of New Technology for Sustainable Water Management and Sanitation: A Case Study of Operating Farm Households in the Mekong Delta, Vietnam*. Inaugural Dissertation for Doktor der Agrarwissenschaften, Institute for Agricultural Policy, University of Bonn.

Wiles, J.L. et al. 2005. Narrative Analysis as a Strategy for Understanding Interview Talk in Geographic Research. *Area.* Vol. 37, No. 1: 89-99.

Williams, M. 2010. *Understanding the WASH Sector: How to Carry out an Analysis of the Capability, Accountability and Responsiveness (CAR) of the Water, Sanitation and Hygiene Sector in your Country.* Tearfund.

Winch, P.J. et al. 2000. *Qualitative Research for Improved Health Programs.* A Guide to Manuals for Qualitative and Participatory Research on Child Health, Nutrition, and Reproductive Health. School of Hygiene and Public Health, Johns Hopkins University.

World Bank. 1994. *Governance: The World Bank's Experience*. Washington DC.

World Bank. 1996. *Bangladesh: Pursuing Common Goals, Strengthening Relations Between Government and Development NGOs*. University Press Limited, Dhaka.

World Bank. 2003. *World Development Report 2004. Making Services Work for Poor People*. World Bank and Oxford University Press.

World Bank. 2006. *Disease Control Priorities in Developing Countries* (Second Edition). A Co-publication of Oxford University Press and The World Bank, New York.

World Bank. 2007. *Dhaka: Improving Living Conditions for the Urban Poor.* Bangladesh Development Series, Paper No. 17, The World Bank Office: Dhaka.

World Bank. 2008. *Dhaka Water Supply and Sanitation Project*. A Project Appraisal Document, Submitted to the People's Republic of Bangladesh, The World Bank.

WSP. 2005. *Lessons Learned from Bangladesh, India and Pakistan: Scaling-up Rural Sanitation in South Asia.* Water and Sanitation Program.

WSP. 2006. *Partnering with Slum Communities for Sustainable Sanitation in a Megalopolis. The Mumbai Slum Sanitation Program.* Water and Sanitation Program- South Asia, New Delhi, India.

WSP. 2011. *Lessons in Urban Sanitation Development. Indonesia Sanitation Sector Development Program 2006-2010*. Field Note, Water and Sanitation Program.

WSP. 2011a. *The Political Economy of Sanitation: How can we Increase Investment and Improve Service for the Poor?* Operational Experiences from Case Studies in Brazil, India, Indonesia, and Senegal. Water and Sanitation Program: Technical Paper, WSP-World Bank.

WSP. 2011b. *Evaluating the Political Economy for Pro-Poor Sanitation Investments.* Research Brief. Water and Sanitation Program.

WSSCC. 2000. *Vision 21: A Shared Vision for Hygiene, Sanitation and Water Supply and A Framework for Action.* Water Supply and Sanitation Collaborative Council, Switzerland.

Yach, D.; Mathews, C. and Buch, E. 1990. Urbanisation and Health: Methodological Difficulties in Undertaking Epidemiological Research in Developing Countries. *Social Science & Medicine.* Vol. 31, No. 4: 507-514.

Yilmaz, S.; Beris, Y. and Serrano-Berthet, R. 2008. *Local Government Discretion and Accountability: A Diagnostic Framework for Local Governance.* Social Development Working Paper No. 113, Local Governance and Accountability Series, The World Bank.

Zafarullah, H. 1992. *Understanding Bureaucracy: A Primer.* Academic Publishers, Dhaka.

Zafarullah, H. and Rahman, R. 2008. The Impaired State: Assessing State Capacity and Governance in Bangladesh. *International Journal of Public Sector Management.* Vol. 21, No. 7: 739-752.

Zakiuddin, A. c2010. *Corruption in Bangladesh: An Analytical and Sociological Study.* Prepared for Transparency International, Dhaka.

