Title: Towards IWRM and River Basin Planning in Nepal: The Bagmati River Basin Experience

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Abstract

In Nepal there is strong rationale for adopting an Integrated Water Resources Management (IWRM) approach to manage its river basins, particularly for the Bagmati River Basin (BRB). The BRB is considered Nepal's most strategically important river basin as Kathmandu, the Nation's political and commercial capital, resides within its headwaters. The BRB shares common characteristics with other main Nepalese basins: high seasonal flow variability between the monsoon and dry seasons; risks from water induced disasters; spatial and temporal water scarcity and trans-boundary sharing of resources with India. However, it is not glacially-fed and faces water scarcity pressures; rapid urbanization and population growth; deteriorating water quality; degradation of the natural environment and strong competition amongst water users leading to frequent water-based conflicts. Currently there is no specific single agency authorized and responsible for managing, regulating and developing the BRB according to the prevailing acts and regulations.

The Government of Nepal (GON) has long sought to address river basin management. The Water and Energy Commission Secretariat (WECS) was created in 1975 with the broad objective of developing water and energy resources in an integrated and accelerated manner. It assists GON with formulating policies and planning projects in the water resources and energy sectors. In 2010-2011, WECS and the High Power Committee for the Integrated Development of the Bagmati Civilization (HPCIDBC) engaged in the preparation of a multi-stakeholder strategic investment road map for the BRB. The road map identifies critical institutional and physical investments to improve water security in the basin including the formation of a River Basin Organization (RBO).

In order to address core priorities of the basin, the Bagmati River Basin Improvement Project (BRBIP) and the Kathmandu Valley Urban Environment Improvement Project (KVUEIP) are currently being designed with ADB assistance. The aim of BRBIP is improved water security and resilience to potential climate change impact in the BRB. Addressing the waste water issue, KVUEIP aims to support ongoing efforts of the GON towards improving wastewater services in the Kathmandu Valley. The BRBIP project design is supervised by WECS through a steering committee with members including HPCIDBC and key basin stakeholders including government departments, NGOs, CSOs and municipalities. The prospect and challenge for Nepal is to implement IWRM and develop a RBO that can support inter sector coordination with clear legal mandates, defined management roles and responsibilities, and sufficient financial and human resources.

Keywords IWRM – Nepal – Water - Resource Management – Water Scarcity - Institutions – River Basin Organization

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1 Introduction

The Bagmati River is a tributary of the Koshi River originating from the Shivapuri hills located in the north of Kathmandu Valley. It flows through the middle of the Kathmandu Valley, where the capital city of Nepal, Kathmandu is located. It has a catchment area of 3,710 km² in Nepal. It flows across the Nepal-India border and eventually merges with the Ganga River.[5]

