The emancipatory promise of participatory water governance for the urban poor: Reflections on the transition management approach in the cities of Dodowa, Ghana and Arusha, Tanzania

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Maryam Nastar [ORCID], Shabana Abbas, Carlos Aponte Rivero, Shona Jenkins and Michelle Kooy [ORCID]

Lund University and UNESCO-IHE

ABSTRACT

There has been widespread recognition in the Global South of the role of participatory governance approaches to urban development in responding to citizens' immediate concerns. However, critiques note that participatory initiatives are often avenues for the political and economic elite to ensure their interests and profits, rather than improving the livelihoods in non-serviced urban peripheries. This article investigates how transition management (TM), as a promising participatory governance framework, can be implemented effectively to improve access to water for disadvantaged groups. First, we highlight lessons learnt from the TM applications in urban and water sectors. Second, we draw on empirical data from low-income urban areas in Ghana and Tanzania to bring the importance of social relations to the fore. By employing open-ended interviews, following the water points and conducting narrative walks, we identify three precautions that need to be addressed through adaptations of the TM approach in order to achieve the emancipatory promises of participatory governance models. In suggesting some guidelines for facilitators and active groups in participatory arenas, we discuss the importance of power dynamics in the communities, potentials and shortcoming of reflexive governance processes, and the need for capacity-building in transition teams.

Citizen participation in processes of decision-making for planning current and future cities in the Global South has been identified as a key principle for building sustainable urban futures (Evans, et al 2016; UN DESA 2015a). The principle of participation is also upheld as a cornerstone of 'good governance', and a requirement for the United Nations (UN) Sustainable Development Goals (SDG) on achieving inclusive cities (UN DESA 2015a). Global urban development policy documents cite examples where local residents are involved in the process of articulating the key urban challenges at the neighbourhood level, and contributing to the development of city-wide strategic plans (UN-HABITAT 2014; Cities Alliance 2014; UNDP 2016). In other cases, participatory forums help to build local political

constituency and catalyse democratic participation to respond to the immediate needs and concerns of residents (UN-HABITAT 2014; Cities Alliance 2014; UNDP 2016). These examples do exist, but as many development studies scholars have pointed out – participation is a term which contains widely different objectives, and the definition of what is participation varies considerably between actors and applications (Cornwall 2003; Eversole 2003).

Critiques against the discourse of participation within development identify dual, competing objectives of development efficiency over empowerment, often failing to deliver on its emancipatory promises for a city's poorest residents (Cleaver 1999), and the tendency of many development initiatives to ignore power relations determining uneven outcomes of what are envisioned as power neutral participatory processes (Kemerink, et al 2013). These same critiques are seen in analyses of participatory governance, whereby market-based approaches to service delivery under a mode of neoliberal governance use participation to make citizens responsible for their own development, rather than being truly transformative (Mosse 2006).

These critiques are well documented in analyses of urban water inequalities in southern cities. Nick Devas and Simon Delay (2006), Brandon Barnes (2009) and Maryam Nastar and Vasna Ramasar (2012) document how the political and economic elites in contexts of highly unequal societies of most African cities, manipulate the process of participation in urban water governance to determine uneven allocations of resources, neglecting more widespread urban improvements. Karen Bakker (2007) and Harris, Goldin & Sneddon (2015) identify the use of participation within processes of decentralisation and commercialisation in a neoliberal mode of urban water governance. They document how participation is used as a mechanism to devolve what were previously thought of as government responsibilities to community organisations, in areas of the city not attractive for the private sector. Sylvy Jaglin (2002) shows that the result of this use of participation is the failure of neighbourhood and community-based initiatives to ensure access to services and improve livelihoods in non-serviced peripheries, as participation becomes a way to transfer costs from water companies to poor households.

There is now a new incarnation of participatory governance in the framework of transition management (TM). TM has emerged over the last decades in the Global North in response to addressing sustainability challenges in the energy, agriculture, transport, and water sectors (Brown, Farrelly & Loorbach 2013; Frantzeskaki, Loorbach & Meadowcroft 2012; Loorbach 2010; Rotmans & Loorbach 2009), but has also been applied for more socio-ecological transformative change in southern cities (Bulkeley, Broto & Edwards 2014). Here, the rationale for participation lies in the belief that only bottom-up change will be able to make urban systems more environmentally and socially sustainable. Participation in this model consists of stakeholders carrying out innovative experiments, emerging from the interaction of various stakeholder social learning processes, required to acquire the type of knowledge leading to desired new perspectives on social and environmental issues.

In this article, we examine the potential of, and requirements for, TM to achieve inclusive and sustainable changes in the urban water sector for two cities in sub-Saharan Africa (SSA). Water is critical for sustainable urban growth, but in many cities, securing current, let alone future, water supply is a challenge. Moreover, while levels of access to improved water sources in SSA cities has declined since the 1990s, the rate of urban population

growth for SSA is set to quadruple by 2050 (JMP 2014; UN DESA 2015). Finally, conditions of water access are highly uneven, where the majority of residents are living in low-income informal settlements and paying up to 50 times more than higher income groups (UN-HABITAT 2016).

Before examining the potentials of the application of TM, we first review experiences where it has already been applied to transforming urban and water governance systems. We then examine requirements for the application of TM to contexts of cities in SSA, as TM is a model of participatory governance developed largely within northern contexts. We contextualise the ongoing debates on the implementation of TM (for example, politics of sustainability transitions, power dynamics in participatory forums, inclusion of stakeholders, etc) by drawing on empirical data from low-income urban areas in Dodowa (Ghana) and Arusha (Tanzania) revolving around groundwater access. By employing open-ended interviews, following the water points, walking with community residents in a storytelling style, where people share their knowledge from their day-to-day activities, we highlight the elements that need to be taken into account in the participatory governance models. Finally, we use this data to reflect on the principles of TM and suggest some guiding principles for facilitators and active groups in participatory arenas in order to make this model of participatory governance more effective in increasing access to water for the urban poor.

