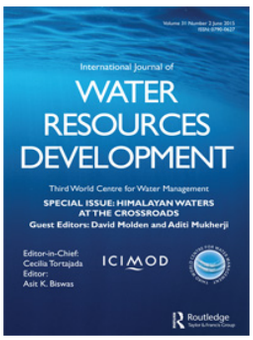

International Journal of Water Resources Development

ISSN: 0790-0627 (Print) 1360-0648 (Online) Journal homepage: https://www.tandfonline.com/loi/cijw20

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To cite this article: Diana Suhardiman, Floriane Clement & Luna Bharati (2015) Integrated water resources management in Nepal: key stakeholders' perceptions and lessons learned, International Journal of Water Resources Development, 31:2, 284-300, DOI: 10.1080/07900627.2015.1020999

To link to this article: https://doi.org/10.1080/07900627.2015.1020999

Published online: 13 Mar 2015.

International Journal of Water Resources Development, 2015
Vol. 31, No. 2, 284–300, http://dx.doi.org/10.1080/07900627.2015.1020999

Integrated water resources management in Nepal: key stakeholders' perceptions and lessons learned

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(*Received 10 December 2014; accepted 15 February 2015*)

Integrated water resources management (IWRM) has been prescribed in the global water policy literature for decades. This article looks at how the concept has been applied in Nepal. It highlights the normative approach in IWRM policy formulation, the existing institutional barriers to apply it and how these resulted in the framing of IWRM 'implementation' as merely a compilation of donor-funded projects. Current discourse on IWRM highlights the need to shift the emphasis from national policy formulation to local adaptive, pragmatic approaches to IWRM. This article brings to light the need to identify potential entry points to scale up locally rooted water management approaches towards the development of nested institutional set-ups in water resources management.

Keywords: integrated water resources management; water resources development; policy implementation; sectoral egoism; institutional barriers; Nepal

Introduction

The concept of integrated water resources management (IWRM) has been the subject of discussion among water scholars for decades (Blomquist & Schlager, 2005; Butterworth, Warner, Moriarty, Smits, & Batchelor, 2010; Gallego-Ayala, 2013; Moriarty, Batchelor, Laban, & Fahmy, 2010).[1] As a concept, IWRM embodies a holistic perspective in water resources management (Lenton & Muller, 2009), with objectives "to improve efficiency in water use (the economic rationale), promote equity in access to water (the social or developmental rationale) and to achieve sustainability (the environmental rationale)" (Butterworth et al., 2010. p. 69); these are often denoted the 3 E's. Coordination is a central element of IWRM (Gallego-Ayala, 2013; Grigg, 2008). In addition to the 3 E's, IWRM core principles usually include integration, participation, decentralization, and water management according to hydrological boundaries (GWP (Global Water Partnership), 2000).

Over the last 20 years, the IWRM paradigm has been presented by international development agencies to developing-country governments as a mantra for water resources management (Biswas, 2008; Merrey, 2008; Molle, 2008). Major international donors such as the World Bank and the Asian Development Bank (ADB) and international organizations such as the Global Water Partnership (GWP) have promoted IWRM approaches as the flagship of water programmes worldwide (Biswas, 2008; Chikozho, 2008; Dombrowsky, 2008; McDonnell, 2008; Saravanan, McDonald, & Mollinga, 2008). Amidst the fragmented sectoral decision-making landscape, and driven by the need to

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better coordinate water resources management due to the increasing competition for water resources, IWRM has been widely presented as a welcome aim or vision (Butterworth et al., 2010). With strong advocacy and funding support from international donors, IWRM has evolved as a conceptual framework that describes the complexity of water problems and decisions, becoming a mainstream approach in water resources planning and management globally (UNEP, 2012; UN-Water, 2008; Van der Zaag, 2005). Many developing-country governments in Latin America, Africa and Asia (e.g. Brazil, Mexico, Cameroon, Mozambique, South Africa, Swaziland, Kazakhstan, Indonesia, Lao PDR and Uzbekistan) have incorporated IWRM as a guiding principle for their national water policy or water acts and/or have embarked on national and transboundary river basin planning.