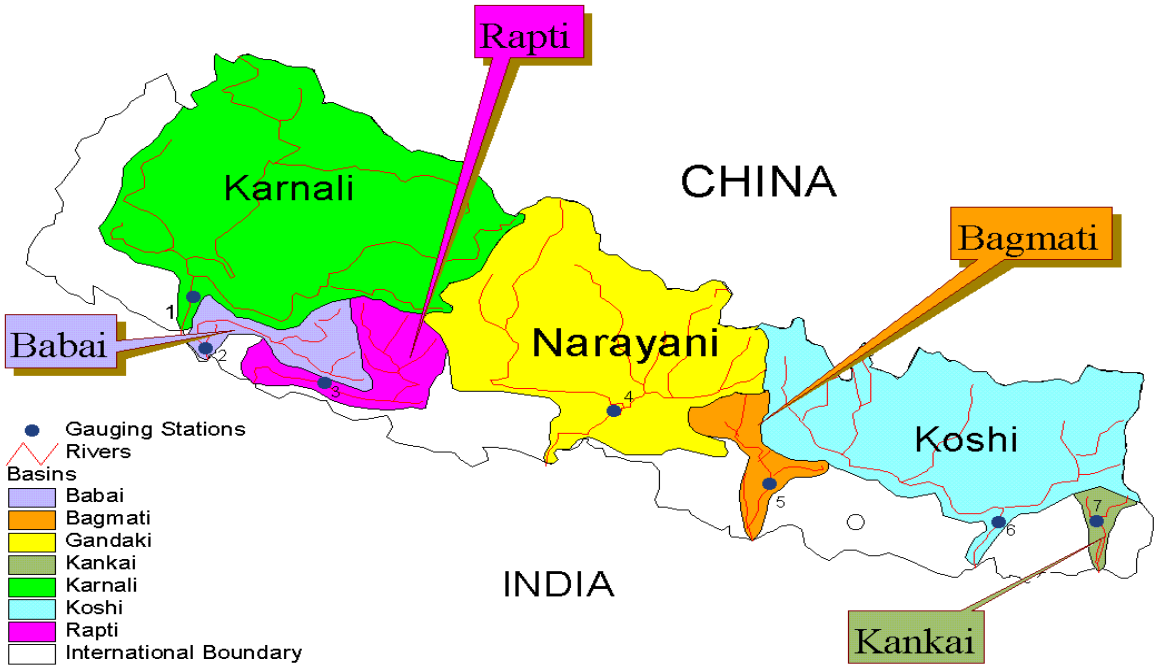

Figure 1: River basins in Nepal

With the capital city located in its upper part, the river basin is both of strategic and economic importance. The Bagmati River also holds a special place in the national culture. It is considered as a holy river and counts many cremation Ghats[6] and temples of great cultural value along its bank which attracts scores of Hindu devotees. The river depends upon seasonal rainfall and natural springs as its main water sources. Its flow is utilized for multiple purposes including water supply, irrigation, religious and cultural uses, industry, power generation, and recreational uses. On one hand, BRB shares some common issues with the other main river basins in Nepal such as: high inconsistency in monsoon and dry season's flows; risks from water induced disasters (floods); spatial and temporal water scarcity; and, trans-boundary sharing of resources with India. However, on the other hand, it has very specific issues such as pollution and river environment degradation due to the high population density in its headwaters.

This paper examines the different issues and challenges present in BRB with special focus on the Bagmati River within the Kathmandu Valley. It outlines Government of Nepal's (GON's) past

[5] HPCIDBC, 2008, *Bagmati Action Plan (2009-2014),* p.1
[6] The term Ghat refers to a series of steps leading down to a body of water, particularly a holy river.

and present efforts for managing the basin and the Bagmati River through its different institutions. Finally, the paper puts forward recommendations for overcoming the identified issues and challenges.

2 Key Issues and Challenges

Major management issues and challenges of BRB differ according to locations within the basin:

2.1 Upper Basin

Unplanned Urbanization: The total population of Nepal currently stands at about 26.6 million. Kathmandu valley alone accounts for approximately one third of Nepal's urban population and one tenth of Nepal's total population. Kathmandu district is the most populated area with population density of 4,408 inhabitants per square kilometer. The population in Kathmandu Valley increased from 0.41 million in 1952/54 to 1.6 million in 2001 and then to 2.51 million in 2011, the year of the last census.[7] However, these figures do not account for temporary residents and it is said that about 4 million people are living in the valley at present. The main factors that entice country dwellers to migrate to Kathmandu include: high level of insecurity caused by the "people's war" during the 10 years conflict 1996-2006; the lack of regional job opportunities (limited industrial and farm jobs); and the lack of basic infrastructure and services in the provinces including limited education and health facilities. Unfortunately the rapid urbanization lacks proper planning and land use zoning which has strongly impacted on the river systems in Kathmandu. The uncontrolled development in semi-urban areas within Kathmandu Valley and associated growing demand for domestic water supply have encroached on water resources that were once primarily allocated for irrigation and the agriculture sector. Nowadays, there is also overexploitation of water by a growing number of industries and the service sector. Owing to these factors, the frequency of water use conflicts has escalated not only among farmers but also among the urban population, service sector and the industrial sector.

Pollution: Most riparian areas of the Bagmati River and its tributaries in Kathmandu are used as solid waste dumping sites of individual houses and municipalities. Some private organizations collecting waste from the households are also found dumping waste directly along the river banks. Furthermore, most domestic and industrial sewage directly discharges into the rivers untreated: there are currently five municipal waste water treatment plants (WWTPs) however only one is functioning, albeit with poor efficiency. Overtime, the steadily increasing population and unchecked disposal of solid waste and wastewater into the rivers have made the Bagmati River extremely polluted.