Zaman, I. and Mahmud, T. 2008. Country Report: Bangladesh. Dieter Zinnbauer and Rebecca Dobson (eds.) *Global Corruption Report, 2008: Corruption in the Water Sector*. Cambridge University Press, New York.

Zhang, Y. 2012. Study on Evaluation of Rural Ecological Environment and Its Influencing Factors in Sichuan Province. *Journal of Agricultural Science.* Vol. 4, No. 1: 23-30.

Zhang, Y. and Li, B. 2011. Motivating Service Improvement with Awards and Competitions – Hygienic City Campaigns in China. *Environment and Urbanization.* Vol. 23, No. 1: 41-56, SAGE Publications.

Zimmer, A. Urban Political Ecology. *Erdkunde.* Vol. 64, No. 4: 343-354.

Annexes

Annex I

Annex I: Methodological Approaches adopted for this research

Research Objective	General Description	Research Approach	Required Information	Data Collection Procedures	Data Analysis Procedures	Target Covered
To map the providers and sanitation technologies used in the informal settlements of Dhaka city.	Through this objective, it is possible to explore urban sanitation related facts and figures such as providers, technologies, distribution, provisions, etc which will be collected and presented for interpretation.	Quantitative Data Interpretation	- Sanitation coverage data including information on providers, technologies and service provisions.	- Archival search - Published sources - GO-NGO sources	- Narrative Analysis	Overall sanitation situation
To describe the dynamics of the social-technological-governance systems through case studies of different sanitation experiences.	This refers to the investigation of underlying mechanisms and structures of social realities as well as technological and governance systems in the informal settlements through case studies. These are important to explore hidden facts in the sanitation sector.	Qualitative Approach	- Spatial Data - Social Data - Technological Data - State of Governance	- Participant Observation - In-depth Interview - Focus Group Discussion - Ethnography	- Narrative and Discourse Analysis - Ethnographic Representation	Exploration of different sanitation experiences (e.g social problems, impacts, etc.)
To compare these dynamics across different experiences (GO vs. NGO, successful vs. less successful, using similar technology).	This objective is more linked with the overall aim of this research. It suggests that, rather than focusing only on community experiences, attention will be paid to different sanitation interventions, which will potentially contribute to identify factors that facilitate or hamper sanitation programmes in the informal settlements.	Qualitative Approach	- Spatial Data - Social Data - Technological Data - State of Governance	- Participant Observation - In-depth Interview - Focus Group Discussion - Ethnography	- Narrative Analysis - Discourse Analysis - Ethnographic Representation - Grounded Theory Approach	Identification of positive and negative factors
To identify policy and practice implications for government, NGO and local communities.	This objective will allow the researcher to find the gaps between policy and practices among the stakeholders in the sanitation sector. It will also uncover how the policies are influenced by power politics. It will ultimately frame the policy weakness, which will help in policy reformulation and planning process.	Qualitative Approach	- Policy Documents - Information on Stakeholders' Practices	- Published Sources - Round Table Discussion - Horizontal Learning Session - Participant Observation - In-depth Interview - Focus Group Discussion - Ethnography (Where applicable)	- Textual Analysis - Narrative and Discourse Analysis	Policy and practice
To disseminate/feedback to communities of informal settlements involved in the research and to local and national government agencies as appropriate.	This objective will particularly suggests the researcher to design a brief outcome of this research to disseminate among the stakeholders which may considered as a guideline to develop a strategically sound and sustainable sanitation programme and policy.	-	- Research Outcomes	-	-	Research Ethics and contribution in development sector

Annex II

Annex II: A detailed outline of the number of data collection events, characteristics and role of interviewee and interviewer in the study areas.

