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Enabling environment for implementing IWRM in Bangladesh: A Policy Network Perspective

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Abstract: Integrated Water Resources Management (IWRM) is being implemented since 1990 to solve the water problems of Bangladesh. However, due to the environmental, developmental, and administrative challenges, the effectiveness of IWRM implementation is hampering. Bangladesh Government has formulated the National Water Policy (NWPo, 1999) and Water Act (2013) to reduce these challenges. Although both policies are significant in this regard, some contradictions in the policy are hindering its implementation. While some administrative problems are acknowledged in the literature, little empirical research has been undertaken to provide insights into the strengths and weaknesses of the policy development processes and the implications for IRWM implementation. This paper uses Policy Network Analysis (PNA) to explore how the water policy development process affects policy implementation. This paper uses semi-structured interviews and document analysis to comprehensively understand how both policies were developed in Bangladesh, offering insights into how actor interactions support or hinder policy development and implementation. Research findings show that the policy development process is defined as flawed as some important water actors are not included in this process, and cooperation among the actors involved is not valid. There is a problem in power practice as the included actors do not have the same resource provider capacity, which has increased the interdependence of the minor actors in the policy network. Flawed policy process and the absence of local communities (women and NGOs) have blurred the rules and regulations regarding the mandate and responsibility of actors who affect the policy implementation.

In some cases, disclaimer rules and regulations limit the actor's access to the policy network processes. Findings suggest that a revision of existing policy and Act is needed to support an improved enabling environment for effective policy implementation in Bangladesh. Such an amendment needs to adequately consider the interactions, roles, and power of IWRM actors, highlighting the need for further study to identify adequate institutional arrangements.

Keywords: Water Policy, Water Act, Policy Network Analysis, IWRM, Enabling Environment

Introduction

Since independence, there has been a concern about the misuse of water resources and associated inequitable environmental and socio-economic consequences in Bangladesh (Giordano & Shah, 2014; Rasheed, 2011). Since the sustainable development of Bangladesh is involved with the water sector, a comprehensive mitigation strategy is needed for adequate water resource management (Gain et al., 2017a). For decades water experts have been attempting to implement IWRM in developing countries like Bangladesh due to its perceived capacity to address long-term water security crises (Bandaragoda & Babel, 2010; Gain et al., 2017b). Like many other developing countries, following recommendations of several summits and conferences (e.g. United Nations Water Conference, 1977; The Dublin Conference on Water and Environment, 1992; Rio Summit on Environment and Development, 1992), Bangladesh commenced Integrated Water Resources Management (IWRM) in the early 1990s with diverse outcomes

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(Biswas, 2008b; Chowdhury, 2010; Das Gupta et al., 2005; Gain et al., 2017a; Rahaman & Varis, 2009; WARPO, 2015). IWRM provides the mechanisms and drives to improve water management and water governance activities, reforming water agendas according to countries development needs (Biswas, 2004; Gain et al., 2013; Rouillard et al., 2014). However, its implementation in Bangladesh has been hampered due to environmental, developmental and administrative challenges (BIDS, 2014). As identified in the literature, an appropriate enabling environment (e.g., policies, legislative framework, and financing structures) can help address these challenges and support effective IWRM implementation (Chowdhury, 2010; Rasheed, 2011; WARPO, 2015).

