

Implementing Integrated Water Resources Management in Bangladesh: Challenges of Legal and Institutional Reforms

Mst. Najnin Begum ©

Abstract

Water resources management aims at managing the tasks required to generate water and produce water related goods and services for the benefits of the society as a whole. It includes physical intervention, institutional arrangement, legislation, and regulations. Implementation of integrated water resources management is crucial for resolving diverse water related problems and issues. The concept of IWRM is gaining popularity as it can reconcile competitions for limited resources and resolve potential conflicts. The effective implementation of IWRM can not only ensure better management of scarce water resources, but also can contribute to sustainable development and poverty alleviation in Bangladesh through preventing unsustainable exploitation of water resources. But prevailing legal and institutional arrangements for integration of water management with other government policies are not well-developed. Implementation of IWRM also faces numerous challenges. Legal and institutional reform is needed to define IWRM clearly and delineate the responsibilities of institutions to realise it unequivocally. To implement IWRM, attention should be paid to environmental, social, institutional and legal aspects of management of water resources.

1. Introduction

Water is considered central to the way of life in Bangladesh. Water has domestic, commercial and industrial use. Water resources provide multitude of services like drinking, irrigation, fishery, forestry, navigation, industry and many other consumptive and non-consumptive uses. In Bangladesh, agriculture is the mainstay of livelihood system that depends on water cycle. Water management in Bangladesh involves complex and diverse problem relating to water and land use. Complexities and challenges include natural as well as man- made

© Mst. Najnin Begum is an Associate Professor, Department of Law, University of Chittagong

causes.¹ Natural causes are alternating flood, drought, cyclone, expanding water needs of growing population, massive sedimentation and erosion. Man-made causes include altering flood plain and watercourse, change of land use, global warming, deforestation, river/channel encroachment, upstream diversion etc.² Water management is also important for the maintenance of the eco-system. Water resources management aims at managing the tasks required to generate water and produce water related goods and services for the benefits of the society as a whole. It includes physical intervention, institutional arrangement, legislation, and regulations. Implementation of integrated water resources management (hereinafter referred to as IWRM) is crucial for resolving diverse water related problems and issues. The most critical of these are floods in the wet season and the scarcity of water in the dry season, ever expanding water needs of a growing economy and population, supply of safe drinking water and sanitation, arsenic contamination, water pollution, river bank erosion and the loss of ecosystem.³

The concept of IWRM is gaining popularity as it can reconcile competitions for limited resources and resolve potential conflicts.⁴ IWRM is also increasingly assuming a critically important for the growing population of Bangladesh due to burgeoning demand and increasing conflict between alternative uses. In Bangladesh, implementation of IWRM can play a vital role in both promoting economic growth and poverty reduction. The population of Bangladesh is huge and rapidly increasing. This will create an additional demand for food grain. In order to ensure food security, agriculture sector must be developed to outpace the growth of population. This growth rate in agriculture can be sustained by bringing more areas under irrigation and through better management of water resource. Bangladesh is also severely facing problems such as

¹ Md. Amirul Hossain and Md. Mizanur Rahman, 'Water Resources Management in Bangladesh: Limitations and Uncertainties', available at <http://nation.ittefaq.com/artman/exec/view.cgi/29/17982> (last visited on 15 January, 2006).

² *Ibid.*

³ HS Mozaddad Faruque, 'Water Resources Management Section in Banglapedia', http://banglapedia.search.com.bd/HT/W_0032.htm.

⁴ For example, South Africa, and Scotland have recently adopted water policy and enacted laws based on the principles of IWRM. See, Andrew Allan, 'A Comparison between the Water Law Reforms in South Africa and Scotland: Can a Generic National Water Law Model be Developed from these Examples?' *Natural Resources Journal*, Vol. 43, No.2, (2003), pp. 419-489.

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riverbank erosion, river siltation, water pollution, land reclamation, and encroachment of rivers. In short, sound management of water resources is vital for agriculture, irrigation, industries, energy and power generation, flood management, environmental protection and conservation of fisheries and forestry.

The aim of the present paper is to examine legal regime of integrated water resources management in Bangladesh and identify challenges of legal and institutional reform to make IWRM effective and adequate to cope with ever increasing needs of water resources. It also defines IWRM, analyses its key elements and also sheds light on legal development of IWRM at the international level. Then it proceeds to examine the existing legal and institutional framework on IWRM in Bangladesh and focuses on whether the existing legal regime on water resources management covers its core elements.