However, IWRM has been criticized by an increasing number of scholars for both its underlying concept and the way its implementation has progressed (Biswas, 2004, 2008; Molle, 2008; Varis, Keskinen, & Kummu, 2008). As stated by Butterworth et al. (2010, p. 69): "Like governance and sustainability, IWRM is a Nirvana concept (Molle, 2008) that people can invest their hopes and fears in, exactly because it is so elastic and amorphous (Biswas, 2004)." Lautze, de Silva, Giordano, and Sanford (2011) question the positioning of IWRM as a prescriptive policy concept for better water governance. Molle (2008) discusses the fact that it is often pretended that IWRM can accommodate all the above-defined objectives to improve efficiency, promote equity and achieve sustainability, when in reality there will always be trade-offs involved. Scholars also criticize IWRM for its neglect of political structure and processes within and beyond the water sector (Allan, 2003; Blomquist & Schlager, 2005; Gyawali et al., 2006; Wester, Merrey, & de Lange, 2003). As stated by Blomquist and Schlager (2005, p. 102): "The watershed does not resolve fundamental political questions about where the boundaries should be drawn, how participation should be structured, and how and to whom decision makers within a watershed are accountable." Drawing institutional boundaries is indeed a political act: "Boundaries that define the reach of management activities determine who and what matters" (p. 105). Warner, Wester, and Bolding (2008) point out that river basin boundaries and institutional arrangements are not natural but matters of choice and contestation. These criticisms recommend an explicit recognition that decisions related to water resource management are political choices (Wester et al., 2003), for actors to re-open debates and critically re-assess concepts to avoid discourse closure (Molle, 2008), and to shift from unrealistic blueprint institutional arrangements to adaptive, flexible and inclusive approaches such as polycentricity (Blomquist & Schlager, 2005).

On the implementation side, there is little agreement among IWRM proponents on such fundamental issues as what aspects should be integrated, how, or by whom, and whether such integration is possible or desirable in the first place (Biswas, 2004), bringing to light the potential institutional barriers to IWRM application (Swatuk, 2005) and the need to take into account the context where IWRM is going to be implemented (Hering & Ingold, 2012). The principle of participation of stakeholders at the basin level has also raised issues regarding how to operationalize inclusion and representation, particularly in countries where locally elected government agencies are absent or the civil society is weak or does not adequately represent all sections of the society (Mehta et al., 2014; Swatuk, 2005). Accountability becomes an important issue, especially with regard to the design of watershed organizations, and political choices that must be made about how to realize it (Warner, Lulofs, & Bressers, 2010; Wester et al., 2003). Lastly, coordination, participation and decentralization have political, financial and human costs which cannot be borne in many of the countries where IWRM implementation has been attempted (Herrfahrdt-Pähle, 2014).

Taking Nepal as a case study, this article looks at how IWRM has so far been perceived and 'implemented' by different stakeholders. While revealing key government ministries' views on IWRM, it shows how IWRM has been imposed in places where it may not yet be ripe for implementation. In particular, it looks at how the IWRM concept was introduced as an ideal set of concepts into national policy documents without reflecting on its relevance, applicability, or desirability. This lack of reflection resulted from a high level of donor involvement and push in national policy formulation processes, combined with government agencies' lack of common vision on IWRM. As the incorporation of IWRM into policy documents has not been effective in changing institutions and practices, most donors have turned towards a project-based strategy to showcase and promote IWRM – without, however, much success in influencing water resource management in the public sector. Referring to the current mismatch between the notion of integration embodied in IWRM and the prevailing sectoral decision-making structure and power relationships, this article illustrates how IWRM application and implementation in Nepal are limited to the framework of donor-funded projects at both the national and the local level. Two models have emerged among donor-funded initiatives: a top-down and sector-based basin-level planning approach (ADB, 2014; World Bank, 2014), with a focus on water use efficiency and large-scale infrastructure development; and a participatory local planning approach emphasizing equity and benefit sharing. Amidst these efforts, this article argues that linking local approaches of IWRM to national water resources planning is pertinent to ensure inclusive and accountable decision making and sustainable water resource management but that this requires first a common vision and shared understanding of water management issues among major stakeholders in Nepal. This article identifies current challenges for such scaling-up as well as alternative ways forward.

The article's main findings and line of analysis are derived from case-study research carried out between June and October 2014. The research included a literature review on IWRM and in-depth, semi-structured interviews with 17 representatives of organizations in Nepal, including government agencies (Ministry of Energy, Ministry of Irrigation, Water and Energy Commission Secretariat [WECS], Ministry of Urban Development, Ministry of Federal Affairs and Local Development, and Legislature-Parliamentary Secretariat), civil society groups and NGOs (International Centre for Integrated Mountain Development, Nepal Water Conservation Foundation, World Wildlife Fund, Helvetas), and international donors (World Bank, ADB, Government of Finland, Japan International Cooperation Agency). Our interviews focused on how key stakeholders view challenges and opportunities for IWRM application and how these views relate to their roles and responsibilities in water resources management. They looked at the central positioning of the National Water Plan and WECS's role to promote IWRM application and how these are connected with the current attempts to implement IWRM at the local level.

Local approach to IWRM and the issue of scaling-up

Recent discourse on IWRM highlights the need to shift the earlier emphasis from policy and institutional reforms at the national and river basin levels to locally rooted, pragmatic and adaptive water management with a specific focus on better sharing of the water resource between users (Butterworth et al., 2010; Giordano & Shah, 2014; Pollard & du Toit, 2011). For example, Lankford and Hepworth (2010) illustrate how a polycentric approach to river basin management could be implemented deriving from an adapted and more local approach to IWRM. Similarly, Moriarty et al. (2010) propose the idea of 'light' IWRM that focuses mainly on building mindsets and skills for the development of

appropriate planning models for IWRM at the district level in Egypt. Here, the idea is to focus IWRM implementation on more practical and local entry points that offer a number of potential advantages and could be complementary to policy reforms and river basin institution building.