The Government of Bangladesh (GoB) has developed a significant legislative environment to enable IWRM, including the National Water Policy (NWPo, 1999) and the Water Act (2013) (MoEF, 2012; MoWR, 2013; WARPO, 2015; World Bank, 2017). The NWPo sets the ground rules for water allocation to different users, water rights, pricing, and environmental safety (Gain et al., 2017b; Rasheed, 2011; WARPO, 2001). The Water Act provides integrated development, management, distribution, use, protection, and conservation of water resources (Cook, 2010; MoP, 2010; MoWR, 2013; Muller, 2010; WARPO, 2015). The NWPo is conceded as being a practical and reasonable approach to enable IWRM by considering basic IWRM principles (e.g., economic efficiency, social equity, and equilibrium of ecosystems) (Gain et al., 2017b; Rasheed, 2011; WARPO, 2001). Despite this, and the positive intentions of the GoB in developing the NWPo and Water Act, their influence on the IWRM implementation has been hindered by both the inefficient processes used to create the policy and the Act, and their content (Alam, 2014; Gain et al., 2017a; Gain et al., 2013; Rahman, 2014; Rouillard et al., 2014; WARPO, 2015; World Bank, 2017). Although the adverse impact of these public administration processes on policy implementation is acknowledged in the literature, very little is known about the details of the water policy and Act development processes and how these directly impact IWRM. This paper provides a critically analyze the methods used to develop the NWPo and Water Act to understand better the strengths and weaknesses of the policy development process (reflected in the policy contents) and how they affect IWRM implementation.

Using Policy Network Analysis (PNA), this paper focuses on a critical analysis of how actors interact within the development process, providing insights into how actors drive and limit the water policy and water Act development and consequently policy implementation in Bangladesh. The specific objectives of the paper are to:

i. Describe how the National Water Policy (NWPo, 1999) and Water Act (2013) were developed.

ii. Describe who was involved in the development of the policy and Act; were any actors or interest groups excluded from the development process, and why?

iii. Identify how the actor's interaction affect the policy development processes and, consequently, effective policy implementation.

Before critically analyzing the policy development process, the paper first briefly describes IWRM and Policy Network Analysis (PNA). Following this, document analysis and semi-structured interviews were used to explore the development of the National Water Policy (NWPo, 1999) and the Water Act (2013); and their impact on the IWRM

implementation. Actors in water policy and act development processes are described, providing insights into how their interaction assists the development process and IWRM implementation. An analysis of the consequences of interests being left out in the policy and act development process is then provided, highlighting their influences on the performance of IWRM. Improvements to water development processes are identified in the concluding remark highlighting what is necessary to improve the enabling environment within Bangladesh to support the effective and legitimate implementation of IWRM.

IWRM in Bangladesh

IWRM is best understood as an umbrella concept which encompasses many principles which enable a holistic and coordinated management approach across the different aspects of water resources systems (Foster & Ait-Kadi, 2012; Gain et al., 2013). Defined as *"a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems"* (GWP, 2000, p. 22), IWRM is an open and flexible approach that can handle multiple and cross-sectoral stakeholders to solve specific water challenges (Bandaragoda & Babel, 2010; Benson et al., 2015; Biswas & Tortajada, 2010; Biswas et al., 2005; Gain et al., 2013; Rahaman & Varis, 2009).

The IWRM definition given by the GPW highlights the three principles (economic efficiency in water use; equity and social justice; and environmental sustainability) that together act as the overall IWRM framework (Bandaragoda & Babel, 2010; Benson et al., 2015; Biswas et al., 2005; Chadwick & Datta, 2003; CSIRO, 2014). Based on these three principles, IWRM uses three 'pillars' to properly implement IWRM (Biswas, 2008a; GWP, 2000). The first pillar is the *enabling environment* which is the focus of this paper. The enabling environment includes the policies, legislative framework, and financing structures that support the implementation of IWRM. A proper enabling environment is essential to ensure the rights and assets of all stakeholders (individuals and as well as private and public sector organizations and companies), and also to protect available assets such as intrinsic environmental values (Alam & Quevauviller, 2014; Albert, 2001; Das Gupta et al., 2005). The enabling environment can create (or hinder) opportunities for the other two IWRM pillars, institutional framework, and management instruments, highlighting the importance of the enabling environment for effective IWRM. The second pillar, *institutional* structure, relates to the organizations and networks developed to implement IWRM. The third pillar, *management instruments*, capture the discrete methods, processes, and procedures that enable IWRM to be implemented, providing information to help decision-makers make rational and informed choices between alternative actions (GWP IWRM Toolbox, 2001). The purpose of the policy and Act as part of the enabling environment is to support the IWRM implementation. The problems and inconsistencies resulting from creating water policy and Act in the inefficient development process must impact IWRM.