1. Defining Integrated Water Resources Management

The concept of IWRM encompasses number of interrelated issues regarding water uses and management and how these should be accommodated in a holistic framework. An integrated water resources management perspective ensures that social, economic, environmental and technical dimensions are taken into account in the management and development of water resources. The Global Water Partnership defines IWRM as

*a process, which promotes the co-ordinated 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.*⁵

It embraces both quantitative and qualitative aspects of water management. The scope of IWRM includes water resources supply and demand, efficient use, and pollution control. The IWRM is essential to harmonise among the different needs of water such as industry use, irrigation, protection of natural ecosystems, hydrocarbon production, and consumptive use. The realisation of IWRM requires creation of legal and institutional framework, and stakeholder participation in the decision making process in the management of water resources. The sustainability dimension of IWRM dictates that water management should be designed in a way that meets the needs of the present

⁵ Global Water Partnership Toolbox on Integrated Water Resource Management. <http://www.gwpforum.org/gwp/library/Tacno4.pdf> (last visited on 7 October, 2005).

generations without affecting the interest of future generations.⁶ The IWRM also requires a well-coordinated and participatory approach of a multi-functional system of water, land and related resources. According to an OECD study, *Integration requires the conscious and systematic consideration of the many diverse elements of a resource management issues in seeking optimal solutions. In conceiving, designing, implementing, maintaining and terminating a policy, complementary and competing objective must be balanced to solve and anticipate problems, mindful for inter-temporal and equity implications. Integration, therefore, requires the development of policies that are preventive and anticipatory as well as reactive.*⁷

2.1 Core Elements of IWRM

In many countries, IWRM is considered vital factor for sustainable use of water and for ensuring access to water. Government has the fundamental responsibility to provide water services through proper water resource management. The core elements of integrated water resource management are the following:

2.1.1 Public Participation

As water is a common resource and has wide ranging uses, its management and use should involve all users and beneficiaries.⁸ Public participation can enhance the quality of decision-making process and is the means for achieving consensus on issues involved in integrated water resource management.⁹ Public participation means, involvement of all stakeholders of a project in its decision making process. For effective public participation in water management, accessibility and availability of information is fundamentally important. Public participation can create awareness among the people who are likely to be affected by a project.¹⁰

⁶ The Water Page: Assessment of Integrated Water Resources Management Activities in the Southern Africa, at http://www.thewaterpage.com/IWRM_Zimbabwe.htm (last visited on 2 January, 2006).

⁷ Water Resources Management: Integrated Policies, A publication of OECD, Paris, (1989), p. 10.

⁸ See, The Dublin Statement on Water and Sustainable Development, adopted in Rio De Janeiro, June 1992, available at <http://www.wmo.ch/web/homs/documents/english/icwedece.html>, (last visited on 15th January, 2006).

⁹ See, Principles of Integrated Water Resources Management, at <http://www.gdrc.org/uem/water/iwrm/1pager-01.html> (last visited on 2 January 2006).

¹⁰ See, George (Rock) Pring and Susan Y. Noe, 'The Emerging International Law of Public

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To introduce public participation, it is necessary to make shift from the traditional 'top-down' approach to bottom up approach in which all levels of society have a say in the allocation and use of the resource. Public participation helps the policy makers to understand the needs and priorities of the stakeholders. However, participation to be effective and genuine one, it should not be carried merely to observe legal requirements, but should be spontaneous, demonstrate equitable representation of the community including voices of the poor and women and be channelled through transparent process.¹¹ In particular, according to *Dublin Statement*, women's access to at all levels of decision making is essential for real participatory approach and to this effect, operational mechanisms and laws should be amended to ensure equitable participation of women in IWRM.¹² However, participation implies more than consultation and

*consultative mechanisms will not allow real participation if they are merely employed to legitimise decisions already made, to defuse political opposition or to delay the implementation of measures which could adversely impinge upon a powerful interest group.*¹³

It has been argued that to achieve IWRM, the involvement of all relevant stakeholders such as planners, policy makers, other stakeholders for water management, such as water user associations, local communities, NGOs working in the field of water and water quality management.¹⁴

2.1.2 Institutions

Creating an institutional framework is treated as critical to the formulation and the development of IWRM programmes and policies. According to Global Water Partnership Report,

Participation Affecting Global Mining, Energy, and Resource Development', in: Donald N. Zillman, Alastair Lucas and George (Rock) Pring (eds.), *Human Rights in Natural Resource Development: Public Participation in the Sustainable Development of Mining and Energy Resources*, Oxford University Press, New York (2002), pp. 11-75.