For scholars, this shift to more adaptive and local approaches in IWRM is driven by the attempt to focus more on services people use, rather than directly aiming to integrate water resources planning and management per se. Moriarty et al. (2010) and Van Koppen et al. (2009) have brought to light that "another way to think across sectoral borders and promote IWRM is to respond to wider domestic needs of many consumers, such as for small-scale productive uses of water" (Butterworth et al., 2010, p. 77). This thinking is embodied in the concept of multiple-use water services, which has been widely implemented in Nepal since 2002, notably by International Development Enterprises and the Finnish Embassy. Here, the idea is not only to focus IWRM implementation on a more practical level, but also to incorporate local people's development needs and aspirations, in particular with regard to their water uses.

International organizations such as the GWP and the International Union for the Conservation of Nature have also promoted locally rooted approaches to IWRM as alternative pathways to 'implement' IWRM and get IWRM into national political agendas through upscaling (Cartin et al., 2012; GWP (Global Water Partnership) South Asia, 2010), mainly because of the lack of response to implement IWRM at the national level. For instance, in Nepal, the GWP piloted local water parliaments in 2009. The arguments behind this initiative were framed in relatively populist terms and concepts such as Water Resources in the Hands of the People (GWP (Global Water Partnership) South Asia, 2010).

This article argues that while a locally rooted, pragmatic and adaptive water management approach could be a starting point for IWRM implementation, to ensure effective, inclusive and accountable decision making at the basin scale, it would need to be supported by a broader institutional framework both horizontally (across the different sectors) and vertically (along the administrative levels) (Andersson & Ostrom, 2008; Grigg, 2014; Ostrom, 2010). Identifying potential entry points to scale up the locally rooted, pragmatic and adaptive water management approach is crucial to the development of a nested institutional set-up in water resources management towards effective, inclusive and accountable decision making. As stated by Andersson and Ostrom (2008, p. 78):

> The key to the successful design of institutions is their multiple scales and their generation of information that allows participants operating at many different scales to learn from experience [as] the complexity of the environment involved is simply more than any single corporate entity can absorb and manage.

In the context of Nepal, however, this article questions whether such 'scaling up' is desirable and possible, both from the planning perspective and with regard to shared perceptions of water management issues and the need for coordination, stakeholder representation and the inclusion of poor and marginalized groups in the overall decision-making processes (Merrey, Drechsel, de Vries, & Sally, 2005; Mitchell, 2005).

Integrated water resources management in Nepal

Water resources management in Nepal

Nepal is one of the most water-abundant countries in the world, with 6000 rivers, total mean annual runoff of 224 km3 and per capita water availability of 9000 m^3. However, the hydrology of Nepal is primarily monsoon-driven, and about 85% of the rainfall happens in

June–September. The temporal variability of rainfall and runoff is hence very high, and the problems of excess water during the monsoon, and water scarcity during the dry season, affect all aspects of life in the country.

Over 80% of Nepal's population depend on subsistence agriculture for their livelihood (World Bank, 2009); however, only 24% of arable land is irrigated. Crop productivity is significantly lower than in the rest of South Asia, and the country relies heavily on food imports from India. Despite vast groundwater reserves in the Terai, tube well development and use remain limited, and access to groundwater is particularly difficult for the marginal (<0.5 ha) and tenant farmers who constitute the majority of cultivators. As a result, vast tracts of land remain fallow during the winter and summer dry seasons. Thus, the issue of improved water resources development and management looms large for the future of the country.

Referring to this need to develop Nepal's water resources, there is also high expectation for hydropower development. This expectation is derived both from the local population, who face low electrification coverage (up to 16 hours of load shedding during the dry season in electrified areas), and the government, who see electricity export as a potential source of revenue. Hydropower projects supply most of the electricity in Nepal (National Electricity Authority, 2014). Nepal's commonly quoted total and technically feasible hydropower potential are 83,000 MW and 42,133–45,000 MW, respectively (Ministry of Water Resources, 2001; WECS, 2010), based on the estimates from a doctoral research study conducted in the 1960s (Shrestha, 1966 cited in Pokharel, 2007). A recent study using more accurate hydrological, meteorological and topographical data and hydrological model has estimated that the total hydropower capacity, on a run-of-river basis at 40% Q (exceedance flow) and 80% efficiency, is 53,836 MW (Jha, 2010), but actual power production amounted to only 650 MW out of 790 MW supplied in 2013, with the rest mostly being imported.

In Nepal there are eight different ministries working in water-related issues. These are Energy, which is responsible for electricity generation and overall power-sector development; Irrigation, which is in charge of irrigation development; Urban Development, which is responsible for drinking water supply and water sanitation provision; Agriculture and Cooperatives, which is responsible for agricultural crop production; Forest and Soil Conservation; Science, Technology and Environment; Physical Infrastructure and Transport; and Federal Affairs and Local Development, which is in charge of local infrastructure development in the rural areas.