With the future development of Bangladesh inextricably linked with the water sector, Bangladesh adopted IWRM in the early 1990s with mixed results (Biswas, 2008b; Chowdhury, 2010; Das Gupta et al., 2005; Gain et al., 2017b; Rahaman & Varis, 2005).

Recognizing the importance of IWRM, the GoB has developed many policies, programmes, and procedures to ensure enabling environment for IWRM implementation (Debnath, 2016; Dewan et al., 2015; GoB, 2013). The policy and Act's development was a significant step in providing an appropriate water governance system, with several IWRM projects completed and many ongoing (see https://www.bwdb.gov.bd; http://www.warpo.gov.bd). The Act provides a solid basis to the NWPo to support IWRM by granting water resource rights to user groups, organizations, and associations, facilitating the best possible use of water resources and nature conservation (Alam, 2014). In addition to the Act, several national development goals (e.g. poverty reduction, food security, gender equality, water pricing, access to safe water, environmental sustainability, etc.) have been considered in other substantial GoB policies, including the National Water Management Plan (NWMP), the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) and the sixth Five Year Plan (Cook, 2010; MoP, 2010; MoWR, 2013; Muller, 2010; WARPO, 2015), further strengthening the enabling environment for effective IWRM. While the collective impact of these multiple policies on IWRM is essential, this paper focuses on the NWPo and Water Act to provide a nuanced understanding of the influence of actors on the policy and act development and support improvements in the Bangladesh IWRM enabling environment. Policy network Analysis (PNA) will help explore the actor's influence in the development process of policy and Act, providing insights into how involved actors contribute to, or hinder, the development process and consequently IWRM implementation in Bangladesh.

Policy network Analysis (PNA)

A policy network is a form of interest group intermediation focusing on the relationship between the state and stakeholders (Arts & Van Tatenhove, 2006; van Tatenhove et al., 2000). PNA offers new problem definition procedures and identifies policy instruments to help manage policy networks developed to solve policy problems (Alam & Quevauviller, 2014; Benson, 1982; Chadwick & Datta, 2003; Chowdhury, 2010). The concept of policy networks was introduced to the study of public policy in the mid-1970s through the work of Scharpf (1978). Then it grew in popularity and has been used to analyze policy-making processes and implementation across various sectors and geographies (Ball, 2012; Ball & Junemann, 2012; Kikert et al., 1997; Klijn, 2009; Marsh & Rhodes, 1992). Given this, PNA provides a useful analytical tool to explain the nature of links and interactions among actors and a new technique to manage policy formulation processes within complex interactive situations (Klijn, 2005) such as IWRM.

Marsh and Rhodes (1992) argue that characteristics analysis of the policy network under PNA has an idea about the possible difficulties in implementing that policy. Three key characteristics of policy network analysis are helpful to analyze actors and how they support or hinder policy development processes: a) actors involved, b) rules and regulations; and c) power relations and resources dependencies within networks (Rhodes, 1990, 2006; Rhodes & Marsh, 1992; Rhodes, 1986; Waarden, 1992). Each of these is described in further detail below.

Actors within the policy networks

The actor's characteristics affect the policy development and implementation process (Peterson, 2003). The policy development process is better through appropriate actor

selection, which has an apparent effect on implementing that policy (Börzel, 1998). Challenges can be created during any policy development process due to the absence of actors relevant to the networks and less cooperation and unrealistic bargaining amongst actors (Klijn et al., 1995). Actor performances can be assessed at the policy outcome level by analyzing how involved actors support the development process to produce high-quality policy. Also, the development process was hampered due to left out interests (Fischer & Miller, 2006; Marsh & Smith, 2000; van Tatenhove et al., 2000). The role of the actor's in policy development has a far-reaching impact on that policy implementation (Klijn & Koppenjan, 2000). Even if there are proper rules and regulations, later, such policy output is not sound even the kind of work done following this policy.