¹¹ See generally, Donald N. Zillman, Alastair Lucas and George (Rock) Pring (eds.), *Human Rights in Natural Resource Development: Public Participation in the Sustainable Development of Mining and Energy Resources*, Oxford University Press, New York (2002).

¹² The Dublin Statement on Water and Sustainable Development, adopted in Rio De Janeiro, June 1992, available at <http://www.wmo.ch/web/homs/documents/english/icwedece.html>, (last visited on 15th January, 2006).

¹³ Global Water Partnership Toolbox on IWRM, *supra* note 5.

¹⁴ Else Boutkan and Allerd Stikker, "Enhanced Water Resource Base for Sustainable Integrated Water Resource Management", 28 *Natural Resources Forum* (2004), p. 153.

*flawed demarcation of the responsibilities between different actors, inadequate coordination mechanisms, jurisdictional gaps or overlaps, and failure to match responsibilities, authority and capacity for action are all major source difficulty with implementation of IWRM.*¹⁵

However, according to the report, institutional framework in relation to IWRM does not simply mean the formally structured organisation, but it also involves a consideration of a whole range of formal rules and regulations, customs and practices, ideas and information, interests or community group networks, which together provide the institutional role or context within which water management actors or other decision-makers operate.¹⁶ The institutional framework is also essential for better governance in water management. In other words, good governance plays an important role to ensure better water resource management. According to *Bonn Recommendations on Water Management*, it is now accepted that, there is enough water for everybody in the world but due to lack of proper management water crises may arise in future.¹⁷ Thus, the solution to water crisis does not lie in merely technological innovation, but to integrated approach to management of water resources. In this regard governance has an important role to play. Good governance in relation to water resources management means,

*a range of political, social, economic and administrative systems that are in place to regulate the development and management of water resources and provision of water services at different levels of society.*¹⁸

The institutional framework, which promotes good governance, can ensure accountability, transparency, participation, predictability in the decision-making process and responsiveness of the governmental agencies involving water resource management.¹⁹ In this regard role of law is also important because law defines rights, obligations and power of institutions involved and sets standards to be achieved in the water resource management.²⁰ A suitable and responsive legal framework can

¹⁵ Global Water Partnership Toolbox on IWRM, *supra* note 5.

¹⁶ Global Water Partnership Toolbox on IWRM, *supra* note 5.

¹⁷ Bonn Recommendations on Water Management, see, http://www.water_2001.de/outcome/BonnRecommendations/Bonn_Recommendations.pdf (last visited 8 October, 2005).

¹⁸ Asian Development Bank's Report 'Governance: Sound Development Management', Manila, Philippines, August 1995, <http://www.adb.org/Documents/Policies/Governance/default.asp>.

¹⁹ *Ibid.*

²⁰ Andrew Allan and Dr. Patricia Wouters, 'What Role for Water Law in the Emerging 'Good Governance' Debate', *The Journal of Water Law*, Volume 15, Issue 3 and 4, (2004),

ensure governance in water resources management by laying down procedures, setting standards and implementing mechanisms.²¹

2.1.3 Integration

The concept of integration in water resources management distinguishes it from traditional fragmented and sectoral approach to management. According to the Global Water Partnership report, integration can be considered under two basic categories: the natural system of integration, which emphasises on the resource availability and quality; and the human system, which fundamentally determines the resource use, the waste production and pollution of resources.²² Natural system integration denotes that freshwater management and coastal zones should be integrated, reflecting the continuum of freshwater and coastal water as freshwater systems are important determinants of conditions in coastal zone.²³ Natural system of integration takes into consideration of upstream-downstream aspect of water management. In this regard, it should be mentioned that water is a key determinant of character and health of all ecosystems and their water quantity and quality requirements therefore have to be taken into account in the overall allocation of available water resources. Catchment and river basin management is also an integral part of natural system of integration. According to the Global Water Partnership Report, catchment and basin level management is critical in managing the relationship between the quantity and quality and between upstream and downstream water interests.²⁴ On the other hand, human system of integration includes governmental policies, financial priorities and planning regarding water resource development, private sector involvement in making technological, production and consumption choices based on the real value of water and mechanisms to ensure stakeholders participation in the decision making process.²⁵

More specifically, integration in relation to water management mainly implies the following things:

2.1.3.1 Integration of Land and Water Management

pp.85-88.