The incorporation of IWRM into the National Water Plan

The government of Nepal formulated its Water Resource Strategy (WRS) in 2002 and its National Water Plan (NWP) in 2005. With strong support and assistance from the Canadian International Development Agency, UNDP and World Bank (JVS (Jalashrot Vikash Sanstha), 2003), WECS formulated the NWP in consultation with relevant sectoral ministries. Partially driven by the global push and the agenda of major international development donors (such as the World Bank and GWP) to promote IWRM, the plan, approved by the Cabinet, states the importance of IWRM principles and the notion of river basin management to ensure that water resources development is done in an effective and sustainable manner. As stated in the NWP (HMG (His Majesty's Government), 2005, p. 7):

> The integrated water resources management (IWRM) principle professes that water must be viewed from a holistic perspective, both in its natural state and in balancing the competing

> demands on it (e.g. domestic, agriculture, hydropower, industrial, cultural and environmental).... The IWRM is defined as a process that promotes the coordinated development and management of water, land, and related resources to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

Initially, the Ministry of Water Resources (MoWR) and WECS were identified as the main government institutions responsible for promoting IWRM implementation. In 2009, however, MoWR was split (mainly for political reasons) into two ministries: the Ministry of Irrigation (MoI) and the Ministry of Energy (MoE). Though other ministries are actually involved in water resources management, MoWR and later MoI and MoE continue to be the most powerful ministries in water resources management. For this reason, WECS is also located under MoWR and later under MoE.

WECS is the permanent secretariat of the Water and Energy Commission (WEC), which was established by His Majesty's Government of Nepal in 1975 with the objective of "developing the water and energy resources in an integrated and accelerated manner" (ADB, 2004, p. 4). The establishment of WEC was largely driven by the government's objective to be well equipped to negotiate transboundary water and energy issues with India, notably through the creation of "an integrated and centralized environmental database system for information related to water resources development and management" (WECS, 2003). WECS was formed in 1981. The Canadian International Development Agency supported it from its formation until June 2014, when it withdrew its substantial support. In its early days, WECS's role was envisioned as providing other government ministries with review and technical reports in relation to sectoral ministries' development plans, and provision of design guidelines. Following the development of the WRS and NWP, WECS's role was oriented more and more towards the formulation of policies and legal frameworks to promote IWRM, and towards inter-sectoral coordination.

Our interviews, however, revealed considerable confusion over what WECS's role and mandate are, as well as marked disagreement on what they should be. Representatives from funding agencies believe that WECS's role lies in coordination of water planning, but some sectoral ministries perceive that WECS should solely provide technical expertise to them, while civil society organizations perceive WECS as a government body in charge of IWRM implementation – without actually defining what IWRM implementation entails.

Following the NWP's formulation in 2005, WECS developed a draft act that outlines the institutional frameworks that need to be developed towards the realization of IWRM. However, the act was never approved, because of MoE's objection. The act was drafted notably to give legal backup to WECS to review and approve sectoral ministries' development plans and activities. MoE resisted the act because it would result in a new control mechanism (in terms of technical audit), which would stand above the sectoral ministries' decision-making authority and might threaten their power and budget allocation. Moreover, stated in the draft act was also WECS's proposal to change the membership status of the WEC from appointment only to full-time recruited staff. WEC members are mainly high-level officials representing various sectoral ministries. Officially, there are 11 ministries represented in WEC, and they are supposed to meet regularly. In practice, however, the meetings with representatives from the other sectoral ministries happen irregularly. WECS's functioning is shaped mainly by MoE, which plays a crucial role as the chair of WEC. The NWP initially proposed that "WECS will be transformed to WEC, operating full time with a permanent office and with the provision of

chief commissioner and commissioners, who will be full-time office bearers" (HMG (His Majesty's Government), 2005, p. 62). This provision, if implemented under the act drafted by WECS, would have indirectly resulted in the replacement of all WEC current members (representing the sectoral ministries) and in the loss of control of sectoral ministries over WECS. Obviously, the act's propositions to give WECS formal decision-making authority to review and approve sectoral planning, combined with the change in the modality of WEC membership/staffing, gave enough reasons for the MoE to halt the act's promulgation process. MoE (which chairs WEC today) thought that agreeing to the proposal would result in MoE's losing control of WEC.

MoE's resistance to the act's promulgation process reveals the institutional barrier to the meaningful application of IWRM in Nepal. Or, as said by one informant: "We cannot change the existing governance structure, which is very much driven by sectoral decision-making power, just for the sake of implementing IWRM" (interview, September 2014). Following this major setback, WECS has been unable to fulfil its role in promoting cross-sectoral coordination, as outlined in the NWP. Lacking the legal backup to ensure sectoral ministries' compliance with the principles of IWRM (e.g. sharing its development plan and activities with WECS and other sectoral ministries), WECS continues to struggle to find the institutional niche where it can add value for sectoral ministries. Supported by various international donors, WECS has conducted some pilot-testing studies for IWRM implementation in the Indrawati and Dudh Koshi sub-basins. Lessons learned from this pilot IWRM implementation were not applied elsewhere, however, due to lack of budget and the absence of a strong coordinating agency at the national level, to whom the newly formed river basin organizations would need to report.