Transition management

The principles

The TM framework is used within applied research projects to understand the dynamics and potential for societal change required to achieve more sustainable energy, water, transport, and agricultural systems (Rotmans & Loorbach 2009). As the change process encompasses the stages of formulating problems, envisioning future pathways, and experimenting and learning, TM can be identified as a form of participatory governance (Rotmans & Loorbach 2009). The actors involved in these iterative processes are engaged in a virtual network (the transition arena) to discuss challenges and opportunities (Loorbach, Frantzeskaki & Thissen 2011; Rotmans & Loorbach 2009).

The transition arena is guided by transition managers, who facilitate discussion towards a convergence of perspectives, assumptions and ambitions about alternative viable and desirable futures and the required pathways of change to get there (Loorbach, Frantzeskaki & Thissen 2011; Rotmans & Loorbach 2009). By going through different stages of TM, the framework can be used to bring together actors concerned with a given issue, for example lack of water access, in such a way that they can reinforce each other's activities to compete with dominant actors and (often unsustainable) 'business as usual' practices (Frantzeskaki, et al 2012; Loorbach 2010). Table 1 shows the theories behind strategic steps of the TM framework.

Within the TM framework, *niche* is defined as an experiment or a project formed by a small group of agents that deviate from the regime[1] (Geels 2010; Loorbach 2010). A regime, in transition studies, is defined as the product of structural conditions and dominant institutions, including: historical conditions, physical environment, formal and informal rules and norms, shaping culture, routines, and habits (Geels 2010; Loorbach 2010). As

Table 1. Theoretical and strategic principles of TM.

Theoretical principles of TM	Systemic instruments for TM
– Creating space for niches	– Transition arena
– Focus on frontrunners	– Transition arena and competence analysis
– Guided variation and selection	– Transition experiments and transition pathways
– Radical change in incremental steps	– Envisioning for sustainable futures
– Empowering niches	– Competence development
– Learning by doing and doing by learning	– Deepening, broadening, scaling-up experiments
– Multilevel, multi-domain approach	– Complex systems analysis
– Anticipation and adaptation	– Multi/pattern and multilevel analysis

Source: Rotmans & Loorbach (2009).

shown in Table 1, TM focuses on *frontrunner***s** as agents of change with unique personal competencies and the capacity to generate and operate within emergent structures. Frontrunners are meant to scale-up niche experiments by different means such as technological innovations or through various types of social mobilisation. *Transition arenas* are protected spaces wherein frontrunners, transition managers and other actors at the micro level aim to form new coalitions and networks to create alternative pathways to current practices in the regime (Rotmans & Loorbach 2009). The hypothesis of the TM approach is that active communication of the shared vision and transition pathways into other networks will encourage people to join the innovation network and build joint strategic agendas to influence the regime (Rotmans & Loorbach 2009).

The concept of governance in TM is based on the notion of reflexivity. As seen in Table 1, this means that a necessary precondition for societal change is to identify and understand the perspectives of various actors and related options for transitions, and to include the variety of perspectives in an experimental and explorative attitude toward social innovation in practice (Loorbach, et al 2011). Thus, in developing a new mode of governance, TM employs a learning-by-doing approach, which can be operationalised through transition arenas following the systemic instruments (Table 1).

TM applications and lessoned learnt

TM has been applied to various contexts in the Global North to bring about socio-technological change in sectors of energy, healthcare, agriculture, food, and water (Loorbach, et al 2011). Given the importance of water related challenges in SSA cities, we review only those examples most relevant to urban settings and water management, in order to draw lessons about the applicability of TM. These include the EU Mitigations in Urban Areas, Solutions for Innovative Cities (MUSIC) project (Frantzeskaki, Gorissen & Loorbach 2013), the Cooperative Research Centre for Water Sensitive Cities (CRCWSC) project (2016) and the Sustainable Water Management Improves Tomorrow's Cities' Health (SWITCH) project (2011).

In all three projects, there are clear social learning outcomes from the TM approach. These outcomes are required for achieving the desired change, but are also seen as benefits in and of themselves for the actors involved. Networks were created around urban and water issues, pathways of change were identified by actors, and the reflexive capacity of actors was boosted. In the CRCWSC project, the idea of the water sensitive city has not only initiated a dialogue among practitioners, policymakers and industry

about what sustainable urban water regimes should look like in the future, but has also provided some guidelines about how to get there across the cities of Australia (Brown, Deletic & Wong 2015; Brown, Farrelly & Keath 2009).

However, despite the positive benefits generated through TM approaches to the water sector, TM practitioners identify several challenges in the application of TM to both urban contexts and the water sector. Brown, et al (2009, 20015) identify the lack of investment in practitioner capacity-building (knowledge and skills training) around diverse water source technologies as one of the main barriers to changing regimes in urban water systems. Similarly, the experience of the MUSIC project pointed out that municipalities should acknowledge the importance of time and the budget required for continuing the transition efforts (Nevens, et al 2013). Building knowledge and networks requires a longer time horizon, and must follow the pace of the actors involved.

Another hurdle in operationalising TM is the technocratic and bureaucratic characteristics of transition arenas, and naïve optimisms of project leaders about confronting the deep structure of regimes through adaptive and reflexive governance activities (Smith & Stirling 2010). This echoes critiques of participation referenced earlier, where the use of participatory processes in development initiatives is often (wilfully) blind to power relations and contestation (Cleaver 1999). For example, in the SWITCH learning alliances, we note that many of the case studies, including Accra, created administrative platforms rather than protected spaces for innovation and making societal networks. By adopting and applying TM principles, the above projects have often recognised the need for a broader political project wherein reflexive governance can be practised by social groups to make political and economic elites listen and act upon their voices (Nevens, et al 2013; Ferguson, Brown & Deletic 2013). However, there are a few examples, if any, indicating how this need should be met, especially regarding urban water governance.

The last point of concern with the application of TM relates to the disciplinary expertise of transition managers, the related terminology used, and the approaches they employ to analyse systems and actors, including the selection of frontrunners (champions, change agents or learning alliances) and niche initiatives. For example, in the MUSIC project, the transition team (with expertise mainly in the energy sector) captured the energy use and mobility systems through a system dynamics approach. Thus, they used stocks, flows and feedback loops to define niche initiatives and guide the inclusion of actors in transition arenas. As a result of an insufficient social and political analysis, political and social activists (who often have agency for making change happen in society) were either not included, or in the case of Montreuil, the local political party, was engaged at the very end of the process. As Florian Kern argues:

> if transitions are to a large degree political processes resulting from decisions by multiple actors, then political dimensions should be at the heart of the analysis. (2010: 26)

Why TM?