Slum	Data Collection Techniques	Number of events	Respondents	Role of the researcher			Role of (two) research assistants		
				Planning phase* (No. of days visited: 06)	During data collection (No. of days required: 02)	Number of survey conducted	Planning phase (No. of days visited: 02)	During data collection (No. of days required: 02)	Number of survey conducted
Begun Tila (BT)	Observation	N/A	N/A	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	N/A	Observe the neighbourhood to get an overall idea about the context	Observe household hygiene practices during the interview	N/A
	Informal Discussion	12 (Approx.)	02 owner of tea stall, 02 local businessman, 03 unemployed, 02 women and few general residents	10 (Approx.)	02 (including a 12 year boy)	12 (Approx.)	-	-	-
	In-depth Interview	08	Adult man, adult woman, old man, old woman, adolescent girl, disable (male), community leader (male), CBO representative (female)	N/A	Interviewer and non-judgmental listener	02 With community leader (male), CBO reps. (female)	N/A	Male interviewer and non-judgmental listener	03 With adult man, old man, disable man
								Female interviewer and non-judgmental listener	03 With adult woman, old woman, adolescent girl
	Focus-group Discussion	02	Male FGD with 16 participants Female FGD with 20 participants	N/A	Principal investigator, facilitator and moderator	02	N/A	Observer, taking notes, recording conversation	02

Slum	Data Collection Techniques	Number of events	Respondents	Role of the researcher			Role of (two) research assistants		
				Planning phase* (No. of days visited: 07)	During data collection (No. of days required: 02)	Number of survey conducted	Planning phase (No. of days visited: 02)	During data collection (No. of days required: 02)	Number of survey conducted
Bagan Bari (BB)	Observation	N/A	N/A	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	N/A	Observe the neighbourhood to get an overall idea about the context	Observe household hygiene practices during the interview	N/A
	Informal Discussion	10 (Approx.)	01 owner of tea stall, 01 local businessman, 02 unemployed, 02 garment worker (female), 02 women and few general residents	10 (Approx.)	02 (including a 13 year disable girl)	10 (Approx.)	-	-	-
	In-depth Interview	08	Adult man (politician), adult woman, old man, old woman, adolescent girl, disabled (male), community leader (female), CBO representative (female)	N/A	Interviewer and non-judgmental listener	03 With adult man (politician), community leader (female), CBO reps. (female)	N/A	Male interviewer and non-judgmental listener	02 With old man, disable man
								Female interviewer and non-judgmental listener	03 With adult woman, old woman, adolescent girl
	Focus-group Discussion	02	Male FGD with 12 participants Female FGD with 14 participants	N/A	Principal investigator, facilitator and moderator	02	N/A	Observer, taking notes, recording conversation	02

Slum	Data Collection Techniques	Number of events	Respondents	Role of the researcher			Role of (two) research assistants		
				Planning phase* (No. of days visited: 07)	During data collection (No. of days required: 02)	Number of survey conducted	Planning phase (No. of days visited: 02)	During data collection (No. of days required: 02)	Number of survey conducted
Gulshan City Colony (GCC)	Observation	N/A	N/A	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	N/A	Observe the neighbourhood to get an overall idea about the context	Observe household hygiene practices during the interview	N/A
	Informal Discussion	13 (Approx.)	01 owner of tea stall, 02 local businessman, 02 unemployed, 01 owner of local drug store, 02 women and few general residents	10 (Approx.)	03 (including a 14 year girl and 01 female community leader)	13 (Approx.)	-	-	-
	In-depth Interview	08	Adult man, adult woman, old man, old woman, adolescent girl, disable (male), president of *Ponchayet* (male), CDC representative (female)	N/A	Interviewer and non-judgmental listener	02 With president of *Ponchayet* (male), CDC representative (female)	N/A	Male interviewer and non-judgmental listener	03 With adult man, old man, disable man
								Female interviewer and non-judgmental listener	03 With adult woman, old woman, adolescent girl
	Focus-group Discussion	02	Male FGD with 12 participants Female FGD with 13 participants	N/A	Principal investigator, facilitator and moderator	02	N/A	Observer, taking notes, recording conversation	02