Rules and Regulations within the policy networks

Policies are rules that an organization makes to achieve its aims and goals. Regulation is considered a restriction imposed by authorities to make people follow the desired code of conduct. Rules can be formal or informal; for example, they could be a set of guidelines with little or no consequences depending on the person enforcing them (Klijn & Koppenjan, 2000). The network rules are not fixed but can change in response to different situations (Koppenjan & Klijn, 2004). The regulation provides the frameworks agencies use when developing rulemakings by setting guidelines for developing and implementing policy or Act (Megdal et al., 2017). Rules and regulations guide the actor's behaviour, including resource distribution and interactions between actors (Klijn et al., 1995; Marsh & Smith, 2001). Klijn and colleagues (1995) argue that both rules and regulations can specify the mandate, power and responsibility of involved actors based on deciding policy development, adjustment and implementation stages (Waarden, 1992). The effectiveness of policy networks will be significantly impacted without the proper specification of actor mandate and responsibilities, which are guided by the rules and regulations (Hu et al., 2019; Tejada-Guibert et al., 2015).

Power Relations and Resource dependencies within the policy network

Typically resources include money and knowledge (Marsh & Smith, 2000), although information can also be exchanged as a vital resource. Power is a relational concept that considers the actor's ability to support a policy network from its development to implementation phases (Marsh, 1998; Peterson, 2003). Power distribution and resources within a network affect the policy outcome and influence how the policy develops. The success or failure of the policy development depends on the actor's ability to provide resources, what Rhodes (1986b) has termed 'power dependencies'. Though actors are mutually interdependent in terms of their aid exchanging capacity (Peterson, 2003; Waarden, 1992), the authority of resource providing refers to the power of an actor (Leroy & Arts, 2006). The wide variation in resource supply affects the power balance of the policy network (Klijn & Koppenjan, 1999). Usually, providers of these primary resources dominate the network, influencing network rules and behaviour; hence the distribution of resources between actors within a system affects the policy outcomes (Leroy & Arts, 2006) with power balance among actors significant when developing effective policy. At the same time, the type and size of the network, together with its administrative characteristics and the degree of centralization, also can play a vital role in shaping power relations within a network (Fischer & Miller, 2006). With this

understanding, we can better determine the resource, mandate and responsibility, and interdependency amongst actors within the policy network.

The paper recognizes the utility of policy networks better to understand the challenges within the Bangladesh water policy environment. Using the PNA framework initially developed by Marsh and Rhodes (1992), the paper focuses on the three main network characteristics: actor traits (types, numbers, interests), network rules and regulations, and actors power relations and resource distribution to develop a comprehensive and critical understanding of policy development and implementation in Bangladesh.

Data and Methods

Interviews and document analysis were both used in this study. In-depth semi-structured interviews with 30 water professionals and experts were completed, including crucial informants from government organizations (25) and NGO representatives (5). Interview respondents were asked according to the PNA framework (e.g., actor types, numbers, interests, network rules and regulations, actors power relations and resource distribution), focusing on how IWRM implementation is influenced by the policy and act development processes. Interviews were undertaken with water management professionals (BWDB and WARPO) and experts (CEGIS, IWM, BARSIK), lasted up to 45 minutes in duration and were recorded and transcribed following the approved ethical protocols (HREC-20180367).

In addition to the interviews, documents were collected from professional water management organizations, government agencies, private institutions, relevant non-governmental organizations (NGOs), and funding bodies where appropriate. Materials include government notifications, public records, various policies from the national organization in detail by referring to multiple government publications and reference books, journals, published data from time and other statistical data, media reports etc., regarding water resources management of Bangladesh. Documents were collected directly from institutions[1] that were involved in preparing both Water Policy (1999) and Water Act (2013) and currently working with IWRM implementation?