²¹ *Ibid.*

²² Global Water Partnership Toolbox on IWRM, *supra note 5.*

²³ Global Water Partnership Toolbox on IWRM, *supra note 5.*

²⁴ Global Water Partnership Toolbox on IWRM, *supra note 5.*

²⁵ Global Water Partnership Toolbox on IWRM, *supra note 5.*

Integration of land and water management should be considered in the context of prevention of pollution of water sources. The human activities such as land use can lead to afforestation, deforestation, urbanisation and consequently can alter the flow of surface water. An integrated approach to land and water management can avoid such environmental degradation and therefore, land use developments and issue of maintaining quality of water must be considered in the overall planning and management of water resources. Land degradation results not only in the loss of soil quality, which has adverse impacts on agricultural productivity and food security, but also lowers the environmental and habitat functions of the ecosystems, leading to hydrological disturbance, loss and degradation of water resources, loss of genetic resources and biological diversity.²⁶ The land degradation can be caused by human-induced processes such as agriculture, deforestation and grazing, natural phenomena such as water and wind erosion.²⁷ Land degradation can reduce the world's freshwater reserves and has a direct impact on river flow rates and the level of groundwater tables. The reduction of river flow rates and the lowering of groundwater levels leads to the silting up of estuaries, the encroachment of salt water into groundwater, the pollution of water by salinization.²⁸

2.1.3.2 *Integration between surface water and groundwater management*

In many countries, the significant proportion of water demand is met by groundwater. In view of the growing scarcity of surface water in the world today, there is widespread belief among experts that the management of both ground and surface water resources should be integrated, and they should be used conjunctively.²⁹ The need for integration between surface water and groundwater management is also necessitated by the hydrological cycles. According to some authors:

Integrated surface water and groundwater management is also very important for efficient use of all available sustainable water resources. This is especially critical in many arid or semiarid parts of the world faced with

²⁶ A. Parviz Koohafkan, 'Land Resources Potential and Sustainable Land Management: An Overview', 24 *Natural Resources Forum* (2000), p. 69.

²⁷ *Ibid.* p. 80.

²⁸ *Ibid.* p. 74.

²⁹ Raj Krishna and Salman M. A. Salman, 'International Groundwater Law and the World Bank Policy for Projects on Transboundary Groundwater', in: Salman M.A. Salman (ed.), *Groundwater: Legal and Policy Perspectives*, World Bank Technical Paper No. 456, (1999), p. 165.

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*the challenge of drought management which requires careful consideration of sustainable water resources use in the context of multi-year cycles.*³⁰

Moreover, such integration is also necessary in order to prevent groundwater pollution. The widespread use of agro-chemicals and pollution from other non-point sources already pose significant threats to groundwater quality and this calls for the water planners to consider the integration between the surface and groundwater.³¹ The need for integration is also felt in situations where there are interconnections and interdependencies between surface and groundwater so that the combined resources form a common pool, which can be managed and exploited for the interchangeable uses.³² However, it should be mentioned that management problems of groundwater is always not identical with that of surface water because many of the ground water related problems occur as a result of improper use, or abstraction of groundwater which causes depletion of aquifers, deterioration of groundwater quality and saltwater intrusions. The ground water pollution also occurs due to the use of pesticides and fertilisers, as well as the dumping of industrial waste and mining activities.³³

2.1.3.3 Integration of upstream and downstream water-related interests

At the same time, IWRM takes into account the conflict of interest between upstream and downstream water-related interests and tries to strike a balance between them.³⁴ The conflict of interests between upstream and downstream may occur in various ways such as consumptive “losses” upstream will reduce river flows, pollution at the upstream level will degrade water quality at the downstream level, land use change upstream may alter groundwater recharge and river flow seasonally and flood control measures upstream may threaten flood-dependent livelihoods downstream.³⁵ Upstream-downstream conflict resolution requires balancing complex interests, and establishment of physical and social linkages in a particular context.

³⁰ *Ibid*, p. 210.

³¹ Global Water Partnership Toolbox on IWRM, *supra* note 5.

³² Ludwik A. Teclaff, *Water Law in Historical Perspectives*, W.S. Hein, New York, 1985, p. 199.

³³ Raj Krishna and Salman M. A. Salman, *supra* note 29, p. 165.