Slum	Data Collection Techniques	Number of events	Respondents	Role of the researcher			Role of (two) research assistants		
				Planning phase* (No. of days visited: 07+02)	During data collection (No. of days required: 02)	Number of survey conducted	Planning phase (No. of days visited: 02+01)	During data collection (No. of days required: 02)	Number of survey conducted
Mohammadpur City Colony (MCC)	Observation	N/A	N/A	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	N/A	Observe the neighbourhood to get an overall idea about the context	Observe household hygiene practices during the interview	N/A
	Informal Discussion	10 (Approx.)	01 owner of tea stall, 01 local businessman, 01 unemployed, 02 student, 02 women and few general residents	09 (Approx.)	01 *Madrazi* resident (male)	10 (Approx.)	-	-	-
	In-depth Interview	08	Adult man, adult woman, old man, old woman, adolescent girl (*Madrazi)*, disable (male), president of *Ponchayet* (male), CDC representative (female)	N/A	Interviewer and non-judgmental listener	02 With president of *Ponchayet* (male), CDC representative (female)	N/A	Male interviewer and non-judgmental listener	03 With adult man, old man, disabled man
								Female interviewer and non-judgmental listener	03 With adult woman, old woman, adolescent girl *(Madrazi)*
	Focus-group Discussion	02	Male FGD with 14 participants Female FGD with 13 participants	N/A	Principal investigator, facilitator and moderator	02	N/A	Observer, taking notes, recording conversation	02

Slum	Data Collection Techniques	Number of events	Respondents	Role of the researcher			Role of (two) research assistants		
				Planning phase* (No. of days visited: 05)	During data collection (No. of days required: 02)	Number of survey conducted	Planning phase (No. of days visited: 01)	During data collection (No. of days required: 01)	Number of survey conducted
Kamar Para (KP)	Observation	N/A	N/A	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	Observer-as-participant, Non-judgmental listener, Taking notes, Voice recording, Photograph	N/A	Observe the neighbourhood to get an overall idea about the context	Observe household hygiene practices during the interview	N/A
	Informal Discussion	08 (Approx.)	01 owner of tea stall, 01 local businessman, 02 *Bede (male)*, 02 women and few general residents	08 (Approx.)	-	08 (Approx.)	-	-	-
	In-depth Interview	08	Adult man, adult woman *(Bede)*, old man, old woman, adolescent girl *(Bede)*, disabled (male), community leader (*Bede*), local influential person (female)	N/A	Interviewer and non-judgmental listener	02 With community leader (*Bede*), local influential person (female)	N/A	Male interviewer and non-judgmental listener	03 With adult man, old man, disabled man
								Female interviewer and non-judgmental listener	03 With adult woman *(Bede)*, old woman, adolescent girl *(Bede)*
	Family-group Discussion	02	One with 3 and another with 4 family members	N/A	Principal investigator, facilitator, moderator, observer, taking notes, recording conversation	02	-	-	-

*Note: Planning phase includes necessary ice breaking activities, observation, informal discussion and other relevant data collection techniques.

Annex III

Observation/Participant Observation Schedule
In the Study Areas

Objective

- Visualize and gain overall idea about the people, place, projects and their practices.
- My role: observer-as-participant, non-judgmental listener.
- Finding key informants for in-depth interviews and FGDs.
- Cross check data.

Locations for observation/participation in the study area

- Tea stalls;
- restaurants;
- community centres;
- foot paths;
- gathering places;
- schools;
- grocery shops;
- water points;
- houses and other relevant places.

Possible areas that covered by observation.

- Overall slum environment;
- day to day experiences and activities related to water and sanitation;
- different dimensions of social, cultural, behavioural issues;
- operation and management of sanitation infrastructure;
- state of sanitation which includes technology, practice, cleanliness, problems, risks, coping strategies, hygiene practices, etc.;
- organizational activities and community responses;
- other relevant issues.

Annex IV

In-Depth Interview Schedule
For Slum Dwellers

Relevant Questions and Issues

[Note: The following questions and issues were used for guidance only. The interview (questions and answers) sessions were not limited only on the structured questions that outlined below and were changed during the interview]

Objective

- Get individual opinion regarding the projects, practices and concerns related to water and sanitation.
- My role: non-judgmental listener.