In 2010 WECS prepared the Koshi River Basin Management Strategic Plan. The plan was drafted in partnership with the World Wildlife Fund, rather than in a collaborative effort with sectoral ministries. The latter were simply consulted as 'stakeholders'. Consequently, the plan was never considered a legal policy document because it was never endorsed by government ministries or passed through the Cabinet. Explaining the approach in the plan formulation, an official at WECS stated:

> The objective of the plan was mostly to gather all relevant stakeholders and get them engaged in the project so as to get their support in the field. It does not aim to be a River Basin Master Plan. We had initially agreed on a River Basin Master Plan, but it was a huge task. We have to rename the plan, as it might be misleading. (Personal communication, World Bank and WECS workshop on Integrated Basin Planning and Management in Nepal, September 2014)

In 2012, the government of Nepal drafted the National Water Resources Policy. The National Planning Commission, the government body in charge of formulating development plans and policies across all sectors, entrusted WECS in 2009 to prepare this policy to achieve the objectives defined in the NWP. The policy was drafted with the support of GWP/JVS Nepal and has not yet been endorsed by the Parliament. Like the NWP, it emphasizes the need for cross-sectoral coordination to develop and manage the country's water resources in a comprehensive way (Taylor et al., 2014). However, it remains unclear how the policy will advance the NWP in relation to WECS's envisioned role to promote IWRM, given the secretariat's current dysfunction and the lack of common vision amongst different government agencies on what WECS's role should be.

Recently, the government of Nepal signed a power trade agreement with the government of India (18 September 2014), as well as a project development agreement with the GMR Group to build a hydropower dam with 900 MW generating capacity on the upper reaches of the Karnali River. While the signing of this power trade agreement could potentially accelerate the speed of hydropower dam building in Nepal, a number of former

government officials from various ministries criticized this move in an open letter to the prime minister (22 November 2014). The proposed plan and the criticism of it bring to light the need for key stakeholder involvement to manage Nepal's water resources more effectively and sustainably, while also ensuring the incorporation of local populations' development needs.

IWRM and the prevailing sectoral decision making

Amidst the lack of scientific evidence to back up the different claims, and the clear lack of interest of the most powerful public agencies in applying IWRM, sectoral decision-making processes prevail. In general, officials from powerful sectoral ministries (like MoE and MoI) agreed that there is no need to consult other sectoral ministries or WECS for their development plans as long as there is sufficient water for the proposed activities and that the proposed activities would not affect other types of water use (e.g. agriculture, hydropower and drinking water supply).

Although powerful sectoral ministries have started discussing multi-purpose projects, which combine hydropower production and irrigation, they are sceptical about the need for IWRM. Theoretically, WECS was to review sectoral ministries' development plans and activities to ensure cross-sectoral coordination and integration between the different ministries. In practice, however, sectoral ministries never share their development plans with WECS because they do not see the added value of doing so. Sectoral ministries formulate their development plans and activities for approval by the National Planning Committee to ensure budget allocation by the Ministry of Finance, without any coordination or information sharing with each other. This issue of institutional barriers was eloquently captured by one of our informants: "The concept of IWRM was incorporated into NWP and WSS only for the sake of the policy, not for the government agency involved in water resources management" (interview, September 2014). In turn, WECS has been unable to fulfil its mandate of promoting cross-sectoral coordination, as envisioned in the WRS and NWP, partially leading to its own dysfunction. On top of this, WECS has also lacked human resources to fulfil its mandate, as the capacity and motivation of civil servants posted in the agency has decreased for the last 10 years since the Canadian International Development Agency withdrew its technical assistance.

While other sectoral ministries (like the Department of Local Infrastructure Development and Agricultural Roads [DoLIDAR] under the Ministry of Federal Affairs and Local Development, and the Department of Water Induced Disaster Prevention under MoI) do see the need for IWRM, especially at the local and district levels, they lack any power to initiate and scale up the process at the national or basin level. Moreover, as DoLIDAR are implementing the small-scale irrigation projects (less than 25 ha), they might feel that the main need for coordination is at the local or district level. In addition, working solely at the district level, they might perceive coordinating with NGOs working in the same localities as their entry point to initiating coordination.

Key stakeholders' perceptions of IWRM

This section highlights key stakeholders' perceptions of IWRM, thus unravelling some of the basic reasoning behind the prevailing sectoral decision-making processes in Nepal's water resources management. Given the strong disagreement on how Nepal's water resources should be managed, it is pertinent to contextualize the current discussion of IWRM, focusing on its relevance and applicability in relation to key stakeholders'

perceptions, as a means to identify potential ways forward towards the shaping of a common vision of Nepal's water resources management.