Thematic analysis of the collected transcripts and documents was guided by the PNA approach, identifying actor characteristics, impacts of rules and regulations, examples of power relations and resource distribution, and actor dependencies and their impacts on IWRM implementation. The thematic analysis enabled an exploration of the properties and dimensions of PNA categories, identifying relationships between types, and uncovering different patterns between groups. To maintain the anonymity of study participants, quotes from interviewees are attributed numerically based on their place of, e.g., WARPO 1, BWDB 1, CEGIS 1 etc.

[1] Water Resources Planning Organization (WARPO), Local Government and Engineering Department (LGED), Bangladesh Water Development Board (BWDB), Institute of Water Modelling (IWM), Ministry of Environment and Forest (MoEF), Centre for Geographic Information Systems (CEGIS), NGOs and academic institutions.

Development of the National Water Policy (1999) and the Water Act (2013)

The National Water Policy (NWPo) is the first step towards IWRM implementation in Bangladesh (Mainuddin, 2003), guiding water resource management through all relevant ministries, agencies and local bodies (WARPO, 2000). The Water Act 2013 is the latest and most crucial water policy in Bangladesh, developed by the MoWR to ensure development management, exploration, distribution, use, protection and conservation of water resources (WARPO, 2015; World Bank, 2017). The Act is applicable for the surface water, groundwater, seawater, rainwater, and water in the atmosphere in the territory of Bangladesh (Gain et al., 2017a; Pal et al., 2011). The Act absorbs contents from previous water regulations and supersedes all previous water-related policies, which is the source of some inconsistency of the Act that influences the effective IWRM implementation (Alam & Quevauviller, 2014; Chowdhury, 2010). Water Act (2013) is the latest water policy based on NWPo (1999), and the development process is the same. Therefore, for the convenience of discussion, all the analysis will be done by mentioning both policies as 'water policy'. Why and how such difficulties and inconsistencies have been created during the policy development process and their impact on the policy implementation, the purpose of this paper is to analyze these according to the PNA framework.

Discussion and analysis of the water policy and Act development process using PNA

This section discusses how the actor's interaction relationships affect policy development and implementation following the PNA framework. Here we identify which actors were included and excluded from the policy development process and the consequences of this inclusion or exclusion. Actor interactions and relationships within the policy are discussed, specifically those supporting and hindering the development process. Finally, how the policy development process affects policy implementation is addressed in the framework of the PNA.

Actor's role in water policy and water Act development

The subject matter of this section is how the actor's involvement and performance influence the development process of the water policy. First, we identify who was included or excluded from the policy development processes before critically analyzing how their interaction affects that process.

Bangladeshi officials and local experts prepared the water policy without foreign experts, operational water managers or water disaster victims (BWDB, 2016; WARPO, 2015). As water regulators, officials of the Ministry of Water Resources (MoWR) were involved in the developing process from beginning to end, where WARPO and BWDB have worked as supportive institutions. The development process used a top-down approach that prevented local actors from involving and the cost of foreign actors (World Bank, 2017). Several difficulties and inconsistencies have been created during the policy development process, as some important Bangladeshi water actors are not involved, like what Gain et al. (2017) found:

> "…BWDB and WARPO were involved with MoWR in that process as key water bodies; however, due to some important left out actors[2], The policy could not absorb multidimensional concepts that were the sources of a few inconsistencies of policy contents. It was a great mistake. After completing each project, we find some challenges that come from the development process." (WARPO 5, interview)

The opposite picture also emerges from the interview results:

> "…the policy and Act, which included all water actor's, was time-consuming and costly. Instead, I think it is better to review the policy and act based on the outcome of the implemented water projects. In this case, the experience of other countries can be taken into consideration." (CEGIS 2, interview)