About the Respondent and his/her Neighborhood

- Could you please tell me a little bit about yourself (e.g. your name, address, age, occupation, family members, education, income, etc.)
- How long have you been here? Where did you live previously? Why you move to this place? What encourages you?
- Could you please tell me the three things that you feel necessary during living here?
- Is there anything that worries/concerns you about living here? (Water and Sanitation).
- Do you or any of your family members face any social problems? Explain what type of problems?

About Water and Sanitation

- Could you please tell me what type of latrine (technology) you use here? Is it shared/community based/public/private/.....?
- Before coming here what type of latrine you used? What type of latrine you prefer most? Why you prefer them?
- What do you think about your own latrine? Is it healthy or not? Why do you think so?
- What is your usual time to use your latrine? What about your family members? Briefly mention why you choose to use your latrine in your mentioned time? What are the problems in other times of the day?
- Do you personally feel insecure/risk while using your latrine? In what ways?
- What are the other sanitation options that people are using in this slum? How will you compare them with your latrine?
- What are your desirable sanitation system that can satisfy you? Why do you think so?
- What are the good things of your latrine, in your opinion? Why do you think so?
- What are the bad things/problems of your latrine, in your opinion? Why do you think so? What measures should be taken in your opinion to mitigate these problems? (pit emptying). Is any measures taken so far to solve this problem?
- Did you ever talk about your demand with the organization that works in your area?
- What is your drinking water source? Is it adequate? How far the source from your house? How long it usually takes to collect drinking water? How you store water in your house?
- What do you think about the quality of your drinking water? Do you purify this water before use? How do you purify your water?
- Do you use water in the latrine? How much water you need in a day per person? Can you manage to get this water from your source? What are the sources of the water for latrine use? What are the sources of the water for household use? What other cleansing material you use in the latrine?

About Hygiene and Health

- Do you know about hygiene behaviour? What do you mean by hygiene behaviour? How have you come to know about this issue?
- What do you think whether or not clean and healthy toilet is a part of hygiene behaviour?
- Do you think some illnesses in particular are caused by water, sanitation and hygiene behaviour? Explain. How have you come to know about the health effect of sanitation?
- Do you know about waterborne diseases? How and when have you come to know about this?

- Have you experienced any diseases like cholera, diarrhoea, etc? How you usually tackle these diseases? How often you and your family members (including kids) suffer with these kinds of diseases? Why do you think the frequencies of these kinds of diseases are very often?
- Is anybody died among your family members/relatives due to these diseases? How many members died? What are the relations between you and the sufferers? When they died? How? Why they died you think?
- Have you ever heard about ORS saline? How and when have you come to know about this?
- What treatment measures do you usually take to get well from these diseases?
- Are there any NGOs, government support available for you? Which organization? How they support you? What do you think about their service and service level? Explain.
- What are the other diseases usually visible in your neighborhood?
- Do you know, inadequate water and sanitation can affect human health? How do you know?
  - Detail discussion about...
  (1) quality, adequacy, sources and uses of water; time spent for collecting water;
  (2) types of latrine and adequacy;
  (3) time of latrine use for women & children and time required for latrine use;
  (4) open defecation;
  (5) hygiene-ness, hand-washing, using sandals, water preservation techniques.