Major international donors like the World Bank and ADB have been promoting IWRM application in Nepal towards more holistic and sustainable water resources management since the 1990s, notably through supporting the formulation of the WRS and NWP. Closely linked with the way international donors and international organizations view IWRM as a useful tool for optimal water resources use and effective management and planning at the national level, interviewed civil society groups and NGOs view IWRM as a promising tool to promote equitable and bottom-up decision making supporting the inclusion of local populations' development needs and aspirations.

Government agencies, however, have different opinions on whether and how they could benefit from IWRM (Table 1). The powerful sectoral ministries view IWRM mainly in relation to river basin planning and management, within the context of large-scale infrastructure development (e.g. hydropower and irrigation dams) and negotiations with India on water and energy management. This is most evident in the way infrastructure development was presented as the core element in the NWP (HMG (His Majesty's Government), 2005), especially with regard to hydropower and irrigation development, and the observation that large-scale hydropower development in Nepal is contingent on cooperation with India (HMG (His Majesty's Government), 2005).

The realization of large infrastructure projects became a precondition for IWRM application. Information gathered from stakeholder interviews reveals that MoE and MoI supported WECS in developing NWP and the integration of IWRM principles in the plan because they thought this would encourage donors to invest in Nepal's infrastructure development. However, when the envisioned large-scale infrastructure development did not materialize (partly due to political instability in the country), they lost interest in supporting the idea of cross-sectoral coordination and today do not believe that IWRM is a useful approach for water resources management in the context of Nepal.

Powerful sectoral ministries question the need for IWRM in relation to the overall objectives of optimized water use, benefit sharing, public participation and conflict resolution. Senior government officials from MoE and MoI feel that Nepal does not need the IWRM approach because sectoral ministries work within distinct territorial and operational boundaries without interfering with each other. It is argued that each sectoral ministry still has all the space to develop its plan, without having to fine-tune it with others, to optimize water use or prevent conflict situations. Interesting to note here is how the idea of cross-sectoral coordination in IWRM was perceived by informants mainly in the context of the MoI–MoE relationship, as two major water users, and not always involving other sectoral ministries. For example, while both ministries seem to be clear on how they could divide their roles and operations to ensure effective water resources management (with MoI working mainly in plain areas, and MoE in hilly areas), conflicts in water demand between irrigation and urban centres such as Kathmandu reflect the not-so-clear-cut operational and territorial divide between MoI and the Ministry of Urban Development.

Donor-funded projects as means to implement IWRM

Driven by international donors' development agenda on the one hand, and challenged by the prevailing institutional set-up on the other, IWRM implementation has been largely framed within a donor-funded-project approach. The latter has become an institutional remedy to promote IWRM and ensure its 'implementation' to some extent on the ground.

Table 1. Views on integrated water resource management (IWRM) of respondents from various government agencies in Nepal.

Organization	Is IWRM needed in Nepal?	What aspects of IWRM are needed or not needed?	Why is IWRM needed or not needed?
Water and Energy Commission Secretariat	Yes, in theory	Coordination across all uses	Maximizing the use of water without compromising the environment
Ministry of Energy	Yes, generally, but not for hydropower development, except in spring-fed rivers	Coordination across uses (hydropower, domestic use and irrigation)	Lack of conflicts in water management and especially water allocation among water uses – rooted in the geographical separation of large hydropower development from settlements
Department of Electricity Development	Yes	Inter-sectoral coordination	To assess the impacts of other projects on hydropower; waste of money
Department of Irrigation	Not currently	Coordination across uses (hydropower and irrigation)	Ministries can do their work separately without causing any problem or conflict. There are no conflicting demands for water for agriculture or energy during the dry season. Distinct geographical areas of development for irrigation and hydropower.
		Better water management	Efficiency is required only when resources are limited and scarce. Nepal needs infrastructure not better management.
	Yes, in the future	Coordination across uses (irrigation, hydropower and domestic water)	To be cost-effective; potential impacts of hydropower development and operation on irrigation supply
		Better water management	Increases in population and emerging problems such as groundwater exploitation and pollution
Department of Water Induced Disaster Prevention	Yes	Coordination across all uses	We need IWRM for future generations
Department of Local Infrastructure Development and Agricultural Roads	Yes	Coordination across actors in the water, sanitation and hygiene sector	To minimize negative impacts on the environment and avoid replication

Source: Authors' interviews, September–December 2014.