The supply of fresh water within the Bagmati River is limited and seasonal; during the dry season the river is nearly dry as most flow is diverted for drinking water supply and irrigation. Hence the river's assimilative capacity during the long eight month dry season has been lost. Water quality indicators show a significant degradation as the river flows through the city and the river is now considered biologically dead at Chovar Gorge, the downstream boundary of Kathmandu Valley.[8]

[7] PANT, D. B. 2012, Issues of Urban Governance in Nepal: With special reference to Kathmandu metropolitan. Institute for Integrated Development Studies (IIDS), p. 1. The percentage of urban population increased from 2.9% in 1954 to 13.9% in 2001 and to about 17 % in 2011.

[8] HPCIDBC, 2008, *Ibid,* p. 9

The deterioration of water quality in the upper BRB impacts on the downstream basin where incidents of diarrhea, typhoid, jaundice, cholera and skin disease are now common amongst water users. Such diseases particularly manifest during the dry season when they have no other water supply options other than the Bagmati River to meet their daily demand.[9]

Water Scarcity: Nepal's climate is characterized by three main seasonal periods: (i) dry pre-monsoon season (March–May); (ii) rainy monsoon season (June–September); and, (iii) post-monsoon season (October–February).[10] About 80% of the total annual rainfall occurs during the rainy monsoon season. The BRB also shares this common rainfall pattern and has abundant water during the monsoon period but for the remaining eight months the river flows are scarce. During the dry season, up to 80% of the Bagmati River's flow in Kathmandu is tapped for domestic use, leaving very little flow for irrigation, environment and other sectors. The current water demand of Kathmandu Valley is estimated at 330 million liters a day (MLD) all year round[11] while the current supply is only 137 MLD (surface and groundwater) during the wet season and 70 MLD during the dry season, leaving a shortfall of 193 MLD in the wet season and 260 MLD during the dry season[12]. This shortage has forced some communities in Kathmandu Valley to rely on supply from the polluted river to meet their basic needs which has resulted in similar illnesses to those suffered in the lower basin.. Also, a large part of water for irrigation and other use is supplied from the groundwater.[13]

Over-exploitation of Groundwater: Groundwater is a very important source of water for Kathmandu Valley. However, extreme and reckless abstraction due to supply shortages and groundwater pollution now jeopardizes its sustainable water use. According to the hydrological conditions of the valley and the natural recharge rate of the basin, only 15.6 MLD per day can be safely extracted.[14] However approximately five times that amount is currently being extracted which has led to a severe lowering of the ground water table (up to 90m) and worrisome land subsidence (up to 60cm in Patan over the last 4 years)[15]. Unfortunately, the prime groundwater recharge area of the valley, located in the northern part of the valley is also the fastest urbanizing area of Kathmandu. It impacts the groundwater recharge capacity from two aspects: firstly the growth paves the surface of land and prevents natural recharge; and secondly the local water demand increases, causing accelerated over-exploitation of groundwater resources. The challenge in this context lies in regulating groundwater extraction, the protection of the recharge areas, and providing suitable alternative water sources.

Cultural and heritage sites decay: Within BRB, particularly along the banks of the Bagmati River, are a number of significant cultural, archaeological and historical sites with both national and international importance. The Bagmati River also attracts numerous Hindus and Buddhists from all over the world as it is worshiped as a holy river and contains many cremation Ghats and temples of great cultural value along its bank. For example, the Bagmati River flows through

[9] PAUDEL, A. *Environmental Management of the Bagmati River Basin.* United Nations Environment Programme. p. 276
[10] SHARMA R. H. and SHAKYA N. M. (2005*). Hydrological changes and its impact on water resources of Bagmati watershed, Nepal*. p. 318
[11] Population serviced by KUKL only
[12] JWA, Bagmati river basin profile, 2012
[13] ADB, 2012, *Concept Paper: Nepal, Bagmati River Basin Improvement Project*. p.2
[14] JICA, 1990
[15] Source TA 7547 REG, supporting investments in water security in river basins, supplementary study 2, ground water management in the Kathmandu valley, Japan water agency, February 2012.

one of the major Hindu religious shrine, Pashupatinath, which is also one of seven UNESCO heritage sites.[16]

This river is important from an historic prospective as well: there are many archaeological sites, stone water spouts, temples and historical monuments lying near the river bank.[17] This rich heritage along the river and its tributaries are deteriorating and are in an immediate need for effective restoration, protection and management.