Governance

- Are any GO/NGOs working to promote sanitation services to your community?
  - Detail discussion about...
  (1) type of GO/NGO services and programme details;
  (2) duration and extent of services and adequacy; public opinion.
  (3) community demand and service delivery, state of participation
  (4) any concern about corruption, money-flow, carelessness, power practice, etc.;
  (5) state of inclusion of women in sanitation projects.
- Are there any terms and conditions for using GO/NGO provided sanitation system? If yes, what are those conditions?
- What are their existing programmes in this area? Which programmes are useful in your opinion? Explain.
- Who is responsible to clean/maintain your latrine? What type of cleansing material you use?
- What are your expectations from the organizations? Why your expectations are like this?
- What do you think about the sanitation problem in the slum areas? Do you think anything could be done to solve this problem? If yes, what and how? If no, why not?
- Do you think, people alone can solve this problem? If yes, how? If no, why not?
- Whose responsibility you think to solve sanitation problem in your area? Or, whose responsibility is to provide safe water and sanitation services – DPHE, NGOs, Municipality, Government, ... etc? Why?
- What are the main barriers you think to have and use hygiene/improved latrine in the slums?
- How do you/community people manage your/communal sanitation system?
  - Detail discussion about...
  (1) community/user participation;
  (2) cost; operation and management;
  (3) problems and preventive measures;
  (4) roles and responsibilities.
- How you cooperate with the GO/NGO personnel?
  - Detail discussion about...
  (1) Information exchange and strategies of communication with GO/NGO personnel;
  (2) extent of your participation such as attendance, voice, help, time, etc.;
  (3) types of cooperation they seek from you or their expectation from you;
  (4) barriers of adequate cooperation or fears of telling the truth.
- How you will describe GO/NGO's state of governance?
  - Detail discussion about...
  (1) Good things and bad things;
  (2) response time, bureaucracy, monitoring and evaluation;
  (3) efficiency of staff or field workers and officers;
  (4) how it can be improved or any suggestion that can improve their state of governance.

Annex V

In-Depth Interview Schedule
For Government and NGO personnel

Relevant Questions and Issues

[Note: The following questions and issues were used for guidance only. The interview (questions and answers) sessions were not limited only on the structured questions that outlined below and were changed during the interview]

Objective

- Get information regarding GO/NGO's WatSan projects.
- Access to secondary data, policy and practice.
- My role: non-judgmental listener.

About the organization

- Please give me some basic information of your organization.
- What are the fields that your organization is currently involved in?
- Why your organization choose to work in water and sanitation field?
- What do you think about your organization's achievement so far?

About Sanitation Projects

- How many sanitation projects currently you are implementing? Are they based on urban/rural areas? Why you choose to work in urban/rural areas?
- Who usually design your sanitation projects?
- How you will define a successful sanitation project? How many projects of your organization fall into this category? What are the main reasons you think that result success and failure?
- What are the usual sources of fund for these sanitation projects?
- Do you have to meet donor imposed terms and conditions to implement your projects? What do you think about the effectiveness regarding these imposed terms and conditions? Is it causing any impact your projects? How? Please explain.
- Do you have any freedom to use this fund according to your own programme strategies? Explain this issue.
- What are the roles of NGO affairs bureau of the government of Bangladesh? Explain.
- How do you choose sanitation technology for the slum areas? Which technology you prefer in the context of slum areas? Why? Do you usually involve the community in choosing the technology? Explain your answer.
- How do you solve space related problems while installing latrines in the slum areas?
- How do you organize people? What are your motivational strategies? What are the constraints?
- How you get help from the local people? How do they participate?

Policy and Practices

- It is observed that, bigger organizations are away from urban sanitation projects. Is it true? Explain your answer.
- What are the step-by-step procedures to develop your sanitation programmes for slum areas? Explain.
- Do you usually have any targets in your sanitation projects? What types of targets? How often you can achieve this target? How you set these targets?
- National Sanitation Strategy and Target: what do you think about government target for sanitation? How will you interpret this? What should be done to achieve this target? Is it possible? How? Explain.
- MDG and Target: How will you interpret the MDG target and current state of sanitation Worldwide and Bangladesh in particular? Is it achievable? How? Explain.
- What type of project that GoB and other donor agencies welcome? Whether latrinization or sanitization? Please justify your answer.
- Do you think, the sectoral priority often goes to water sector? Justify your answer.
- Do you think, the decentralized governance system will help to implement sanitation programmes more effectively? Explain.
- What do you think about the funding support for the urban slum sanitation programmes? Are they adequate? What should be done? Give your opinion.