As seen from the above account, the TM approach shares many similarities with existing participatory approaches in urban development.[2] Like in TM, the inclusion of different groups in the process, the increase in social capital, and engagement with policymakers are key elements of participatory development approaches (Brocklesby & Fisher 2003;

UN-HABITAT 2014; Loorbach 2010). However, there are some distinctive features that might make TM, theoretically, a more relevant approach to address water issues in contemporary urban contexts.

First, TM is based on the idea of generating sustainable solutions by objecting to dominant (and often locked-in) governmental or market-based approaches and by focusing on frontrunners and radical innovations (Loorbach, et al 2011). In this sense, a TM approach could be different from participatory approaches promoted by the World Bank, World Trade Organization (WTO) and UN-HABITAT where the focus is to stabilise institutional settings rather than being radical in changing legislations and institutions. For example, the World Bank pro-poor policies in the water domain are often based on the participation of citizens as consumers; their roles are tightly linked to the dominant neoliberal development agenda (Swyngedouw 2005). As mentioned earlier, many water scholars have documented how participatory development approaches are (ab)used by governments to over-allocate water to privileged groups at the expense of other people and the environment (Jaglin 2002; Cleaver & Toner 2006; Devas & Delay 2006; Bakker 2007; Swyngedouw 2006; Kooy 2014; Bond 2012; Sinwell 2011).

Second, in recent years there has been increased recognition of the politics of socio-technological transitions. The importance of engaging with social and political aspects of participation are therefore foregrounded, rather than ignored (Shove & Walker 2010; Smith & Stirling 2010; Meadowcroft 2011). Researchers have highlighted that while the power for transformation might lie in technological innovations, the democratic processes of such innovations are not always transformative, and in most cases, there is a zero-sum game at play (Shove & Walker 2010; Smith & Stirling 2010; Meadowcroft 2011).

The questions of power over and control of resources in transition studies have led to a new conceptualisation and application of power dynamics. Concepts of power and control between and within levels of a given system (for example in the water, energy or food sectors) are used to scrutinise the interactions within a network of heterogeneous niches (Nastar & Ramasar 2012; Avelino & Rotmans 2011; Lawhon & Murphy 2011). In connecting the study of power to material realities, Flor Avelino and Jan Rotmans define power as 'the ability of actors to mobilize resources to achieve a certain goal' (2011: 559). Resources can include persons, assets, materials or capital including human, mental, monetary, artefactual, and natural (Avelino & Rotmans 2011). The mobilisation of these resources by different actors brings us to the realm of how power is exercised. In order to lead the participatory processes within TM towards a transformation of the regime, two types of power, innovative and transformative, become crucial components of making transitions occur (Avelino & Rotmans 2011). Innovative power is defined as the capacity of actors to create or discover new resources, while transformative power is perceived as the ability to transform the distribution of resources, either by redistributing resources and/or by replacing old with new resources (Avelino & Rotmans 2011).[3]

Thus, exploring the community dynamics, as well as actors and organisations controlling or having access to resources, becomes vital to understanding how TM can potentially facilitate the process of change in a given context and sector. We now turn to examining these processes within the transformation of groundwater systems in two SSA cities.

Setting the scene

Case studies

The vast majority of new urban residents emerging from Africa's urban transition will live in rapidly expanding low-income urban settlements, where urban water services are inadequate in both quantity and quality, as the rate of urban transition significantly out-paces investment in urban water supply infrastructure (JMP 2014).[4] As a result of the minimal or negative progress made towards increasing access to improved water sources in SSA cities, use of groundwater via wells, boreholes, or mobile providers is the fastest-growing source of urban water-supply in the region (Foster, Hirata, Misra & Garduno 2010). The World Bank's Groundwater Management Advisory Team (GW-MATE) research programme estimates that 24 per cent of urban water-supply (by user numbers, not volume of abstraction) in SSA cities is groundwater directly collected from water wells constructed by municipal, community or private initiative – and this is the most rapidly growing category at 1.5 per cent per year on average and over five per cent per year in some countries (JMP 2014).

While reliance on groundwater in SSA is predicted to increase, especially in the small and medium towns and urban/peri-urban settlements, where most urban growth is pre-dicted to occur (UN-HABITAT 2014), there are growing concerns over the sustainability of the resource (Howard 2015). Data on which to calculate sustainable yields – thus pro-tecting current and future users of the resource – are rarely available in the very locations where abstraction is increasing. Regulation of boreholes is often highly inadequate in growing urban centres in SSA, as either/both the drillers or the wells are not registered with authorities or operated with legal permits. This also raises concerns over the equity of access to groundwater resources amongst current users. As we will show, this is also the case for low-income urban residents in Arusha and Dodowa who remain reliant on the most-polluted shallow sub-surface groundwater resources (Graham & Polizzotto 2013; Grönwall 2016; Chakava, Franceys & Parker 2014), while those who can afford the more expensive option of drilling deeper into contained aquifers have access to higher quality and quantity of water supply (Foster, Hirata & Howard 2011).

The challenges of groundwater resource sustainability are the focus of an ongoing multi-disciplinary development research programme, Unlocking the Potential of Ground-water for the Poor (UPGro) funded by the United Kingdom.[5] One project, T-GroUP, of which the authors of this article are members, is applying the TM framework to realise the necessary transitions towards ecological sustainability and social equity.[6] The goal of the project is to achieve the sustainable management of urban groundwater, while ensuring the interests of low-income urban dwellers are taken into account (T-GroUP 2016). The application of TM involves establishing multi-stakeholder platforms or social learning alliances to share strategic planning and information and to facilitate small-scale demonstrations of applied examples of transitions towards sustainable groundwater management.

