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Policy and Institutional Aspects of Water Management in Dhulikhel

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SUMMARY

Dhulikhel Drinking Water and Sanitation Users Committee (DDWSUC), a community-based water management organization has been known for its reliable and good quality drinking water supply system since 1991. Growing population, haphazard urbanization, changing socio-politico-economic contexts, and impacts of climate change have posed new challenges to the local institutions to manage water. DDWSUC along with other water-related institutions have made their efforts to extend its services and manage water sustainably. However, the policy and institutional aspects of water management at the higher level have implications for local efforts towards achieving water security. This chapter unravels the struggle of Dhulikhel on securing water juxtaposing with the national policy and institutional contexts in three distinct political periods: during Panchayat, post 1990s democratic period and Federal Nepal. We find that the policies governing water management had emerged during the Panchayat period but lacked coherent institutional arrangements. In the post 1990 democratic system, the decentralization of power and authorities to local levels created spaces for local water management institutions. Further, Federalism in 2015 provided local government the authority to develop policy and institutional mechanisms and initiate external collaboration for ensuring water security. However, there remain challenges with regard to developing capacity of local water management bodies and other stakeholders. The chapter offers important lessons from Dhulikhel to other municipalities specifically on community-based water management, maintaining relations with upstream communities, and stakeholder engagement.

1. INTRODUCTION

Dhulikhel Drinking Water and Sanitation Users Committee (DDWSUC), served as an exemplary institution to initiate community-based water management practice since 1990s. It was known for quality and reliable supply. However, DDWSUC is facing the unprecedented pressure due to the accelerating water demand. On one hand, rapidly expanding urban settlements and growing population with significant floating population of tourists in Dhulikhel accelerate water demand. On the other hand, the water supply is decreasing due to impacts of climate change. The Roshi River watershed area, that supplies water to three municipalities in Kavre valley including Dhulikhel, is experiencing diminished precipitation pattern and stream flow, with increasing dry spells and decreasing wet spells (Dahal et al., 2019). In this situation, the water management institution is functioning on its limit and is struggling to fulfill the water demand. Recent studies have identified a huge gap between the supply and demand of water in the town. For example, the current water supply has been 1.8 MLD compared to the demand of 3.9 MLD¹. In part, such a high demand of water is because of a large number of floating populations and businesses.²

Policy and institutional arrangements at higher levels play a vital role to cope with the growing problem of water insecurity. Yet, problem also lies with the provisioning of multiple and overlapping institutions and policy arrangements hampering the efficient and equitable urban water management systems (Maskey et al., 2020, Pandey et al., 2019, Ojha et al., 2020a). So, there remain unresolved puzzle, why local level institutional response is limited despite of policy and institutional mechanisms at place in higher levels (Cullet and Gupta, 2009). As we argue, this is largely because of weak institutional capacity and lack of robust system of water planning and governance at local level, as is evident in Dhulikhel (Ojha et al.,

1 Interview on May 24, 2020, Manager and Technical Chief of DDWSUC.

2 Calculation carried out by Chandra Lal Pandey (May 2020) based on WHO recommendation of 130 LPCD water for Nepalese cities \times 32162 (CBS 2011 population estimation and the Municipal population data, 2017) as resident populations without considering the floating population and business water requirements.

2020a). In this context, this chapter unravels the experience of Dhulikhel drawing attention to policy and institutional context of water governance in Nepal.

The chapter draws from the qualitative research approach in which the insights are drawn through in-depth interviews, transect walks, participatory observations and water forums (*Pani Chautari*)³. Altogether, 15 in-depth interviews were conducted, and the authors participated in six water forums and Drinking water general assembly. Secondary sources including journal articles with specific research in Dhulikhel and other relevant articles, policy documents focusing on water management, annual reports and municipal plans were reviewed. The history of water-related institutional and policy aspects was traced from literature review and in-depth interviews with key informants and their relations in Dhulikhel's context was linked. In the following sections, we analyse the water management related institutions and policies in three distinct timeframes- during Panchayat, development after 1990s as Democratic era and after Federalization. The initiatives the city has taken and the vision the city has adopted have salient features to inform policy and institutional aspects of water management to other cities of the Himalayan region.