³⁴ Raj Krishna and Salman M. A. Salman, *supra* note 29, p. 165.

³⁵ Global Water Partnership Toolbox on IWRM, *supra* note 5.

2.1.4 Co-ordinated Management

Co-ordinated management is considered to be essential component of integration. Since water management may involve the functions of the different government agencies, the creation of effective coordination mechanisms between different agencies is essential for integrated water resources management. Fragmented management, bureaucratic decision making process, lack of well defined jurisdiction and coordination among the government agencies responsible for water management can lead to inconsistent enforcement and contradictory result. However, mere integration in the sense of organisational consolidation automatically cannot lead to cooperation and coordination, and consequently the improved effectiveness of water resource management.³⁶ In reality, even efforts to coordinated management may confront with many problems. For example, merging of responsibilities or agencies does not always result in significant performance improvements or simple act of putting all water functions within one agency will not necessarily remove conflicts of interests.³⁷ For effective coordination, there must be proper apportioning of the responsibilities among different agencies. Transparency and accountability is also key question that should be addressed in such co-ordinated management.

2.1.5 Sustainability

One of the core elements of integrated water management is that water must be managed in a sustainable way. The Bruntland Report which first conceptualised the idea of sustainable development, defines sustainable activities as one where the needs of the present generation are met without compromising the needs of future generations.³⁸ What the Bruntland definition implies is an equitable distribution of the resources not only spatially between users in a given location, but temporarily between users over time. The idea is to allocate the resource in such a way as for all, including the environment, to have an adequate share without making one group worse off, both now and in the future.³⁹ However, introducing the concept of sustainability in IWRM, existing

³⁶ Global Water Partnership Toolbox on IWRM, *supra note 5*.

³⁷ Global Water Partnership Toolbox on IWRM, *supra note 5*.

³⁸ See, World Commission on Environment and Development (Brundtland Commission), *Our Common Future*, Oxford University Press, Oxford, (1987).

³⁹ *Ibid*.

institutions and regulation should be changed to be ecologically oriented.⁴⁰

2.2 International Legal Development on IWRM

The first international effort for developing principles on water management took place on March 1977 by UN Conference on Water held at Mar del Plata, Argentina.⁴¹ It emphasised that institutional frameworks should be modified to promote an efficient water resource planning and management. It also urged international community to strengthen river basin institutions with integrated river basin planning.⁴² However, the most important development occurred at international level on integrated water management on January 1992 at International Conference on Water and Environment, Dublin, Ireland. The Dublin Conference stressed that water management should be integrated, ensuring simultaneously social and economic development with the protection of ecosystems, linking land use patterns and water use in the geographic space of a river basin or an aquifer.⁴³ According to the Dublin conference, the main objectives of water resources planning are: poverty alleviation and water-related disease control; protection against natural disasters; water conservation and re-use; urban sustainable development; agricultural production; drinking water and sanitation in the rural communities; aquatic ecosystem protection and water conflicts solution.⁴⁴ It also put emphasis on human and institutional capacity buildings and participatory approach to water management involving users, planners and policy makers in all level.⁴⁵ The Dublin Conference elaborated four basic principles of IWRM, which are known as Dublin principles, marked an important step of international community towards improved water resources management.⁴⁶

⁴⁰ Paul D. Raskin, Evan Hansen and Robert M Margolis, 'Water and Sustainability', 20 Natural Resources Forum, (1996), p. 13.

⁴¹ Richardo Sandoval-Minero, 'Capacity building for a participatory and decentralised water management model: the Guanajuato State Water Plan', in: Miguel A. Marino and Slobadan P. Simonovic, (eds.), *Integrated Water Resources Management*, International Association of Hydrological Sciences Publication, (2001), p. 134.

⁴² *Ibid.*

⁴³ See, The Dublin Statement on Water and Sustainable Development, *supra* note 12.