Riparian Encroachment: In Kathmandu Valley, the number of squatter settlements has grown rapidly from 17 settlements in 1985 to 64 in 2003 with the squatter population growing from 2,134 to 14,500 during this 18 year period. These settlements are particularly adverse to the Bagmati River as about 60% are settled along its banks. Resettlement of these squatters is an important issue that requires urgent resolution in consideration of their living conditions and in regard to the impact on the pollution of the river. Along with the squatter settlements, ad hoc construction of stone filled gabion boxes along the river banks, structural encroachment of river banks, and illegal extraction of large volumes of sand significantly impact on the river environment and flow capacity.

2.2 Middle and Lower Basin

Watershed Degradation and Water-Induced Disasters: Deforestation, land conversion and fragile geology are all factors causing soil erosion, landslides and overall watershed and basin degradation. These are increasingly threatening important infrastructure such as reservoirs, barrages, irrigation canals, roads and bridges from flooding and debris carried by the river during the monsoon season.[18] The results of over-exploitation in the upper basin pose serious threats to the stability and sustainable use of downstream infrastructures. A serious example occurred in 1993 when a cloudburst caused heavy flooding and damaged the Bagmati Barrage of the Bagmati Irrigation Project and the Kulekhani Reservoir of the Kulekhani Hydroelectric Project.[19] Furthermore, the damage to human lives and property was immense. It is estimated that over 7.7 million m^3 of sediment was deposited in the Kulekhani Reservoir in three days of rainfall in July 1993, which is very high compared to 1.2 million m^3 of sediment normally deposited each year. The flood also damaged 367 kilometers of roads along with 213 large and small bridges.[20] Integrated watershed protection and management along with a flood forecasting and early warning system need to be in place if further damages to life, property, infrastructure and watersheds are to be minimized.

2.3 Other Common Issues

Lack of finance and infrastructure development: Finance and economic capability plays a pivotal role for achieving any country's development aspirations. Nepal has limited financial resources which must be shared to address many multi-sectoral needs. To address the issues and challenges in the BRB, significant investment in key infrastructures such as dams, bridges,

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16 UNESCO, 2012, Kathmandu Valley: http://whc.unesco.org/en/list/121 Accessed on: 14/12/12

17 HPCIDBC, 2008, *Ibid.* p. 3

18 PAUDEL, A. *Environmental Management of the Bagmati River Basin.* United Nations Environment Programme. p. 271

19 DIXIT A., GYAWALI D. et al, 2009, *Climate Change Induced Uncertainties and Nepal's Development Predicaments*. Nepal Climate Vulnerability Study Team. p. 14 The landslides, floods, and debris flows triggered by the torrential rain of July 1993 claimed 1,029 lives, affected 400,000 people, and damaged 25,000 houses in the Bagmati River Basin and the adjacent areas.

20 DIXIT A., GYAWALI D. et al, 2009, Idem.

sewer networks, wastewater treatment facilities, and formal solid waste disposal sites is required, along with appropriate mechanism for sustainable operation and maintenance.

Institutional Issues: Legislative arrangements are one of the key factors for efficient and successful implementation of the programs and policies. Improving river ecosystems especially in rapidly urbanizing areas like Kathmandu Valley need strong legislative arrangements related to water resources management. There are already a number of existing sectoral legal arrangements (Solid Waste Act, Land Reform Act, Forest Act, Environment Act, Water Resources Act, etc.) that address issues relating to solid waste management, wastewater management, conservation of natural resources, cultural heritage and land-use. However, due to lack of coordination between these sectors and due to the absence of an integrated approach, these arrangements are not focused on managing the basin global issues but rather are scattered and isolated efforts to address them on a piece meal basis. The functions and jurisdictions of responsible government agencies are also not clearly defined and executed.[21] Similarly, there are several government bodies at policy formulation level and a hierarchy of set institutions at the implementation level with mandates to translate those policies and plans into actions. However, mandates and jurisdictions of these institutions are not always clear. Vague mandates lead to duplication of roles, overlapping of duties and responsibilities, and conflict of interest amongst concerned institutions. Most of the water sector institutions were established by the government to address sector specific problems, for example: Department of Irrigation only looks after development and operation of irrigation systems while Department of Water Supply focuses on water supply sector. There is no institution mandated to look after the integrated development and management of water resources at the basin scale. This has led to uncoordinated sectoral development which ultimately minimizes the overall benefits and contributes to the escalation of water conflicts.