Questions on Specific Case Studies (study areas)

- Duration of the project? why you choose to work in this slum?
- Programme strategies: tick the appropriate options.

Categories	Options		
	Option 1	**Option 2**	**Option 3**
Technology	Onsite	Offsite	Other
Finance	Subsidy	Self Initiative	Cost Recovery
Ownership	Private	Shared	Communal
Maintenance Scheme	Subsidy	Pay and Use	Monthly Scheme
Promoter	Government	NGO	Private Sector
Commencement of Service	Software	Hardware	Both
Programme Strategy	Supply Driven	Demand Driven	Participatory
Vision	Some for All	More for Some	More for Most

- Why this strategy? How effective it is? Which one you prefer and why? Explain.

Other Relevant Issues

- Detail discussion about…

- sanitation technology;
- hygiene training;
- health and treatment;
- women issue;
- strengths, weaknesses, opportunities and threats of the programme;
- community participation and responses;
- operation and Maintenance;
- power and politics;
- governance: Who is involved? How you operate?
- government support: state of coordination and cooperation from different agencies;
- issues of corruption;
- results and achievements so far;
- lesson learned;
- others.

Annex VI

Focus Groups Discussion Schedule
For Men and Women Groups

Relevant Questions and Discussion Issues

[Note: The following questions and issues were used for guidance only. The FGD (questions, answers and activities) sessions were not limited only on the structured questions that outlined below and were changed during the FGD]

Objective

- Get idea about group responses, community practices and concerns related to water and sanitation.
- My role: non-judgmental listener.

Social Issues

- What do you think about your neighborhood? Past, present and future perspective.
  - Detail discussion about...
  (1) social bondage, education, culture, environment (physical, social and cultural), facilities, fear, income, work and poverty,
  (2) types of social problems in general and social problems due to sanitation,
  (3) women and sanitation,
  (4) Needs and priorities (water and sanitation).

Hygiene Education and Sanitation

- Did you ever receive any kind of awareness campaign regarding the safe drinking water and use of hygienic latrine? If yes, from whom you received?
  - Detail discussion about...
  (1) hygiene education/awareness campaign, types and extent of hygiene education,
  (2) peoples participation on these educational programmes,
  (3) following up strategies,
  (4) results after receiving the education,
  (5) problems of this programme,
  (6) general comments.
- 'Open defecation', how will you consider this issue in your locality? Is it still visible in your neighborhood? Who, what age group and why you think, people usually engaged with this kind of activity? How do you think, that can minimize this problem?
- Do you think there is anything can be done to reduce the overall social problems? If yes, what can be done? Anything the organization or you personally can do? What you can do?

Technology and Governance Issues

- What do you think about available latrine technologies in your neighborhood? Past, present and future perspective.
  - Detail discussion about....
  (1) existing technology-....., suitability sustainability in the urban context,
  (2) user satisfaction, women issue, emptying service, cost and affordability, operation and maintenance, aesthetics, durability, odor, queue, water availability, space,
  (3) problems, risks and vulnerabilities
  (4) coping strategies and preventive measures,
  (5) adjacency of water point and latrine from house.

Policy and Other Related Issues

- Detail discussion about...
(1) Slum eviction, tenure rights;
(2) politics, political influences and political promises;
(3) responsibility of the government and support from state such as relief, grant, etc.;
(4) linkages between income/affordability and sanitation;
(5) state of infrastructure, water logging, flooding, urban basic services, etc.;
(6) demand driven or supply driven?, Government or NGO?, Provisions?

Annex VII

Round Table Discussion and Horizontal Learning Session

Relevant Topics Discussed

Topics Covered/discussed in Round Table Discussions and Horizontal Learning Session
Existing Sanitation Situation and WatSan Programmes
Problem and Risk Identification
Strengths, Weaknesses, Opportunities and Threats in this sector
Existing Politics on Sanitation Intervention
NSS, MDG and Current State of Development
Programme Strategy and Source of Funding
Targets
Achievements and Progress
Voices from the Grassroots and Reality-based Discussions
Guidelines of Sustainable Sanitation Programmes
Guidelines of Policy Formulation & Recommendations
Citizen Charter and Development of Slum Sanitation

Annex VIII: A Quick Review of Existing Social, Technological, Governance Systems and Other Characteristics of the Study Areas.