2. WATER INSTITUTIONS AND POLICIES IN NEPAL

Nepal has long experience of traditional and community managed water management practices such as *Raj kulos* (irrigation canal), stone spouts, ponds, wells and lakes. Nepal's Five-Year Plan (1956-61) initiated modern planning and development of public water supply and sanitation in Nepal. The Water Supply and Sewerage Board, established in 1973 under the 1957 Development Board Act, was followed in 1985 by the establishment of the Water Supply and Sewerage Corporation under the Corporation Act of 1965. The Department of Water Supply and Sewerage (DWSS) was established in 1972 for the management and maintenance responsibilities. One of the important developments was the establishment of Nepal Water

3 Water forum is a common platform with relevant stakeholders for discussion on water related issues and identifying the solutions, linked to traditional practice of gathering people informally for discussing social issues.

Supply Corporation (NWSC) in 1990 which was responsible for drinking water supply.

Nepal's political transformations towards inclusive democracy since the early 1990s devolved power locally compared to the rigid centralized model of Panchayat system. It provided the freedom to citizens to raise their voices and concern through multiple ways and the major water-related legislations were formulated in this period.

The 1990 political change marked an important policy departure towards decentralized water governance. The Water Resources Act⁴ was formulated in 1992. This Act vests ownership of water in the State and provisions user rights through licensing process. The Act also set the priority in utilizing the water resources with Drinking Water having the first priority regarding utilization of water resources. Water Resources Regulation (WRR) 1993 and Drinking Water Regulation (DWR) 1998 are the two relevant regulations for drinking water that were issued under this Act. These regulations govern the Drinking Water User Associations, drinking water quality and drinking water supplies. Drinking Water Regulation (DWR) 1998 regulates the use of drinking water via different management systems: Corporate bodies, Water Users Associations and Individuals. In the case of community managed systems, Water Resources Regulation (1993) provisioned the District Water Resources Committee (DWRC) headed by the Chief District Officer to register the water user committees while tapping water from a particular source. The enactment of Local Self-Governance Act in 1999, provisioned power to the local government units to prepare, construct and maintain drinking water projects for the supply of drinking water to the communities.

Another major departure in institutional arrangement was introduced with the formulation of Water Supply Management Board Act (2006). This act provisions Water Supply Management Board as an autonomous body that can own, build, expand and finance the infrastructure that is required for drinking water services in Nepal. It can manage the service system within one or more than one municipality, being operated by any government body or Corporation.

4 Water Resource Act is the main legislation for drinking water.

There has been further progressive development in policies and institutions in the recent five years. The promulgation of Constitution of Nepal (2015) has added a new dimension to local governance from the perspective of local autonomy. The 2015 Constitution adopted federal governance, with three tiers governance system i.e., Federal, Provincial and Local. The Constitution envisions policy regarding the conservation, management and use of natural resources. It has provided the scheme of distribution of power among the Federal, Province and Local levels; devolved power and resources to the federal level and given autonomy for the local institutions. It also mandates the federal government to conserve water resources and develop policy and standards for multi water uses, and provincial government to manage water resources within their provincial jurisdiction.

The federal restructuring has empowered the local governments and opened window of opportunities for effective management of water resources. The opportunities lie with the authority provided to the local governments for developing required water and sanitation Acts and Policies for water management and sanitation within their jurisdiction. However, despite having many institutional and policy making provisions in three levels of government, there still lie an array of challenges for urban water security.