The challenge here is to establish a central agency with a clear mandate for coordination between all sectoral development programs to improve their effectiveness and minimize any potential impacts from inter-sectoral conflicts.

3 Opportunities

Major laws, institutions and projects developed by the government for improving the environmental situation of the rivers are briefly described below.

3.1 Acts and Regulations

The GON established the Water Resource Act (WRA) in 1992 in order to address the issue of growing conflicts among competing scarce water users which customary laws were unable to manage. The WRA is the umbrella regulation governing water resource management for safe drinking water, increasing agricultural production, generating hydroelectricity and encouraging consumer and private sector participation. It recognizes the rights of individuals and communities to divert water from sources such as streams, rivers and groundwater to the extent that the extraction does not adversely affect the functioning of existing government irrigation schemes or hydro-power plants. People have water rights enabling them to use resources for creating national assets and contributing to revenue. The setting of water quality standards and provision of water use licenses is governed by this Act.[22] In 2002, the Water Resources Strategy

[21] HPCIDBC, 2008, *Ibid.* p. 29
[22] THAPA S. M., *Water Resources in Nepal: Institutional Analysis Based on Legal Provisions,* pp. 201-203

(WRS) was formulated, guided by the principle of IWRM and recognizes that water resources development needs to be more closely integrated with sustainable social and economic development. The National Water Plan (2005) was the first step in putting into practice the strategy for water resources management and adopted the key elements of using a river basin management approach.[23] The Water and Energy Commission Secretariat (WECS) is now formulating an IWRM Policy and Nepal's Long Term Water Resources and Energy Sector Vision (2050) for implementation of river basin management programs.

3.2 Institutions and Mandates

Government intervention in natural resource management is carried out through different layers of the institutional mechanism. A number of councils, commissions and line ministries are involved at the policy, planning and implementation level.

The National Planning Commission (NPC) is responsible for the national planning and coordination of all sectors, including water. The National Water Resources Development Council (NWRDC) has the highest authority for decision making on water related issues. Members of political parties, senior government officers and non-government officers are represented in the NWRDC. The Secretariat of the NWRDC is the secretariat of the Water and Energy Commission.[24] WECS is a central level government organization under the Ministry of Energy, working on sustainable development and management of Water Resources and Energy sector in Nepal. It aims at formulating integrated water policy, establishing knowledge based information system and implementing IWRM principles. Water supply sector is managed by the Ministry of Physical Planning Works and Transport Management (MPPWTM)[25] While Kathmandu Upatyaka Khanepani Limited (KUKL) is the implementing agency with a specific mandate within the Kathmandu Valley.

At the local level, the District Development Committee (DDC) is the key institution for the planning and implementation of projects. The DDC is linked with line ministry offices that are located at the regional and district levels, such as irrigation, rural water supply, and meteorology and hydrology. Village Development Committees (VDC) and Municipalities are the lowest level administrative units to plan and execute program and activities at the local level. The local level development aspirations are forwarded from the VDC to DDC and upwards through DDCs.

In 1995, the Government decided that a single organization should look after the Bagmati River environment and subsequently formed the High Powered Committee for Integrated Development of Bagmati Civilization (HPCIDBC – under the ministry of Urban Development). The role of HPCIDBC was implementation and operation of the Bagmati Area Sewerage Construction and Rehabilitation financed by the Government of Nepal. The prime responsibility of the HPCIDBC is to keep the Bagmati River and its tributaries clean by preventing the direct discharge of solid and liquid wastes to the river by developing interceptor sewers and wastewater treatment plants.