The centralization of the development policy was also identified as a blockage. Despite these groups being left out, industry and community stakeholders are not commonly part of policy discussions in Bangladesh, including the water policy, though they are major impacted and impacting groups with water governance mechanisms (Rasheed, 2011). Political influences and pressure on individuals and departments created a closed policy development environment, with community groups perceiving that their views were not taken into account during policy setting processes, and complaints were not visibly dealt with (GoB, 2013):

> "…community stakeholders and industrial actors did not have the opportunity to contribute to the policy development process due to their absence. However, taking their views on the review process will make the policies much more realistic and increase the success rate of policy implementation." (BARSIC 1, interview)

An essential part of water policy development was to absorb contents from the previous water-related policy. Despite the best efforts of BWDB and WARPO, there are some contradictions in the policy content due to the absence of the representative of women and local NGOs, similar to what Rasheed (2011) found:

> "…indigenous knowledge often plays an important role in policy implementation at the local level, which can only be obtained from women and NGOs. The role of indigenous knowledge in the emergency water crisis period is much more fruitful. Due to the absence of these actors in the policy development process, indigenous knowledge could not be properly incorporated into the policy content. This should be considered very seriously in future policy reviews." (CEGIS 1, interview)

The acceptance of the policy would have increased if the important actors left out of the policy development process were included. Policy rules and regulations can play a vital role in minimizing the contradictions that result from flawed water policy development processes.

Rules and regulations to the policy and Act development

Here is a detailed discussion of how flawed policy development processes affect policy rules and regulations. Due to the poor policy development process, some rules and

[2] Bangladesh Haor & Wetland Development Board (BHWDB), Institute of Water Modelling (IWM) and Centre for Environment and Geographic Information Services (CEGIS), Department of Agricultural Extension (DoA), Bangladesh Agricultural Development Corporation (BADC), Barind Multipurpose Development Authority (BMDA), Local Government Engineering Department (LGED), Department of Public Health Engineering (DPHE); and Water and Sewerage Authority etc.

regulations remain contradictory, affecting the actor's mandate and responsibility, similar to what Alam (2014) found. The water act is broadly a firm policy; however, policy documents are sometimes unclear about the mandate of individual water institutions. There are contradictions in a scope where it is unclear which agency is responsible for implementing particular activities (Gain et al., 2017a). Waterbodies cannot function properly because the actor's responsibility and mandate are not adequately defined in the rules and regulations, even if the main waterbodies struggles to meet their responsibilities (World Bank, 2017):

> "…WARPO, as an institution, has challenges in terms of unclear mandate and responsibility. WARPO is the apex body of the water sector, and it is responsible for providing clearance to any project related to the water sector. However, the Planning Commission approves more than one thousand projects yearly, and it is difficult to call upon WARPO in every project approval meeting. WARPO is unable to properly maintain its responsibilities due to lack of workforce and resources."
>
> (WARPO 12, interview)

WARPO is facing some more difficulties in fulfilling its responsibility due to contradictions created during the policy development process (Alam, 2014):

> "…WARPO is the main body to implement the Water Act 2013, the latest water policy; however, there is no specific clause regarding the financial mechanisms for this implementation. Also, the policy has not provided any guidelines on the institutional setup of WARPO. For example, the policy does not specify which institution will ensure the Environmental Quality Standard (EQS); is it WARPO or Department of Environment (DoE)?" (WARPO 13, interview)

Water Act is the latest water policy, which absorbs content from previous water regulations and supersedes all previous water-related policies[3] (GoB, 2013). Occasionally confusion over linguistic translation leads to confusion about the responsibilities described in rules and regulations (WARPO, 2015). Due to which involved actors try to impose their duties on each other, in contrast to GoB (2013). This has adverse effects on policy implementation:

> "…there are some serious policy gaps where the policies have been translated or interpreted. For example, the Bangla version of the water act (2013) states that safe drinking water for all will get priority; however, the wording in the English version of this water act is unclear. Therefore, according to the water act, the government is not legally obligated to ensure safe drinking water in the coastal area where there is no source of drinking water." (BWDB 7, interview)