The understanding of the socio-political context of this transition, including recognition of the power dynamics at play, requires an examination of the issues of power and control of resources governing access to groundwater. We examine these issues in two of the three project case study cities by drawing on empirical data documenting community dynamics and urban water governance settings: Dodowa (Ghana) and Arusha (Tanzania).

As the TM framework calls for the identification of relevant organisations, social actors and resources (i.e. money, labour, knowledge, skills, and social networks) which can be mobilised to improve water access in selected areas, we explore the power dynamics between these actors. We also explore other aspects of the social relations within the communities that shape urban and water governance processes, identifying their significance for an application of TM that aims to increase the collective agency of communities and change water management practices.

Data collection methods

In mapping out actors and identifying agents of change, we collected data based on a mixed-methods approach. First, we conducted a literature review on involvement of governmental and non-governmental organisations (NGO) in control of different resources revolving around (ground) water access. Second, we conducted open-ended interviews with community households as well as those actors and organisations identified during the literature review process.

The objective of interviews with organisations was to understand challenges and opportunities in mobilising resources in relation to better access to (ground) water. The aim of the interviews with households was to understand the dynamics of decision-making, social relations, and resource mobilisation within the community, and identify development priorities within the settlements and key actors at community level who had the (unrecognised) power to mobilise resources. The data collection process in each case study was carried out as follows:

In *Dodowa,* we conducted a document analysis on urban policy and water governance settings in the district of Shai-Osudoku, where Dodowa is located. We analysed a series of documents including Ghana Statistical Service (GSS), the Community Water and Sanitation Agency Act, the Regional and Shai Osoduku District Analytical Report 2010, Ghana Water Company Limited documents and the NGO reports in relation to water access in urban and peri-urban areas (GSS 2010; GWCL 2016; DAR 2010; CWSA 2010). This was used to gain a better understanding of actors and their roles, as shown in Tables 2 and 3. We then carried out 104 interviews with community households: 42 interviews were conducted in three suburbs in December 2015, and 72 interviews were conducted in an additional six suburbs of Dodowa in February/March 2016. The open-ended interviews were conducted in English or translated from Asante Twi, Ga or Dangme by research assistants fluent in both of the local languages and English.

In *Arusha,* data sources for document analysis included academic papers on urban water management, governmental reports from websites of the National Bureau of Statistics and the Arusha Urban Water Supply and Sanitation Authority (AUWSA), GITEC's report (an independent consultant) on the groundwater assessment in the Pangani River Basin, AUWSA's GIS records, Tanzania Water Resource Management Act and NGO reports (TNBS 2016; GITEC 2011; AUWSA 2016; MWI 2009). Through analysing and comparing data from these sources, we outlined the roles and responsibilities of the organisations, as well as their interactions in water service delivery in Arusha. This is captured in Table 3. Following this, from November 2015 to January 2016 we carried out 56 interviews with households from six wards in Arusha (Unga Limited, Sombetini, Olorieni, Moshono, Sakina and Lemara). Households were selected through purposive sampling to identify

Table 2. Key organisations in possession of resources in relation to (ground) water access in Dodowa.

Organisation (type)	Activities	Resources in control of or have access to
DA (government)	Making decisions about management of water supply systems under the community-ownership and management scheme	Legislative and executive power, financial resources
CWSA (government)	Responsible for effective facilitation of the provision of sustainable potable water and related sanitation services as well as hygiene promotion to rural communities and small towns through resource mobilisation, capacity-building and standards setting with the active participation of major stakeholders	Legislative and executive power, technical support
GWCL (government)	Responsible for urban water supply only, 100% state owned, limited liability	Technical support
ISODEC (NGO)	Promotion of human rights and social justice for all, especially those suffering marginalisation, injustice and powerlessness Policy analysis and public awareness about governance of water service delivery	Media, capacity-building skills, access to social networks at local, regional, national levels
CONIWAS (NGO)	Creating strong and effective advocacy platforms towards influencing policy and enabling marginalised populations develop a voice	Media, capacity-building skills, access to social networks at local, regional, national levels
RCN (Resource Centre Network) (institutional partnership)	Seeking to promote knowledge management (KM) services within the Water, Sanitation and Hygiene (WASH) sector in Ghana	Social network, access to social networks at local, regional, national levels
WaterAid (NGO)	Helping to improve access to water and sanitation for some of Ghana's poorest people	Media, capacity-building skills, access to social networks at local, regional, national levels

Source: Fieldwork; GSS (2010); GWCL (2016); DAR (2010); CWSA (2010).

respondents who used a borehole, shallow well, and/or AWUSA piped water connection. Finally, over the same time period, we used an ethnographic approach to identify the water points and identify household water supply practices in low-income communities, i.e. kiosks, standpipes, springs, dug wells, and boreholes. This included observation and

Table 3. Key organisations in possession of resources in relation to (ground) water access in Arusha.

Organisation (type)	Activities	Resources in control of or have access to
PBWB (government)	Ensuring water resources are managed sustainably	Executive power, regulatory agency
AUWSA (government)	Responsible for the overall operation and management of water supply and sewerage services in Arusha city	Technical support
Arusha City Council (government)	Responsible for urban planning and issuing land permits in Arusha city	Executive power
NEMC (government)	Responsible for protection of water resources and for environmental pollution	Technical advisory, coordination and regulatory agency
Oikos East Africa (NGO)	Research on groundwater, conducting hydrogeological surveys, drilling of boreholes and infrastructure development for water supply	Financial resources, social network, access to social networks at local, regional, national and international levels
WEO (ward executive office) (government)	Supervising and coordinating the implementation of projects and programmes of the ward	Executive power
Street chair and committee (government)	Responsible for supervising the development activities at the street level	Executive power, political power

Source: Fieldwork; TNBS (2016); GITEC (2011); AUWSA (2016); MWI (2009).

unstructured interviews with 120 people in 70 water points distributed in Unga Limited, Sombetini and Osunyai wards. The interviews were conducted in Swahili, translated by a research assistant.