Further development includes Local Government Operation Act (LGOA 2017) that replaced Local Self- Governance Act (1999). LGOA (2017) provides the legal framework for local government to operate and provides authority to the local government to prepare legislations related to drinking water. The sectoral policies, particularly developed after 2015 under the Federal structure [National Urban Development Strategy (NUDS 2017), LGOA (2017) and National Adaption Plan (NAP)] are found progressive regarding sectoral linkages while the sectoral policies prior to this were not effectively interlinked and had disconnected themes of urban-water-climate issues (Maskey et al., 2020).

In the following section, we discuss the context how different institutions emerged in the water management regime in Dhulikhel and the challenges they are going through.

3. EVIDENCE AND ANALYSIS

In this section, we present the analysis of the water management related institutions and policies of Dhulikhel in three distinct timeframes. Firstly, we discuss about the institutional arrangements and policies in managing water during the time of Panchayat. Next, we discuss the development after 1990s and water management challenges, in relation to the development of policy and institutional mechanisms in democratic context. And lastly, we focus on development after new local government and discuss the federal policy reform and the state of ambiguity.

Dhulikhel's struggle in water management in relation to higher level policy and institutional dynamics

Panchayat era

During the Panchayat period, a single party-political system was functional under the direct rule of the Monarch. The Village Panchayat Act 1961 gave judicial power to the Village Panchayats (village councils) and were authorized to exercise powers to hear cases relating to encroachment of water outlet, embankment of water resources and irrigation water and others. Village Panchayat also functioned as decision making authority with its involvement in negotiation process for bringing water to Dhulikhel from Bhumidanda. In Dhulikhel, the head of the village was led by the Pradhan Pancha, elected Chairperson of the Village Panchayat. The monitoring of the water usage was also done by an individual mobilized by the Panchayat (see Chapter 2 of this book by Byanju et al., 2021). Prior to 1982, Dhulikhel did not have any systematic water management system while people were dependent on the natural water sources. The first tap water supply in Dhulikhel started through Judha Dhara (1932-1945).

In 1982, the Indian Embassy in Nepal funded the first water project with 27 public taps for Dhulikhel initiating the history of water institutions (Tiwari, 2008). This was known as old water supply system in Dhulikhel. The initiative of 1982 was small in scale and was not able to serve water matching the demand of the time.

Realizing the problem of water rationing, Government of Nepal and Dhulikhel community worked jointly to acquire the support of German Government for the drinking water project to tap water from Kalanti Bhumidanda (For detail about German funded project, see Chapter 2 of this book by Byanju et al., 2021). The project implementation phase began in 1987 and the project was completed in 1991. During the time, Pradhanpanch of Kalanti Bhumidanda Village Panchayat on behalf of upstream community signed the agreement with Pradhanpanch of Dhulikhel Village Panchayat in 1985 (for detail about the negotiation with upstream communities, see Chapter 4 of this book by Neupane et al., 2021) to allow Dhulikhel to tap water from Khar Khola, a tributary of Roshi River (Joshi et al., 2020).

Democratic era

The post 1990 decentralization policies opened space for wider range of institutions in water resource management such as the community groups, local government and private sector, including non-governmental organizations. Dhulikhel Drinking Water and Sanitation Users Committee (DDWSUC) was formed under the provision of Decentralization Act 1981 and later under Water Resource Act 1992, as required for implementing the GTZ project. Both Dhulikhel Drinking Water project and the old drinking water project were handed over to DDWSUC in 1991 and 1993 respectively. DDWSUC was formed in ad hoc bases initially⁵ but after its successful tenure completion in July 1993, first election of the users committee was organized. DDWSUC then continued exercising its democratic process of forming elected user committee. By 2000s, it was a well-established local community-based water management institution and functioned as a responsible local institution for meeting the local demands of drinking water.