⁴⁴ *Ibid.*

⁴⁵ *Ibid.*

⁴⁶ The four Dublin principles are: (i) *fresh water is a finite and vulnerable resource, and is essential to sustain life, development and the environment. Finiteness of water resources indicates the need for a holistic approach to its management, recognising all the characteristics of the hydrological cycle and its interaction with other natural system and*

Later on, the Dublin principles had been endorsed in the Rio Conference on Environment and Development of 1992 which provided that water resources management should be integrated, including integration of land and water issues, at the basin level or sub-basin.⁴⁷ The Rio Conference stresses that the main objective of water resource management would be planning for a sustainable and rational water use, protection, preservation and administration, according to local needs and priorities.⁴⁸ Regarding developing institutional framework, the conference concentrates on strengthening co-operation at the lowest possible level, delegating water resource administration at that level, according to national legislation, including the decentralisation of water services to local authorities, private firms and communities.⁴⁹

International Conference on Water and Sustainable Development held on March, 1988 at Paris stated that knowledge and comprehension of the water resource at all levels should be increased; institutions, especially the local ones, should be strengthened, and all professionals' and users' capacities should be enhanced.⁵⁰

3. Legal and Institutional Framework on IWRM in Bangladesh

Legally, all waters in Bangladesh belong to the state, and the use of this water is a right granted to citizens by the government.⁵¹ From the socio-economic perspective, the water resources are a public good, to be allocated and utilised for the optimal benefits of the people. In general, laws relating to water resources provide the general legal framework for water management, define water rights, control over the use of water, set out generalised policy objectives for administrative agencies, define their responsibilities and may lay down appropriate consultation procedures both between authorities and with the public.⁵² The legislative and regulatory framework on IWRM includes the laws and regulations that

ecosystems. (ii) water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels. (iii) women play a central part in the provision, management and safeguarding of water. (iv) water has an economic value in all its competing uses and should be recognised as an economic good.

⁴⁷ See, The Rio Declaration on Environment and Development, U.N. Doc.

A/CONF.151/5/Rev.1(1992), printed in 31 International Legal Materials, (1992) p. 874.

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

⁵⁰ Richardo Sandoval-Minero, *supra* note 41, p. 134.

⁵¹ See, article 143 of the Constitution of Bangladesh, which is available at <http://www.pmo.gov.bd/constitution/index.htm> (last visited on 2 January 2006).

⁵² Water Resources Management: Integrated Policies, *supra* note 7, p. 20.

define IWRM, provide the legal basis and define the authority of organisations mandated to manage the water resources in an integrated way. Clear integration objectives must be established in laws and policies of a country. Legislation should delineate as clearly as possible the respective roles and responsibilities of different levels of government agencies with regard to the management of water resources.⁵³ The relevant laws and regulations should embody the core elements of IWRM for the integrated and efficient management of water resources.

3.1 Laws and Policies relevant to IWRM

Bangladesh has few laws and policies governing the integrated use and management of water resources. The National Water Plan constitutes the major effort of the government on water resources management. The first phase of the National Water Plan (NWP) was formulated in 1987 by the Master Plan Organisation (MPO) created in 1983. In its first phase, the NWP aimed to meet domestic and industrial water needs, improve water quality, maintain effective water transportation, develop water resources to increase agricultural production, and control flooding and improve drainage system.⁵⁴ The second phase of NWP was prepared by the MPO in 1990. The NWP-II is predominantly an agricultural development plan and recognises the serious conflict between expanding irrigation abstractions and viability of potable water supplies. The NWP I and II made important contributions to the knowledge and understanding of the water resources of Bangladesh. The NWP created a consistent central database, which provided the basis for subsequent water sector planning.⁵⁵

The government declared the National Water Policy (NWP) in 1999 for the first time.⁵⁶ The NWP lays down the broad principles of development of water resources and their rational utilisation. The six national goals that the NWP seeks to achieve include economic development, poverty alleviation, food security, public health and safety, a decent standard of

⁵³ Water Resources Management: Integrated Policies, *supra note 7*.

⁵⁴ Saeed A. Rana, 'Water Resources Development in Bangladesh: Prospects and Issue', in: Hasna Moudud, (ed.), *Women for Water Sharing*, Academic Publisher, Dhaka, (1995), p. 140.

⁵⁵ *Ibid* p. 141.

⁵⁶ National Water Policy of Bangladesh is available at http://www.sdnpsbd.org/sdi/international_day/water_day/2004/content/water_policy.htm (last visited on 14 January, 2006).