Data collected from interviews in Dodowa and Arusha were interpreted using a thematic analysis and coding approach to create categories in relation to actors and their challenges regarding access to water resources. The coding was based on repeating ideas, metaphors and expressions that emerged during interviews. Finally, all the collected data was triangulated by comparing the results of primary data analysis with other sources such as newspapers, blogs, journal articles, governmental documents, and the media.

Composition of actors and resources in relation to groundwater access

Dodowa, Accra, Ghana

Dodowa is the capital of Shai-Osudoku district (formerly known as Dangme West) of Greater Accra Region and has a population of approximately 12,000 inhabitants (DAR 2010). This peri-urban area presents a fuzzy jurisdictional territory for government departments and agencies serving urban and rural areas. As Table 2 shows, the responsibility of water provision falls under a mixed organisational structure.

One of the most resourceful organisations in the domain of water service delivery in Dodowa is the Ghanaian Community Water and Sanitation Agency (CWSA), which is responsible for the management of rural and small town water supply systems and the coordination of participatory (ground) water management. The CWSA supports District Assembly (DA) technicians in establishing water and sanitations (WATSAN) committees to manage groundwater. Members of the WATSAN committees (caretakers) are trained in the repair and maintenance of boreholes. NGOs, like WaterAid and Coalitions of NGOs in Water and Sanitation (CONIWAS), provide technical assistance and capacity-building to community management groups, including DA water and sanitation teams and WATSAN committees. Under urban jurisdiction, however, the Ghana Water Company Limited (GWCL) is responsible for provision of treated water through standpipes and taps in most suburbs of Dodowa.

Arusha, Tanzania

Arusha is the fifth largest city of Tanzania with a population of over 400,000 inhabitants (TNBS 2016). The city is located in the upper part of the Pangani River Basin. Almost 75 per cent of the city lives in unplanned housing and faces challenges of high housing rental costs, food insecurity, and poor water and sanitation services (UN-HABITAT 2014). As Table 3 shows, there are a number of government organisations and NGOs involved in water service delivery.

The Arusha Urban Water Supply and Sewerage Authority (AUWSA), the urban water utility company, provides an irregular supply of water to only 44 per cent of the population. The piped water network is concentrated in the city centre where the business district is located, and is very limited in the eastern, western and southern parts of the city (AUWSA 2016). Currently, AUWSA faces serious challenges of inadequate water production to serve its existing customers, let alone provide for the remaining urban residents not yet serviced by the water network. As the city continues to expand, and piped water services

decline in quality, a growing number of residents rely on shallow dug wells, boreholes (either private or communal), and spring water to meet their needs.

The city's administrative ward offices supervise water projects and services, like public wells in the ward, with the support of elected street chairs. Also, they act as a bridge between local residents and the water utility company, communicating with AUWSA in order to solve water-related problems in their jurisdiction. The ward health officer has the responsibility of promoting safe food and water handling at the household level, and the protection of water sources. However, due to the lack of water supply and waste-water services, most of the residents in low-income wards use contaminated shallow sub-surface groundwater for drinking. Indeed, at the time of the fieldwork for this research, there was an outbreak of cholera in parts of Tanzania, including Arusha city.

The power dynamics in the process of groundwater management

Findings from Dodowa

More than half of the residents in the research area rely on piped water from GWCL for domestic use, delivered inside the home or via water tanks in the vicinity of 20 to 50 metres. The water tanks are provided after residents' apply and pay the cost of connection.[7] The owner of the tanks sell water by the bucket. The price per bucket (20 litres) varies from 30 to 70 pesewas (pe).[8] However, the volumetric price for the owner of the connection is much less, approximately 3.5 pe, excluding the one time initial fee and ongoing maintenance costs. This means that residents who must collect their household water from tanks must pay ten times more per unit than do those residents who pay the GWCL tariff.[9] Based on the majority of our interviews and observations of water bills from the GWCL, there is evidence that the price of water from the tankers is affected by an absence of price monitoring from the GWCL, as residents who sell the water to their neighbours are trying to maximise their profits by charging more than is set by regulation.

Water supply from groundwater resources, for example boreholes and shallow wells, are the least preferred options of residents because of poor water quality, often mentioned to be too salty to drink or use for cooking or too difficult to use for washing clothes (saltiness makes it difficult to lather soap). However, the extreme intermittency in piped water services – where water supply is delivered once per week, or even once per two months – leaves residents little option but to combine groundwater sources for bulk water uses, and sachet water for drinking. The governance of these groundwater resources is not understood by the residents: out of the nine suburbs of Dodowa that we studied, three had an established WATSAN committee to manage boreholes, but many households in these areas were not aware of the existence of such committees. At best, residents might know of their existence, without knowing who the members are, or what responsibilities they have.

When we asked households about their willingness to participate in community development committees such as WATSAN, we received a diverse range of responses. Residents without entitlement to land or property, renters, showed little enthusiasm to be involved:

> Afua in Wedokum has rented a property for 10 years. She pays roughly 3 cedis per day to buy water from tanks and gets 6 buckets (20 litres) for her household of 8 people. On top of that, she pays 20 pesewas per day for sachet water. Water provision costs are barely affordable and

she hopes the quality of groundwater gets better so she can pay less to fetch water … Afua is hesitant to communicate her need to anyone. She thinks that she does not have the right to complain or to be proactive about her livelihood challenges because she does not own the land or property. She cited 'I'm not a native'.[10]

There will be people who are indigenous who are really native to that place. And they would feel that the place is their own. They feel more ownership than the others.[11]

Lack of trust and transparency in the operation of the boreholes among residents, the WATSAN committee and the DA members was cited in several interviews as issues preventing residents from becoming engaged in the communal management of groundwater resources.

If you aren't an official representative of the people, if you took initiative, you would be called names because you are trying to take someone's job.[12]

We asked one of the WATSAN members, who has been in charge of controlling a borehole for four years,[13] to describe the process of money collection and expenditure on boreholes. She told us they have collected 100 cedis (out of which 20 per cent goes off for commission) and 60 cedis still remained in their account. She says she has reported the dissatisfaction of the residents with the quality of water many times to the DA technicians, but they have made no effort to address the concerns. In the dry season, and with piped-water supply interruptions, residents have no other choice but to pay for the very low-quality groundwater.