The merging of Village Development Committees in 2014 for making Dhulikhel a larger municipality (Pokharel et al., 2018) increased the households and population of the municipality. Further, growing

5 The ad hoc committee was formed to acquire necessary land, supervise construction, help in policy formulation, set up office, take over the project after completion and hold election of the users committee. Source: Dhulikhel Drinking Water Supply Project Document, Case study

urbanization and tourism activities led to increase in water demand. With this, DDWSUC could not provide water services to all the wards of the municipality and its focus remained at the core of city only representing previous wards 2, 3, 4 and 5. DDWSUC could supply water for only seven hours per day in the core while the peripheral areas received daily water supply for less than three hours or even merely 15 minutes (Pandey and Bajracharya, 2017).

Dhulikhel experienced continued struggles in negotiating with upstream Bhumidanda with the adding up of demands and the grievances of local users manifested in different forms (see Chapter 4 of this book by Neupane et al., 2021). People from upstream communities formed Local Concern Committee demanding for inclusive decision making. Likewise, people from outside core Dhulikhel formed Struggle Committee claiming equitable water distribution; and Roshi Khola Concern Group represented local people from downstream raising their compensation demands. Due to inadequate policy framework for upstream-downstream cooperation for securing water in urban areas, Dhulikhel faced continuous challenge of recognition and renegotiation with upstream communities. Often there were contestations. Several meetings and negotiations were conducted and informal agreements with the upstream communities were made to secure water supply.

The socio-political change in the country also affected the negotiation process between the upstream and downstream communities. The agreement process in 1985 was smooth process and the demand from the upstream communities was limited to construction of a school building. But the second negotiation process took nearly 11 years, reaching to an agreement in 2011. With the introduction of multi-party-political system, the negotiation process became chaotic involving a number of actors. The tenure of the local bodies expired in 2002. In absence of elected local bodies until 2017, the overall administrative and development activities at the grassroots level, were handed over to the central government bureaucrats.⁶ During this transitional period, APM (All

6 In the local political vacuum situation after 2002, APM members representing the major political parties at the local levels held the de facto authority for facilitating the local level decisions.

Party Mechanism) were firmly in place. The political leaders of APM took over the local level decision-making practices and were the actors involved in these agreements. APM from upstream played a significant role in negotiation process (see Chapter 4 of this book by Neupane et al., 2021). In the downstream Dhulikhel, Kathmandu University and Dhulikhel Hospital also took over the mediating role and DDWSUC, a well-established local institution was active in the process. In summary, Dhulikhel entered into the formal agreement with upstream with its first agreement in 1985, next in 2010 and third in 2011 bringing together upstream and downstream parties.

The claims and voices of the civil society organizations and upstream communities have led to positive outcomes such as support to upstream communities. A short-term cash-based incentive with NPR one million per year with an increment of NPR 100,000 in every five years was established to support the upstream community. Dhulikhel also supports water mills and irrigation canals in the upstream area. The vociferous claims and voices with better bargaining capacity of upstream communities were possible due to the change in socio-political contexts in the country (Joshi et al., 2020).

The institutional change in water management was introduced with the idea of Water Board in 2006. The implementation of ADB funded Kavre Valley Integrated Water Supply Project (KVIWSP) formed Kavre Valley Integrated Water Supply Board as per the provision in Drinking Water Supply Management Board Act (2006). It envisioned that the existing Water Users Associations, like DDWSUC in Dhulikhel; and Nepal Water Supply Corporation (NWSC) in Banepa and Panauti, would be merged gradually into newly formulated water board. Dhulikhel municipality is interested in bringing DDWSUC and other key water institutions under Dhulikhel Water Board. However, whether the institutions like DDWSUC in Dhulikhel and NWSC in Banepa and Panauti, which enjoyed full autonomy of water management and financial matters, accept the proposal of the municipality is yet to be seen. It is also perceived as a conflict between the Ministries at the federal level. NWSC is under Ministry of Water Supply and Sanitation and KVIWSP Board is under Ministry of Urban Development. The shifting responsibilities among the existing and emerging water institutions has become the standard operation procedure for now (Pandey et al., 2019).