Examples include the ADB-funded Bagmati River Water Improvement Project, the Japan International Cooperation Agency–funded master plan study for hydropower development for Nepal, and the World Bank–funded Irrigation and Water Resources Management Project. Today, while ADB is supporting MoI to update the National Irrigation Master Plan, the World Bank is supporting WECS to develop river basin plans, with a focus on hydropower development. USAID is also collaborating with the Department of Hydrology and Meteorology under the Ministry of Science, Technology and Environment in establishing river basin offices in the Koshi, Narayani and Karnali River basins (Taylor et al., 2014). How donors coordinate their efforts to promote IWRM application remains opaque, especially as donor organizations themselves are markedly sectoralized in the way they operate and disburse funding. In the water sector in Nepal, donors tend to work separately rather than in concerted effort. While there is a donor platform, which meets regularly to discuss water issues, information shared in this platform does not always translate into coordinated donor efforts. For the respectively JICA-funded master plan study and the World Bank-funded project, donors have worked with a single government agency (either WECS, MoE, Department of Irrigation or DoLIDAR), indirectly reinforcing sectoral divides. Interviews with donor representatives reveal that there will be some effort to coordinate the different initiatives, especially with regard to World Bank and ADB river basin planning projects. Nevertheless, these efforts happen on an ad hoc or personal basis rather than through institutionalized mechanisms. Even when donors attempt to engage various government agencies and sectoral ministries to collaborate, each sectoral ministry and government agency still tends to lead each of the project components separately.

Through donor-funded projects, some international NGOs have attempted to implement IWRM at the local level. The World Wildlife Fund has formed 11 integrated river management committees under the Koshi River Basin Management project. The idea is mainly to experiment with the IWRM principles of the NWP on the ground. These integrated committees are grass-roots organizations, envisioned as providing a platform for different water-related community-based organizations and water user groups to apply the IWRM approach at the catchment level (Aryal & Rajkarnikar, 2011). The committees are formed through a local election process, and the executive committee includes representatives of all water uses. However, their formation is currently "at an experimental stage", and their role has been limited to drafting a catchment plan and supervising the construction or rehabilitation of small-scale infrastructure (tanks, canal systems) funded by the project. The long-term sustainability of these interventions is also very unclear, especially once donor support wanes.

Similarly, Helvetas implemented a process of local planning to develop water use master plans in collaboration with DoLIDAR. In contrast to the Koshi River Basin Management project, the approach adopted by Helvetas is based on the administrative boundaries. In the development of water use master plans, representatives of water users and community-based organizations prioritize water development interventions for their village development committee through a participatory planning process. The village development committee is the smallest administrative unit in Nepal. It can include between 10 and 25 villages. It can include up to 10,000 inhabitants in the Terai region of Nepal, but is smaller in the hills and even smaller in the mountains. Each village development committee is divided into nine wards, which often compete for allocation of public resources. Within each ward, villages or settlements range from 20 to a few hundred households. The process involves assessing current and future water needs and existing supply across different uses. Once local people have identified and ranked their

development needs, Helvetas then usually supports the construction of up to two water supply infrastructure or technology schemes (e.g. solar pumps or rainwater harvesting). Currently entering its third phase, the concept of water use master plans will also incorporate the idea of water conservation, next to provision of water supply for domestic and small-scale agricultural use (less than 25 ha).

The formation of integrated river management committees has had mixed results on the ground. In most cases they are not functioning in the way it has been envisioned with regard to IWRM implementation, one issue being their registration and recognition as a legal entity due to the sectoralization of the water sector: because the committees address multiple water uses, they have no institutional home and identity. Other groups (e.g. water user associations) often refuse to join the committee because they cannot directly benefit from it. Water use master plan projects have been more successful in terms of sustainability, but the attempt of the Finnish Embassy to scale these to the district level was a failure. According to some of our informants, this failure was rooted in the fact that the planning exercise conducted at the district development committee level did not capture development priorities at the district level but was merely a repetition of the planning exercise at the village development committee level. The prioritization did not work because every village committee clung to its development priorities instead of coming up with or contributing to the shaping of common strategy at the district level. In this context, the very large data-set collected at the village development committee level does not help define district-level development priorities. This illustrates how representation and accountability issues complicate things when we try to scale up local IWRM implementation.

Neither water use master plans nor integrated river management committees are connected to a national master plan or to the broader institutional framework, either horizontally (across the different sectors) or vertically (along the administrative levels). Donor agencies involved in funding the formulation processes of the master plans (e.g. hydropower, irrigation, basin plans) are not aware of these local-level initiatives.

Lessons learned: moving beyond IWRM?

The way IWRM has been incorporated into government policy in Nepal and is being 'implemented' merely as a compilation of donor-funded (pilot) projects illustrates the notion of institutional barriers and highly contested political arenas for IWRM implementation.

This work reveals four key findings with regard to IWRM policy formulation and implementation in Nepal.

First, it highlights the weakness of a normative approach in promoting IWRM through the incorporation of IWRM principles into national policy documents. While the incorporation of IWRM principles in the NWP is a good starting point to promote IWRM application, the Nepal case study confirms that to ensure meaningful application of IWRM, such incorporation has to match with or be accommodated by the existing governance structure and institutional set-up and, as importantly, by reflection and dialogue among the main stakeholders on which principles are relevant to the current context (Watson, 2014). Of particular importance is to consider the existing power relations among public agencies in the water sector, where the most powerful actors have more reasons to resist than to support IWRM implementation (Schoeman, Allan, & Finlayson, 2014). Put differently, efforts to implement IWRM will continue to face structural challenges when the existing governance structure and institutional set-up

remains adamant in preserving sectoral decision-making authority over the need for integration. For example, it has been very hard for WECS to fulfil its role as envisioned in the NWP, especially since MoE has resisted the implementation of this vision.