The regulations of the water policy provide the legal framework for the water-related organizations to provide essential services to the threshold area (Gain et al., 2015). In this case, the service may be interrupted due to the conflict of policy regulations with the service provider regulations. A prominent water actor can take the initiative to enhance the policy regulations based on data collected from affiliated organizations:

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[3] The Disaster Management Act 2012, Integrated Small-Scale Irrigation Policy 2011, Coastal Development Strategy 2006, the Coastal Zone Policy 2005, National Policy for Safe Water Supply & Sanitation 1998, Environment Conservation Act 1995, National Forest Policy 1994, Groundwater Management Ordinance 1985 and the Forest Act 1927 (WARPO and BWDB, 2019).

> …drinking water and water pollution provision not adequately reflected in the water Act regulations that create contradictions in Dhaka Water Supply and Sewerage Authority (DWASA) responsibilities. Consequently, DWASA cannot supply safe water in city areas where the public sector is legally responsible for drinking water. To ensure developing effective regulations, WARPO may seek necessary data and information from DWASA, DPHE, BWDB etc. Once data is collected, WARPO could decide the threshold of using surface and groundwater based on a complete situation analysis.
>
> (WARPO 11, interview)

Rules and regulations play a vital role in policy implementation. Therefore, the existing inconsistencies in the rules and regulations usually caused by the policy development process are not reduced; the policy effectiveness will decrease. The existence of contradiction rules and regulations related to the mandate and responsibility of the actors has a significant impact on the resource distribution amongst actors. This has an apparent effect on the actor's dependence and power relation.

Power relations and resource dependency on policy development

Though the latest water policy covers several key water issues very well, some critical issues, including actors power practice in terms of resource exchange and actor interdependency, were inadequate or occasionally missing due to inconsistent rules and regulations (Chan et al., 2016). The nature of the resource distribution of the actors involved is just as essential as the absence of some vital actors behind the flawed policy development process (WARPO, 2015). Funding and knowledge are considered crucial resources to the policy network. The power of actors in the policy network depends on their ability to provide. Although there is a continuous interdependence in the policy network, the power practice of actors with unequal assets creates more interdependency amongst actors within the water policy network, which has far-reaching effects on policy implementation (Gain et al., 2017a):

> "…MoWR, BWDB and WARPO were involved in the water policy development process. However, not everyone had the same resources. Due to the low resource capacity of BWDB and WARPO, in most cases, MoWR has taken important decisions in this development process. As a result, more and more interdependent tendencies are observed among the actors of water policy" (WARPO 11, interview)

It is clear that the actor's resource providing ability and interdependency are interrelated (Marsh, 1998). A few powerful actors set the rules and regulations they need to have future benefits (Marsh & Smith, 2000). This leads to increased power imbalance and the actor's interdependence within the policy network, which undermines network stability (Medema et al., 2008):

> "…GoB was the main financial resource provider in the water policy development process supervised by the MoWR, where BWDB and WARPO have acted as a supportive institution. As a key actor, MoWR has tried to create rules and regulations with emphasis on the interest of GoB so that the government can directly control other actors in the future. The effect of which can be seen in the policy implementation. For example, without the prior permission of the MoWR local actors cannot take any decision even in an emergency." (WARPO 14, interview)

However, there are contradictory views on the above comments:

> "…Although the MoWR is the dominating actor in the water policy development process, in some cases, it has made excellent decisions in favour of WARPO and BWDB. It arranges an annual budget for both organizations to make their policies as they see fit. Moreover, there are clear guidelines on how these organizations will help each other. In this sense, the policy development process can be considered as satisfactory and acceptable in a broad sense." (BWDB 3, interview)

The inclusion of international donor agencies[4] could play an important role:

> "…the technical support of the BWDB and WARPO was not adequate to the policy-making process. If international donor agencies like UNICEF, UNDP, World Bank, JICA were included, they could have made the whole effort much more effective with their financial and technical support. To increase awareness, they could play a role in incorporating some sections in rules and regulations, so that public, private, academics, NGOs and women representatives could be more involved in the policy process."
>
> (CEGIS 1, interview)