Issues of Description	Government Managed Slum		NGO Managed Slum		Non-managed Slum
	GCC	MCC	BB	BT	KP
Demographic and Neighbourhood Characteristics					
Year of Establishment	2005	2006	1980	1999	2000
Population & Average HH Size	2500, 5 Persons	750, 5 Persons	2200, 5 Persons	3500, 6.5 Persons	No Data
Area & Number of Dwelling	475 Households	147 Households	410 Households	530 Households	250 Households
Characteristics of Dwelling	Semi-*Pucca*	Semi-*Pucca*	Semi-*Pucca* & *Kutcha*	Semi-*Pucca* & *Kutcha*	Elevated, *Kutcha* & Semi-*Pucca*
Religion (Majority)	Muslim	Muslim and Hindu	Muslim	Muslim	Muslim
Ethnicity	Local	Local and 'Madrazi'-Indian	Local	Local	Local and '*Bede*' Cluster
Occupational Structure	Govt. 4th Class Employees	Govt. 4th Class Employees	Mixed	Mixed	Snake charming & Mixed
House Ownership Pattern	Owners and Tenants	Owners	Owners and Tenants	Owners and Tenants	Owners and Tenants
Political Identity	BNP Supporters	AL Supporters	Mixed	AL Supporters	Mixed
Land Tenure	Govt. Land, Legal Settlement, Govt. Recognized	Govt. Land, Legal Settlement, Govt. Recognized	Govt. Land, Illegal Settlement, Govt. Recognized	Govt. Land, Legal Settlement, Govt. Recognized	Govt. and Private Land, Illegal and Mutually Agreed Settlement, Non-Recognized
Locational Factor	Vulnerable, Unstable Terrain and Flood Affected	Less Vulnerable but Flood Affected	Extremely Vulnerable, Low-lying and Flood Affected	Stable Terrain and Flood-Free Area	Stable Terrain and Flood-Free Area
Technological and Institutional Characteristics					
Service Provider	Dhaka City Corporation	Dhaka City Corporation	DSK	DSK	None
Existing WatSan Services	Latrine, Water, Bathroom	Latrine, Water	Latrine, Water	Latrine, Water, Waste, Drain	None
Commencement of Service	2005	2006	2004-2005	2005	No Service
Type of Sanitation Technology	Cluster Latrine (STL)	Cluster Latrine (STL)	Cluster (STL), Household & Communal (PL)	Cluster (STL), Household (PL)	Communal (HL), Shared (PL)
Type of Water Supply Option	Tubewell with Municipal Water Connection	Tubewell with Municipal Water Connection, Community Pump	Tubewell with Municipal Water Connection	Tubewell with Municipal Water Connection	Communal Well, Borehole and Water Kiosks
O/M Strategy	Lane-wise, Shared, Open	Shared, Lock & Key	Shared, Private, Open	Shared-Lock & Key, Private	Open for All
Latrine Household Ratio	8 HH per Latrine	7 HH per Latrine	10 HH, 1 HH, 5-7 HH	10 HH, 1 HH	Not Identified
Grassroots Organization	CDC	CDC	CBO	CBO	None
Project Strategy	Supply Driven	Supply Driven	Cost Recovery	Cost Recovery	None
State of Participation	Extremely Low	High	Moderate	High	Unidentified
Other Characteristics					
Shape of the Slum	Rectangular	Irregular	Liner	Square	Scattered
Physical Barrier	DND Embankment	DND Embankment	Wall & Multi-storeyed Building	Road	Road
Eviction Threat	Yes	Yes	Yes	Yes	Yes
Degree of Project Success	Less-Successful	Successful	Less-Successful	Successful	Not Applicable


Durham
University