Development after federalization

The Constitution of Nepal (2015) and introduction of Local Government Operation Act (LGOA 2017) have empowered the local government of Dhulikhel with specific powers, including the management of the water resources within its jurisdiction. The local government units were fulfilled by democratizing practices of local election in 2017, which ended nearly two-decade long vacuum in local governments (Acharya, 2018). In line with the Nepal's Constitutional (2015) mandates, Dhulikhel also experienced enabling environment to engage people in promoting the participation of local people and rejuvenating local level democratic institutions such as DDWSUC. Local government in Dhulikhel is now responsible to formulate and approve the plans and promulgate laws on managing water resource.

After 2017 local elections, the local government has developed ambitious plan for securing water adopting the concept of 'one house one tap' within municipal jurisdiction and extended its engagement with diverse actors (see Chapter 2 of this book by Byanju et al., 2021) The municipality has extended its partnership and collaboration with various national and international organizations such as Southasia Institute of Advanced Studies (SIAS), Federal Government, Drinking Water Department, World Wildlife Fund (WWF) and Kathmandu University (KU). To increase the coverage of water supply system in all the wards of the municipality, Dhulikhel municipality has been engaging with various actors, including Panauti and Banepa municipalities to expedite the Kavre Valley Integrated Water Supply Scheme.

The new political context with the elected local representatives has provided municipality the space to lead and facilitate some innovative informal institutional practices and collaborative approaches for securing water. For instance, Dhulikhel municipality has taken the initiative to forge collaboration with research organization by organizing Water Forum to create space for dialogue amongst the key water stakeholders (see Chapter 8 of this book by Devkota et al., 2021). Such an informal platform is evolving and attempting to institutionalize informal institutional collaborative platform or discussion and collective decision-making practices.

One of the concrete actions through the water forum was the decision to construct Climate Adaptive Recharge Ponds — fusion of indigenous knowledge with modern science — for water source conservation. Dhulikhel is also affiliated to global network 'Cities with Nature' and others. Dhulikhel municipality has moved forward formulating municipal strategies as Local Drinking Water Act. In terms of institutional mechanism, Dhulikhel opts for establishing 'Water Council' as an inclusive institutional structure. The council is intended to deal with water related issues of upstream and downstream communities and maintain amicable relations between them. But the idea of Water Council is yet to be finalized, formed and operated.

Despite engagement in multiple efforts to enhance the municipal capacity for urban water management, Dhulikhel is still facing a number of challenges in making itself a water secure city. The major challenges include: the disconnection between ageing infrastructure built for small number of populations to serve the core city, which are wards 2, 3, 4, and 5 only; manifold increase in the urban population and expansion of the jurisdiction of municipality covering rural areas. The water institutions also lack understanding of the changing dynamics due to socio-economic changes and climate change.

Moreover, the major institutional challenge is posed by newly declared Water Board which intend to subsume the existing community institutions. The development of the idea of water board in 2006 has not yet materialized and is still under the state of confusion. Water board has envisioned bigger scale and higher-level mechanisms, but the relations between the existing water management institutions and user committees like NWSC and DDWSUC and newly introduced water board lack clarity. How the existing water institutions will function under the leadership of the municipality is a matter of concern in the situation where the user committees and NWSC are reluctant to function together.

The newly envisioned local platforms like water council and water board may contribute to overcome the competing roles and responsibilities of existing water management institutions and the municipality and address the water issues; but they are also likely to become hostage of duplication. Such institutional interventions

need to envision the implications of formation of multiple institutions as they may instead create confusions and dilute the efficient integrated approach of achieving urban water security.

In summary, despite devolution of power and authority at the local level, the early stage of local government in Dhulikhel, like other municipalities, is facing multiple challenges such as insufficient technical capacity, lack of infrastructure and human resources, limited knowledge and skills in promulgating local laws. There are also confusions and lack of clarity in roles and responsibilities among the three tiers of government in terms of delineation of power and jurisdiction for managing water, and formulation of laws and human resource and budget. Such a lack of collaboration between the three tiers of government amid limited capacity of new local government is posing constraints to manage water sustainably in Dhulikhel.