Second, it brings to light the importance of understanding key stakeholders' perceptions of IWRM towards its meaningful application. How various sectoral ministries perceive the very idea of IWRM and how they could benefit from its application is crucial in shaping the actual significance of the NWP. Discussions on potential ways forward on IWRM application should be based on better understanding of key stakeholders' perceptions of IWRM, and how cross-sectoral coordination and IWRM can provide added value to those currently in charge of sectoral decision making. Such discussions should also pose a question as to e.g. whether cross-sectoral coordination is really needed, to achieve what objectives, for whom, at which (operational) level, and how key government stakeholders could benefit from IWRM policy formulation and implementation. WECS's role possibly needs to be reinvented and clarified, and agreed by sectoral ministries towards the shaping of a common vision for Nepal's water resource management. During the budget speech in July 2014, the government of Nepal announced its decision to work on the transformation of the WECS into a National Water Resources Commission, which is envisioned to more effectively coordinate water resources management across sectors, involving not only various government ministries but also civil society and the private sector (Taylor et al., 2014).

Third, it brings to light the limitation of local approaches to IWRM through for instance the formulation of water use master plans and the formation of new institutions such as integrated river management committees. Focusing on local approaches in IWRM implementation could be an entry point to initiate coordination across scales towards more effective and sustainable water resources management. Nevertheless, this article argues that identifying potential entry points to scale up these local approaches and connect them with the wider decision-making systems in water resources management is pertinent to ensure informed, inclusive and accountable decision making. At present, attempts to scale up local approaches to IWRM have not been successful because local integration has tended to 'crumble' as soon as one tries to link it with district-level planning systems. The lack of elected representatives in village development committees and district development committees, the fact that the intended devolution of functions, functionaries and finances to the village development committees has not taken place, and the prevailing budgetary power of sectoral ministry representatives at the district level to decide on selection and implementation, reflect the institutional barriers to effective, inclusive and accountable decision making in water resource management. Since 2002, there have been no elected representatives on the village or district development committees, which have been de facto headed by civil servants appointed by the Ministry of Federal Affairs and Local Development and supported by the 'all-party mechanism' – a term used to designate a joint committee of representatives from local political parties who act as District Council and district development committee members – until 2012. Local bodies are therefore neither representative nor downwardly accountable. There is also limited devolution of funds and responsibilities to district- and village-level government bodies within the current decentralization framework. This brings to light the importance of understanding the wider political system and how it might determine the limit of what is possible with regard to IWRM implementation. The broader discussion as to whether scaling up these local initiatives through hydrological and/or administrative boundaries poses both structural and institutional challenges to developing nested institutional arrangements for

IWRM – and still remains largely dependent on how Nepal's constitution, still in preparation, will shape the federal restructuring of the state (Shrestha, 2010).

Last but not least, deriving from the notion of institutional barriers, this study links the current discussion of IWRM with the issue of bureaucratic reform. At present, there is a tendency amongst international donors and organizations to assume that sectoral ministries will agree to apply IWRM if only they can come up with the right institutional set-up and mechanisms of implementation. Incorporating the issue of bureaucratic reform as an integral part of IWRM discussion can be an important first step to change the rules of the game with regard to IWRM implementation in particular, and the way development assistance is shaped by donors and government agencies in general. The issue of bureaucratic reform remains uncovered in IWRM discussions primarily because the sectoral ministries and international donors share common interests in directing IWRM policy formulation and implementation following a 'business as usual' mode of operation (Araral, 2009), often manifested in donor-funded 'IWRM projects'.

Acknowledgements

We thank the CGIAR Research Programme on Water, Land, and Ecosystems for its financial support of the International Water Management Institute in conducting this study. The study design, data collection, analysis and interpretation of the result were exclusively undertaken by the authors. We thank one anonymous reviewer and Dr. Prachanda Pradhan for providing constructive feedback on the draft manuscript.

Funding

This work was supported by the CGIAR Research Programme on Water, Land, and Ecosystems through its financial support of the International Water Management Institute.

Disclosure statement

No potential conflict of interest was reported by the authors.

Note

1. See Grigg (2008), Jeffrey and Gearey (2006), and Petit and Baron (2009) for the origin of IWRM as a conceptual framework in water resources management. While the Mar del Plata conference in 1977 marked the introduction of IWRM concept at the international level (Biswas, 2004), it was only after the 1992 Earth Summit held in Rio de Janeiro and the Dublin Conference (ICWE (International Conference on Water and the Environment), 1992) that IWRM gained significant international weight and global importance.

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