While DA members are often happy to hear the needs of the community through WATSAN, they are also worried about the upcoming demands from WATSAN especially in terms of transparency.[14]

The interplay of actors in having power and control over access to groundwater resources in Dodowa extends beyond the formal institutional settings. Interviews with residents revealed that traditional community leaders and groups are influential actors in decision-making processes as well as in possession of resources to mobilise the community. Table 4 lists these actors and groups.

In the nine suburbs of Dodowa where the residents were interviewed, we found 18 different traditional communities (clans). The social groups listed in Table 4 were present in all of the clans. The majority of respondents stated that when they faced an issue in the clan or in the community, they contacted the elder committee or the chief, known as Asafoatse. Households with family ties to these groups were often satisfied with the result of the actions taken by the elder committee or the chief. If addressing the problem is beyond the elder committee and Asafoate's capacity or if they are not

Table 4. Community key actors.

Key social actors in the community	Resources in control of or have access to
Paramount chief (mankrado)	Tribal and social ties at the district and township level
Community chief (Asafoatse)	Clan and social ties at the community level
Elder committee	Social ties with families within clans
Youth committee	Social ties with families within clans
Royal families	Land ownership and ties within their clans and with other social groups
Unit committee	Political power as elected representative of the community

Source: Fieldwork (December 2015, February–March 2016).

attentive to the issue, households reported that they contact the DA representative. We noted that households tend to contact DA representatives directly if they have closer family ties instead of reaching out to the Asafoate or elder committees.

Regardless of how the local authorities are approached – either directly due to kinship ties, or indirectly through the elders or chief – they are identified by residents as actors with more power to address their concerns. However, despite the attribution of power, the majority of residents are not confident that the local authorities will address their needs. Almost all of the interviewees mentioned it is only before elections that the local authorities come to their neighbourhood and attempt to deal with issues the community faces, such as the quality of water access.

> Emmanuel, 76 years old, from a royal family, born in Dodowa and has been living here for his entire life mentions that DA members come to his neighbourhood and make promises for positive changes only around the election time, and not much happens after that.[15]

In this vacuum of responsibility, elder committees, chiefs, and royal families are considered by residents to be resourceful actors to address the community issues. Elder committees are respected members of the community with influential family ties with clan chiefs and bargaining power with local authorities around election time.

> With regards to sanitation, one woman explained how an elderly woman in a neighbouring community had successfully brought together a group of people to build a public toilet.[16]

Members of royal families have strong historical roots and financial resources in terms of land and property, enabling them to help out vulnerable households.

> Victoria, the head of school in one of the Dodowa suburbs, mentions that the head of royal family in their neighbourhood distributes gifts during Christmas. This has made him a popular and respectful figure in the community.[17]

In another example from Wedokum, some of the community chiefs or royal families let residents fetch water from their private wells or boreholes free of charge. In Apetechi, a group of landlords had come together in a corner of the community to raise money to install electricity poles so the electricity company could connect the community to the grid. In Voti and Djabletey, the community organised fundraising for digging wells when needed.

While such social groups and grassroots initiatives might address the community issues to some extent, it is important to note that they often include actors with resources. The elements such as land and property ownerships as well as family and clan ties significantly affect residents' willingness to participate in community-based initiatives and determine who is included in the benefits of such initiatives. To be truly inclusive, a participatory approach to improving water access quality in Dodowa through TM must recognise the variety of social groups within the community and understand the hierarchies and formal and informal authority figures.

Findings from Arusha

Our interviews with six staff from the Pangani Basin Water Board (PBWB), who are responsible for regulating groundwater drilling and use in the city indicate that the number of

unregistered boreholes used by commercial and residential users in Arusha is increasing. Due to a lack of an operational budget with which to monitor drilling, the PBWB has not been able to identify or monitor the number of unregistered boreholes, much less shut them down. When the PBWB does identify an unregistered borehole, they encourage the users to apply for permits, which contribute to the annual budget of the PBWB. According to one PBWB permits officer, user fee collection for groundwater is easier in urban centres than collection of user fees for surface water in villages/traditional areas.

The Arusha City Council (ACC) is another main actor in the domain of urban water service delivery, given their role in urban planning and issuing land permits in the newly expanding urban periphery, where AWUSA supply does not yet extend. Our interviews reveal that ACC planning priorities are driven by an economic development agenda with a potentially negative impact on water conservation. As stated by one PBWB staff member, 'some areas in the city have been earmarked as groundwater potential areas, but the ACC is not currently taking that into consideration for issuing land permits'. According to one of the National Environment Management Council (NEMC) officials, the ACC has been issuing land permits in groundwater recharge areas, which according to Water Resource Management Act is illegal.

ACC's interest in making profit from land permits, together with an inadequate urban piped water supply system, and insufficient institutional capacity for regulating groundwater use has led to unregulated drilling of boreholes and development on groundwater recharge areas. The third key formal actor is AUWSA, which currently relies heavily on contained aquifer groundwater as raw water supply for the piped water system. Their reliance is predicted to increase, given the declining quantity of surface water and competing demands in the basin. Regulating self-supply of groundwater through private boreholes serves their long-term interest in securing sufficient raw water supply, as well as their short-term interest in maximising their customer base amongst upper-income and commercial water users to increase profit margins. Currently urban water resource decisions seem to be shaped by the negotiation of financial interests between the river basin authority, the urban water utility, and the city council. This is not to say that these formal actors are not concerned with the sustainability of the resource or the provision to lower income urban residents; however interviews reveal these are not the dominant interests at play in the negotiations over decision-making to allocate groundwater resources.

In addition to these formal organisations at the regional and municipal level, there are also important informal community level actors who shape allocation of water resources. One of these is the Balozi, the leader of every ten households under the ten-house cell structure (Heald 2006; Snyder 2008). While the Balozi were official government representatives at the household level before the start of multi-party politics, they now fall under informal governance settings, yet remain resourceful in terms of political affiliations and sometimes even organisational access (Heald 2006; Snyder 2008). For example, a Balozi in M-Baniani Street in Unga Limited, in charge of a water kiosk, indicated his responsibilities as follows:

> If someone needs a loan the person must come to me, I sign an approval, then the street chairman and the ward executive officer sign as well. It is a kind of letter where the authorities recognise that I know that person and lives in its jurisdiction. This procedure is for some particular banks.