living for the people, and protection of the national environment.⁵⁷ The National Water Policy address the issues related to the harnessing and development of all forms of surface water and groundwater and management of these resources in an efficient and equitable manner.⁵⁸ It aims to ensure the availability of water to all elements of society including the poor and the underprivileged, and to take into account the particular needs of women and children, accelerate the development of sustainable public and private water delivery systems, bring institutional changes that will help decentralise the management of water resources and enhance the role of women in water management; develop a state of knowledge and capability that will enable the country to design future water resources management plans by itself with economic efficiency, gender equality, social justice and environmental awareness to facilitate achievement of the water management objectives through broad public participation.⁵⁹ As far as the macro institutional framework is concerned, the policy clearly separates “the policy, planning, and regulatory functions from implementation and operational functions”⁶⁰ – is an important step toward introducing IWRM in Bangladesh. It is intended to help guide both public and private actions in the future for ensuring optimal development and management of water that benefits both individuals and the society at large. The NWP envisions improving efficiency of resource utilisation through conjunctive use of all forms of surface and groundwater for irrigation and urban water supply. The policy is a significant landmark that reflected a major shift in the approach to water resources management within government circles. The policy contains many principles of IWRM. However, a supportive legal framework for NWP is not yet to be undertaken.

Bangladesh also adopted a draft National Water Management Plan (NWMP) in December, 2001. The National Water Management Plan has been prepared to implement three central objectives: (i) rational management and wise-use of Bangladesh’s water resources; (ii) improving people’s quality of life by the equitable, safe and reliable access to water for production, health and hygiene; (iii) clean water in sufficient and timely quantities for multi-purpose use and preservation of

⁵⁷ *Ibid.*

⁵⁸ *Ibid.*

⁵⁹ See, M. Chadwick and A. Datta, ‘*Water Resource Management in Bangladesh: A Policy Review*’, Working Paper 1 of DFID, UK, 2002.

⁶⁰ *Ibid.*

the aquatic and water dependent eco-systems.⁶¹ The National Water Management Plan provides a framework within which all concerned with the development, management and use of water resources and water services in Bangladesh can plan and implement their own activities in a coordinated and integrated manner and in doing so, they are contributing to achievement of the national goals. It puts emphasis on decentralised water management, and private sector participation. The Plan's conceptual framework is founded on an assessment of needs, opportunities and constraints throughout the sector. To facilitate a fully integrated approach, the Plan envisages eight distinct and defined hydrological regions. The NWMP spells out its programmes in the following areas: institutional development, main rivers, towns and rural areas, major cities, disaster management, agriculture and water management and environment and aquatic resources.⁶² Undoubtedly, the future water sector activities or the water management of the country is likely to be guided by NWMP. In the course of this, a Development Strategy for the NWMP was subsequently adopted in June 2001. This strategy, agreed by Government as guideline for the Plan, places equal importance on each of the national goals of economic development, poverty alleviation, food security, health and safety, standard of living and environment. Furthermore the Strategy embodies an approach that reflects principles of integrated water resource management and which conforms to sound institutional practices, and also elaborates the main aims for the Plan. The National Water Policy (NWP) and the Development Strategy together constitute the main policy and strategic framework for the NWMP.

3.3 Institutional Framework on IWRM

The institutional framework refers to public organisations, which are responsible for formulation of policy and regulations, enforcement of water laws and regulations, monitoring and data collection, planning, investment in all phases of water resources management and uses. The institutional framework defines the entities and organisations with water management responsibilities at the national, regional, and local level, as well as the mechanisms for their interaction.⁶³ The relevant laws and

⁶¹ Draft Final National Water Management Plan, December 2001, Dhaka, available at http://www.sdnbd.org/sdi/international_days/water_day/2003/content/nwmp.pdf. (last visited on 30 October, 2005).

⁶² *Ibid.*

⁶³ Water Resources Management: Integrated Policies, *supra note 7*.

regulation on IWRM should delineate the respective role and jurisdiction of the government agencies in relation to water resources management in order to secure integrated and co-ordinated management by resolving specific inter-agency or inter-governmental management conflict.⁶⁴ Integrated management among the institutions requires the generation of necessary data to develop and the formulation of options for efficient, co-ordinated management among all responsible levels and agencies of government.⁶⁵

In order to facilitate integration among the functions of the different institutions, several matters demand attention: First, the concept of integration must be given explicit political credibility and legitimisation through political commitment. Second, the organisation structures involved must be considered, especially with regard to the management functions to be completed. Third, processes and mechanisms to facilitate discussion and interaction among participations must be created to supplement the organisational structures. Fourthly, attention should be directed towards aspects, which create positive organisational culture and attitudes regarding cooperation and coordination.⁶⁶ However, an integrated approach does not require all of the issues and functions to be allocated to a single level of government agencies, but overlapping responsibilities should be avoided.⁶⁷ Sound institutional principles are to be followed to separate policy, planning and regulatory functions from implementation and operational functions at each level of government, whilst at the same time holding each institution accountable for financial and operational performance.⁶⁸