3.3 Studies and projects

[23] WECS, 2010, *Concept-Paper on Eco-efficient Water Infrastructure Policy in Nepal*. p. 7
[24] http://www.dspace.cam.ac.uk/retrieve/533584/OPSA_09_09.pdf, accessed on 3/12/2012
[25] Ministry of Planning, Physical Works and Transport Management: http://www.moppw.gov.np, accessed on 20/09/2012

In 2011, in collaboration with Department of Hydrology and Meteorology (DHM), WECS embarked on creating RBOs in three major river basins of Nepal: Koshi, Gandaki and Karnali to help facilitate effective river basin planning ensuring sustainable water resources management and development. The Koshi River Basin Management Program managed by WECS is currently in progress under the framework of the Koshi River Basin Management Strategy. This includes implementing pilot projects in Dudh Koshi and Indrawati sub-basins (tributaries of Koshi River) with support of WWF Nepal that encourage transition towards more adaptive and participatory IWRM. Similarly WECS has initiated the establishment of RBOs in Babai and West Rapti Rivers under the World Bank-funded Irrigation and Water Management Project.

In 2008, WECS carried out a Multidimensional Study of the Bagmati Basin, which looked at the hydrology, environmental, social, legal and institutional aspect of the Bagmati Basin. In 2010-2011, WECS and HPCIDBC under Asian Development Bank (ADB) TA 7547 engaged in the preparation of a multi-stakeholder strategic investment road map for the BRB. The road map identifies critical institutional and physical investments to improve water security in the basin including the formation of a BRB RBO.

In 2009, the GON, supported by the ADB, launched the Melamchi Inter-basin Water Transfer Project. This project aims to daily transfer 510 MLD of Melamchi River water to the River Bagmati at Sundarijal by constructing a 30 km long diversion tunnel. The first phase currently on-going will bring an initial 170 MLD from the Melamchi stream. A tunnel extension could later on bring an additional 340 MLD in two phases of 170 MLD each from two additional streams. However, if Kathmandu population continues to grow at the rates observed during the last two decades. The Melamchi project alone will not be able to fulfill the demand of Kathmandu's domestic water needs. It is hoped however that when this project is completed, the stress on Bagmati River, its tributaries and groundwater extraction will be reduced in comparison to the present state.

3.4 Bagmati River Basin Improvement Project and Kathmandu Valley Urban Environment Improvement Project

In order to address core priorities of the basin, the Bagmati River Basin Improvement Project (BRBIP) and the Kathmandu Valley Urban Environment Improvement Project (KVUEIP) are currently being designed with ADB assistance.

The aim of BRBIP is to improve water security and resilience to potential climate change impact in the BRB through restoring the river environment in the Kathmandu Valley, and irrigation development and water-induced disaster impact mitigation in the middle and lower reaches of the basin. The project will assist with the formation of an RBO, support institutional and legal reforms to implement IWRM in the BRB, and finance key physical investments to improve the river environment in Kathmandu Valley. The BRBIP project is supervised by WECS and a steering committee with members including HPCIDBC and key basin stakeholders including government departments, NGOs, CSOs and municipalities.

In order to address the wastewater issue in BRB, KVUEIP aims to support ongoing efforts of the GON towards improving wastewater services in the Kathmandu Valley through construction of new interceptor drains, waste water collection network and treatment facilities. The specific objectives of KVUEIP consist of establishing an efficient and reliable delivery of wastewater services to the residents of the Kathmandu Valley, optimizing the efficiency of existing wastewater treatment plants and implementing sewerage network rehabilitation and expansion.

4 Conclusions and Recommendations

Government interventions in water sector in Nepal are generally carried out and organized by separate departments or agencies, based on the type of water use. Each sub-sector is responsible for its own sectoral planning, implementation, regulation, operation and maintenance, independent of other sub-sectors. There is a need to change this sub-sectoral approach and adopt a holistic and integrated one instead. In order to implement such an approach, necessary changes and reorganization of the existing institutions at the central, district and local levels are suggested based on critical review of the existing structure.