In this case, many have given alternative opinions:

> "…international donor agencies could take good initiatives but tried to control the whole processes, so it was not easy for the GoB to formulate and implement any policy in the future without their help. This would have increased the actor's reliance on international donors, which would have reduced their ability to operate policy independently."
>
> (CEGIS 1, interview)

The water policy development process has been hampered due to the absence of some important water actors. The less cooperation of included actors is also responsible for making this process flawed. MoWR is the only key actor in this process, and there is no other waterbody equal to it. The sole authority of the MoWR is seen in the policy-making decision. This has led to the conclusion of the MoWR to make policy. As a result, other actors like WARPO and BWDB become more dependent on the MoWR, which is unsuitable for the policy. The local community and NGOs have not expressed their views on the 'top-down' policy development, which has affected the rules and regulations. The local community is rich in indigenous knowledge, and local NGOs work on the life and livelihood of the local community. Moreover, any policy's effectiveness is justified by how much the local community has benefited from that policy. Due to the absence of local communities and NGOs, the policy formulation process has been deprived of indigenous knowledge and experience, which could have further enriched the policy.

Recommendations

- Policies related to the water sector need to be reviewed individually, and institutional specifications and overlaps between institutions and policies should be identified.
- Policy interactions and overlaps should be urgently reviewed to understand how all relevant policies can be optimized as an interactive and mutually supportive system of legislation.

[4] United Nations Children's Fund (UNICEF) and United Nations Development Programme (UNDP), World Bank, JICA

- A precise specification is required on the institutional setup of WARPO and BWDB within the water policy.
- A specific clause should be added in the water policy to recommend a suitable financial mechanism for implementation through WARPO.
- When specific local decisions connect to public health, livelihoods or culturally important issues, precise mechanisms need to be created to consult with local stakeholders. This could be done through empowering local decision-making bodies with a multi-stakeholder approach or perhaps by a community impact assessment similar to EIA.
- To ensure effective and practical policy documents, the number of NGO representatives with community water engagement experience could be raised, perhaps to at least two representatives in the National Water Resources Council and the Executive Committee.
- Indigenous knowledge should be incorporated in the water-related policies, and the awareness of the general people should be increased through advertisement on television, radio etc

Conclusion

Water policy development has been completed in the top-down process. It is a source of contradiction which is reflected in the rules and regulations. Actors do not have a clear idea about their mandate and responsibility, so actors have to a variety of problems in fulfilling their obligation. Actors try to impose duties on each other, or some actors take on extra responsibility, which upsets the policy balance. The rules and regulations give some actors additional responsibility beyond their means, affecting the actors' resource distribution and power practice. Some critical issues, including actors power practice in terms of resource exchange and actor interdependency, were inadequate or occasionally missing due to inconsistency of rules and regulations. Resource distribution and power balance would be excellent if some water organizations of equality were included in the water process. Some large water organizations that can provide adequate resources could be involved in this process. This would have led to a balance between power practice and resource distribution, significantly reducing the interdependence of actors in the policy network. International donors and NGOs and local and NGOs and communities could play a crucial role in this regard. Increasing the capacity of relatively small actors included in the policy development process has resulted in a balance between the existing resource supply and power practice in the policy. Since water policy has already been established, and numerous water projects are being carried out following it. So, some contradictory clauses of rules and regulations can be modified under policy review for increasing the effectiveness of the current water policy. The issues that should be considered seriously in the policy review are highlighted in recommendations in the previous section.

Further research is essential to the satisfactory completion of a policy review that can help bring out some crucial options in this policy review. An empirical study will help to properly understand the influences of the policy development process on effective IWRM implementation in Bangladesh. The findings of such research will help all water actors in

Bangladesh align on an accurate roadmap for healthy, sustainable water sector development.

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