4. CONCLUSIONS AND WAYS FORWARD

The city of Dhulikhel faces growing water scarcity with increasing gaps between water demand and supply, and servicing of quantity and quality water. This chapter discussed the experience of Dhulikhel juxtaposing the policy and institutional context of water governance in Nepal. In doing so, the chapter analyzed the water management related institutions and policies in three distinct timeframes- during Panchayat era, Democratic era and after Federalization. By doing this, the chapter stress for the importance of water related institutions in effective water governance amid the impact of increasing population, urbanization and climate change.

Firstly, during the Panchayat period, although the policies governing water management had emerged, there lacked coherent institutional arrangements. Most of the water-related problems were handled by the governing bodies and the drinking water mega projects were implemented in absence of clear institutional mechanisms.

Secondly, after reintroduction of the democratic system in 1990, the decentralization of power and authorities to local levels opened up spaces for local water management institutions. Institution like DDWSUC was established and operate in order for meeting local

water needs adopting democratic decision-making. DDWSUC has performed its functions of urban water management successfully since 1990s to recent time. However, it has encountered a number of challenges in meeting supply and demand of water in Dhulikhel fueled by rapid urbanization and declining water flow.

Thirdly, with the development of ADB funded Kavre Valley project, process has initiated to form new institutional mechanism of Water Board. There remains confusion about the future of existing community-based institution of DDWSUC. In Dhulikhel, KVIWSP is progressing smoothly and is expected to be completed by 2022. The idea of Water Board is also meant for governing a range of small-scale water supply projects in rural part of Dhulikhel. The new institutional mechanism, however, may invite contestation and confusion, new challenge of local water management.

Fourthly, with adoption of federal structure, the local government of Dhulikhel became empowered to manage water within its jurisdiction. More devolution after Federalism provided local government bodies even more opportunity to forge collaboration with diverse organizations. It is working towards water security with the ambitious goal of 'one house one tap' within the municipal jurisdiction, which after restructuring has expanded including a few new village development committees.

With the devolution of policy-making authority at the local level, Dhulikhel has initiated formulating municipal legislations as Water Resource Utilisation Act (endorsed in February 2020). However, some of these are beyond the realm of local policy and are guided by federal policy, for instance, the provision of Water Board. Moreover, there are some challenges associated with the new federal structure. At the early stages of the local government, there remain ambiguities about roles and responsibilities across three levels of governments, which may affect Dhulikhel's ambition of achieving water security.

Despite these challenges, prospect to harness the authority provided by the Nepal's Constitution (2015) and Local Government Operation Act (2017) lies with Dhulikhel municipality and all other municipalities of Nepal. We offer below some suggestions for Dhulikhel and the sound practices here can offer learnings to other municipalities

- As managing its expanded services seems beyond the capacity of DDWSUC, Dhulikhel municipality can diversify its water management mechanisms making it accountable to the users. Ojha et al. (2020b) offer valuable insights from Bidur on how small-scale water supply systems and community-based water supply schemes serve as safety net during the time of disaster (crisis). Learning through these practices, Dhulikhel and other municipalities should set priority in considering the conservation of local water sources and valuing the small-scale community managed water schemes along with the large-scale water projects.
- Dhulikhel needs to develop local water policy that can transform the local water management and governance towards more equitable and sustainable water supply across municipal jurisdiction. The idea of Water Board can provide broader governing mechanism but we should not forget the history of existing institutions such as DDWSUC. Further, future governing mechanism such as Water Board should also ensure the inclusive membership with women representation (see Chapter 6 of this book by Upadhaya and Shrestha, 2021).
- Municipality needs to continuously engage with the stakeholders through dialogues such as *Pani Chautari* for engaging with evidence-based policy making. Replication of *Pani Chautari* discussion in Dharan and Diktel offers learnings to other municipalities to promote such forums for dealing with water related issues and opting for solutions.

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