4.1 Necessity for a Central Planning Organization

WECS, although mandated to be the national water apex body with dedicated powers for national policy formulation and development currently lacks the support and consideration it needs to plainly fulfill its functions. It is presently portrayed as a low profile government agency, subsidiary to the Ministry of Energy. This situation is further aggravated by the lack of legal provisions for making other ministries to consult WECS on a mandatory basis for matters related to water resources planning and development"[26] For holistic planning and development of water resources, WECS needs to be given clear legal mandates to act and should be given a leading role in planning, guiding, training, and policy formulation within the water resources and energy sectors. To meet this end, institutional capacity building of the WECS institutionally is required.

Additionally, after the disintegration of the Ministry of Water Resources into the Ministry of Energy and the Ministry of Irrigation in 2009, the requirement of a Centralized Water Resources Planning entity has become more critical. The situation clearly calls for an integrated "Central Water Resources Planning Unit" which could plan, coordinate and shape policies in association with other agencies in the water sector; an approach that aligns with the integrated national development philosophy.

Considering the key issues of the BRB, the institutional analysis presented above confirms the necessity of implementing IWRM in BRB with the formation of a specific BRB RBO under WECS.

4.2 Clarification of Roles between Local Bodies, Sectoral Institutions and HPCIDBC

Under the Ministry of Federal Affairs and Local Development (MOFALD), local bodies (VDCs and Municipalities) are mandated to deal in particular with solid waste management and wastewater treatment. HPCIDBC is mandated for the same, but focused on the Bagmati River and its tributaries in the Kathmandu Valley. The need for conflict management between local bodies and HPCIDBC on river bank management is found to be recurrent. As HPCIDBC lacks legitimacy owing to an absence of legal provisions (the corresponding Bill 2009 has not been approved yet), it is difficult for this committee to enforce regulations related to pollution or implement environmental projects in coordination with local bodies. These conflicting and duplicative mandates need to be streamlined between HPCIDBC, sectoral institutions and local bodies.

[26] GoN, WECS, 2000, *Water Resources Strategy Formulation Phase II study, Annex 13 – Main report on Water Resources Strategy*, WRSF Consortium, Lalitpur, Nepal, p. 21.

In the absence of a fully functional RBO for the Bagmati River, and in a situation where there are numerous competing sub-sectoral institutions already in place, establishing a new organization as RBO is not consistent with the current institutional issues. The establishment of new organization will only flare up the issue of inter-organizational conflicts in terms of duplication of work, mandate and authority and increase the difficulty in coordination which already is a burning issue. Thus it is preferable to proceed with institutional and regulatory reforms through developing the capacity of existing institutions in a gradual process. HPCIDBC has been mandated to look after Bagmati River within the Kathmandu Valley. Hence, it seems relevant to develop HPCIDBC's Board into a fully fledged River Basin Authority under WECS. HPCIDBC's project office would then become the RBO secretariat.

4.3 Project Implementation Challenges in the Current Political Context

Nepal's current political context is characterized by a peace process that is persistently fragile, a political instability on the rise again, and a constituent assembly that has failed to accomplish the urgent process of writing a new constitution. Nepal still remains in a critical state of transition. During the decade long armed conflict, no local elections were held. The last election took place in 2002. Whereas elections are supposed to give legitimacy to the political leader in charge of local affairs, since 2002 the VDCs have been operating under the guidance of the unelected VDC Secretary. Decision making and local affairs management are suffering from this lack of clear leadership. Political and administrative leadership as well as social stability will be very important for the successful implementation of BRBIP, especially for strengthening WECS and formation and institutionalization of RBO.

The BRBIP design should be able to identify the roles of the many water users agencies and in the long run address issues of overlapping and unclear mandate. Coordination between relevant agencies during the project design is strongly encouraged and will continue during the implementation process. A road map for IWRM and RBO development was developed through intensive consultation with the basin stakeholders. It will guide the necessary legal and institutional reforms that will be implemented during the project implementation and that should lead to the successful establishment and functioning of the BRB RBO. The necessity of an RBO is widely expressed and accepted by the basin stakeholders. A proposal was also discussed to form a river basin council and to cause HPCIDBC to evolve into the RBO secretariat. However for the Project to deliver such ambitious target under the current political instability, the political, administrative and civil society champions, currently driving the project design, will need to remain strongly engaged and committed.