In case of water shortages, for example, when piped water services fail to provide supply in community water kiosks, the Balozi communicates the issue with AUWSA. In addition, he acts as a peacemaker where there is conflict within and between households and supports families in criminal cases through legal consultancy. During the interviews, some residents mentioned they first approach the Balozi to communicate water-related problems like the maintenance of public boreholes. However, many interviewees mentioned they contact the street chairperson directly. One street chairperson from the Sombetini municipal ward explained his relation with a Balozi as follows:

> Actually, Balozi belongs to the political party, for my work I have a team made up of five people and the secretary. They are members of the community and are chosen by neighbours, as minimum two out of five must be women. The Balozi are not local authorities but people from political parties to get close to the population, make political promotion and others activities. I work with the Balozi if they are from the same political party, if not there is no communication.

Other significant social actors at the neighbourhood level are landlords of tenant blocks. The two low-income settlements of Sombetini and Ungga Limited have mixed housing with both single-family houses owned by the residents and tenant blocks of single-storey units. The neighbourhoods are increasingly lower middle class, as the urban periphery expands into what was once the peri-urban fringe of the city, but this area is still dominated by rental units. Landlords invest in building a rental complex of anywhere between two to 15+ rooms, they provide toilet facilities and water supply of various qualities (piped water standpipe, shallow dug well, borehole well), which are often included in the rental price of the room, and/or charged per volume or per month. These areas in the city are rural migrant destinations, and the rental blocks in these areas are often the first stop, before migrants have saved enough to buy or build a room of their own in another part of the city. Landlords have significant social power in relation to their tenants. Many tenants interviewed did not know who the Balozi was – or did not know the formal administrative structure of the street or ward. Rather, their most important social relationship was with their landlord, who resolved conflicts between tenants, loaned money, and connected them to the rest of the settlement. Some of the landlords are also the original land owners, predominantly from the Maasai tribe who have historically farmed and grazed cattle on the land (Fosbrooke 1956). While some of the Maasai members have since sold their land, others have themselves developed one or more rental units and have significant social standing in the community.

Precautions in taking TM into SSA

Based on our analysis of previous TM applications in the urban water sector and our documentation of power dynamics structuring the management of groundwater resources in Dodowa and Arusha, we identify three precautions that need to be addressed through adaptations of the TM approach in order to achieve the emancipatory promises of participation.

(a) Exercise of power within the 'insiders'

Empowering niches and steering the process of change by 'insiders' is one of the important principles of TM (Loorbach 2010). While we also recognise that the residents of the

community (as insiders) should set the TM agenda, we highlight the need for caution in identifying these actors. Our description of community dynamics in Dodowa and Arusha sketches the heterogeneity of social actors with access to different resources at the community level. We have documented how in both cities relations of economic and political power expressed through land ownership, clan status, and political affiliation would influence the positions of different actors in steering, or blocking processes of change to the status quo. Practically, for the implementation of TM, this echoes a fundamental caution to practitioners implementing any form of participatory development: namely, the community is not a uniform spatial unit or scale. Rather, there are a variety of interests, abilities, and roles, which would influence exercise of power, in terms of ability and capacity of actors to participate within a transition arena.

As we saw in our case studies, demands and visions of residents are not captured via official representatives, for example DA representatives and committee members in case of Dodowa, or street chair persons in slums of Arusha. Thus, we argue the black box of insiders, niche, networks and community need to be clarified and *relations* among actors in possession of innovative and transformative power should be analysed by taking the geo-historical background of the case into account. The absence of these analyses could lead to involvement and empowerment of those actors in the community that are already resourceful and powerful.

(b) Understanding the strengths and limitations of reflexive governance

Following the rapid recognition and application of TM in the Netherlands, Belgium, UK, Canada, Australia and other countries in the Global North, the research community and policymakers have begun to take this approach to the Global South. We see this participatory governance model as useful in addressing urban water challenges in cities in SSA because it has the potential to offer an alternative to dominant approaches, which have been criticised. Participatory approaches to urban sustainability can learn from TM by paying more attention to including radical changes in incremental steps in their objectives, as well as integrating entrepreneurial capacity-building in their processes in an iterative way. But, we also argue that facilitators of TM need to recognise the limitations associated with reflexive governance and democratisation of science-policy processes.

The underlying assumption on which the process of democratisation is premised is that the perceptions and actions of actors will change as a result of a social learning process which guides their reflections on present and future scenarios (Loorbach 2010). However, as we have reviewed applications of TM in urban contexts, there are limited examples of actors (community residents, scientific camps, government officials and private service delivery companies) willing to modify their perceptions and actions because of fruitful dialogues and scientific evidence. In the water domain, the process of policy formulation and implementation is based on political and economic interests rather than the co-production of knowledge from collaborative interactions between scientists and other groups in society (Chitonge 2014; Jaglin 2002; Crook 2003). The irreplaceable nature of water coupled with the adverse impacts of climate change on resources, makes any decision-making process over the allocation of water resources or water-related risks more likely to create win-lose or even lose-lose situations. As a result, there might not be much room for scientific triumphalism in making decisions on water

resources to benefit low-income residents, given the contentious aspect of water and the power at play. Therefore, we argue in addressing the asymmetric power relations in the transition arena, the TM facilitators need to allocate more time on devising socio-political niche experiments rather than socio-technological ones.

Such experiments can be operationalised at the very early stages of forming transition arenas, primarily with extending invitations to those actors who are the least resourceful members of the community. Transition arenas could serve as a platform for these residents (those with no or minimum access to social and political networks or land rights) to help coordinate their efforts to become knowledgeable about strategic ways of making claims on regime actors (or even resourceful community actors) reluctant to change the business-as-usual practices. As seen in Dodowa, for example, numerous interviewees mentioned keeping their problems to themselves (including water problems) or, if they did elevate their problems to a chief, DA member, unit committee member or elder, they had little faith that their issue would be addressed. If transition arenas provide a protected space for 'weaker' actors to get together and make a coalition in light of their common concerns, such desperations can potentially be turned into hopes and actions, where the envisioned collective agency can emerge.

Public networks and campaigns led and coordinated by ISODEC in Ghana against privatisation of water services and the establishment of a local action committee is one example of how participatory processes can be organised for the good of the community, especially for vulnerable groups.

(c) Capacity-building for facilitators

Last, but not least, we argue that one of the most important elements for the success of a TM approach is capacity-building in the transition team. As seen earlier in the article, expertise of transition managers often revolves around the functional domain, for example energy, water, agriculture, transport, etc as the majority of TM applications have focused on large-scale infrastructure networks in these domains. This has led to the domination of technocrats with limited social and political backgrounds in transition arenas. As seen in our case studies, such backgrounds are by no means sufficient to understand social relations in communities and their implications for improving the poorest of the poor in communities. An effective implementation of TM requires facilitators to be familiar with different ways of mapping actors and resources, analysing power dynamics at play, and steering the process of resource mobilisation for the least resourceful groups.

Although recent literature on TM acknowledges the importance of interdisciplinary thinking in tackling complex sustainability issues, there is not much reflection on how social and political knowledge should be integrated in the sectoral expertise of a transition team. Thus, planning to boost the interdisciplinary background of facilitators should be the first and foremost principle of TM. This calls for active participation in training workshops, as well as open-minded dialogues and willingness to learn from each other and most importantly from communities. Our findings indicate that active local NGOs, for example ISODEC in Ghana, working around social and political issues can support and facilitate the process of learning for transition teams, given their experience in working closely with communities. Without proper capacity-building in transition teams, TM will

most likely fail to achieve its ambition of creating a comprehensive picture of the problem and potential resolutions that can be of use for communities.

Concluding remarks

Our findings from the low-income areas of Dodowa and Arusha reveal how actors in possession of land, or holding a decent position on the ladder of rank in the ruling clans or tribes, are more likely to act as representatives of the community in participatory governance models like the TM framework. In these circumstances, many disadvantaged community members, like tenants, might be excluded from transition arenas and from the process of transforming the current status quo arrangements to provide better water access for all. On this basis, we argue that the least resourceful actors need to have a space created specifically for them, in order to be able to form a shared agenda based on their needs and concerns and to make their claims visible, prior to their engagement with other actors in transition arenas.

In highlighting the gap between the framework ambitions and what can be achieved in practice, we suggest that the capacity of facilitators of transition arenas should extend beyond disciplinary and sectoral expertise. Addressing unequal social relations in urban communities of SSA requires the capacity for conducting thorough social and political analyses. This goes beyond system dynamics thinking (i.e. identifying stocks, flows and feedback loops), which is the dominant methodology used in the application of TM in the Global North. Expanding the capacity of the transition team also extends to more active engagement with social and political groups concerned with low-income resident demands and claims. Local groups or NGOs who have been involved with resident activities for many years should be part of the facilitating team in transition arenas. Otherwise, TM is likely to repeat the results of many other participatory governance models run by technocrats, becoming a managerial tool for those actors inside and outside communities that are already politically, socially and economically resourceful. Whether, and how, the precautions we have identified here for taking TM into SSA, will be incorporated in the ongoing development research programmes, is yet to be determined, but it is an endeavour beyond the scope of this article and a subject for further research.

Notes

1. In the water domain and in urban environments, urban water regimes can be defined as a system, a network of actors, vested interests, politics, technology, policy, regulation about the governance of water resources and delivery of services (Nastar 2013).
2. For a diverse range of examples on community development approaches in the context of sustainability see Mary Ann Brocklesby & Eleanor Fisher (2003).
3. Compare Nastar & Ramasar (2012) for debates on power conceptualisation in transition studies.
4. The urban population of SSA is expected to grow by almost four times, from 300-million in 2010 to over 1-billion people in 2050 (UN-HABITAT 2014).
5. Through the Natural Environmental Research Council (NERC), the Economic and Social Research Council (ESRC), and the UK Department for International Development (DFID).
6. Experimenting with practical transition groundwater management strategies for the urban poor in SAA, see <www.t-group.science>.
7. The GWCL office first inspects the area and determines a drawing, size and pressure of the nearest pipe before proceeding with the application request (Usa 2015).

8. 100 pesewas = 1 Ghanaian cedi = 0.25 USD.
9. As of July 2015, approved rate in GHp/1,000 litres, is 178.3326 for domestic use. This 20 litres of water in a bucket equals 3.5 pe (GWCL 2016).
10. Resident interview (10 December 2015).
11. WaterAid interview (3 March 2016).
12. Resident interview, Salem (18 February 2016).
13. The access to borehole is controlled by the caretaker, who opens the pump lock between 5am and 9pm.
14. The Integrated Social Development Centre (ISODEC) interview (8 December 2015).
15. Resident interview, Oboom (9 December 2015).
16. Interview 2 (10 February 2016).
17. Resident interview, Oboom (15 December 2015).

Notes on Contributors

Maryam Nastar is a research fellow at the Centre for Sustainability Studies, Lund University in Sweden. Her research is concerned with social and political aspects of sustainability transitions; water governance and institutions in urban areas; and resource mobilisation, practices of citizenship and social movements.

Shabana Abbas obtained a MSc in Environmental Planning & Management from the UNESCO-IHE Institute for Water Education in Delft, The Netherlands.

Carlos Aponte Rivero obtained a MSc in Environmental Planning & Management from the UNESCO-IHE Institute for Water Education in Delft, The Netherlands.

Shona Jenkins obtained a MSc in Environmental Studies and Sustainability Science, from Lund University Centre for Sustainability Studies, Lund, Sweden.

Michelle Kooy is an associate professor of the Politics of Urban Water at IHE-Delft Institute for Water Education. Her research is concerned with how inequalities in access to water and exposure to water-related risks in and across urban spaces are mediated through water infrastructure.

ORCID

Maryam Nastar http://orcid.org/0000-0001-8918-9601
Michelle Kooy http://orcid.org/0000-0003-3226-9939

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