There are many institutions and organisations involved in water resources management in Bangladesh and their legal basis can be found in relevant legislation. In Bangladesh, at present, the agencies or organisations, which have relevant functions in water sector, are of four categories:

(i) *Central Institutions*: It includes several ministries and government agencies under different ministers dealing with water issues. Separate ministries are in charge of surface irrigation, groundwater irrigation, fisheries, public health, environment, municipal water supply, power and

⁶⁴ Water Resources Management: Integrated Policies, *supra note 7*.

⁶⁵ Water Resources Management: Integrated Policies, *supra note 7*, p. 23.

⁶⁶ Water Resources Management: Integrated Policies, *supra note 7*, p. 12.

⁶⁷ Water Resources Management: Integrated Policies, *supra note 7*, p. 15.

⁶⁸ Water Resources Management: Integrated Policies, *supra note 7*, p. 15

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navigation. Each ministry is acting independently of the other. For instance, surface water is under the authority of Ministry of Irrigation and Water Resources. Groundwater activities are carried out and monitored by individuals, Water Resources Ministry, Ministry of Environment, and agencies under Local Government Ministry. Their mandate is different and therefore the priorities they set out are also often conflicting.

The National Water Resources Council (NWRC) is the highest national body relating to water sector and is responsible for coordinating all aspects of water management, and issues directive through its Executive Committee. NWRC is responsible for coordination of all water resources management activities in the country and particularly, to formulate policy on different aspects of water resources management; to provide direction for optimal development and utilisation of water resources, to oversee the preparation and implementation of the NWMP; to provide directions on the development of institutions in the water sector; and to provide policy directives for appropriate coordination among different agencies.⁶⁹ To support the NWRC, there is an Executive Committee of the NWRC with the responsibilities to provide directive on all matters relating to the planning, management and coordination across all sectors; to guide water management institutions at the national, regional, and local levels in the formulations and implementation of policies for water management.⁷⁰

The Water Resources Planning Organisation (WARPO) is the key organisation dealing with nation-wide macro level water resources planning and management. WARPO was established under the Ministry of Water Resources in 1992 supposedly to act as a national planning authority for water resources. It is a multi-disciplinary organisation having seven technical and one administrative section covering Agriculture, Economics, Environment, Forest and Fisheries, Water Resources, Computer and IT, Monitoring and Evaluation, and Engineering. According to the Water Resources Planning Act, 1992 the main responsibilities of WARPO include: to prepare a water resources master plan for the development of the water resources of the country having full

⁶⁹ See, Bangladesh: Water Resources Planning Organisation (WARPO), Country Paper on National Water Sector Apex Body, presented on regional meeting of national water sector apex bodies (18-21 May, 2004, Hanoi, Vietnam), available at: http://www.adb.org/Water/NWSAB/2004/Bangladesh_Country_Paper.pdf (last visited on 24 October, 2005.)

⁷⁰ *Ibid.*

regard to environmental compatibility; to determine national policies and strategies for the scientific utilization and conservation of the water resources; to review and evaluate the impact of actions taken by any organisation involved in water sector and to improve the level of education and to collect and review information related to the utilisation of the water resources.⁷¹ The tasks of WARPO also include monitoring implementation of the NWMP, upkeep water resources assessments, and stimulate, coordinate and help in providing specialised, multi-disciplinary and cross-sectoral training in IWRM. WARPO provided large technical assistance and the facilities to generate, update and preserve the water resources database. Unfortunately due to weak management, government's lack of interest in this organisation's objectives and shortage of resources, WARPO is gradually weakening.⁷²

Bangladesh Water Development Board (BWDB) is entrusted with the responsibility of development of surface water resource.⁷³ It is a centralised institution which is suited for large scale construction type activities but less appropriate for any management functions which require significant devolution of responsibilities and the capacity to respond to local conditions and events.⁷⁴ The Bangladesh Agricultural Development Corporation (BADC) and the Department of Public Health Engineering (DPHE) are other central government organisations, which have interest in the country's water resources. The central institutions are suffering from management and organisational problems.

(ii) Local government Institutions: The role of local governments can be especially important in the area of water resources management. However, in Bangladesh, in most of the water sector projects the involvement of local governments is very marginal due to the fact that they are grossly incapacitated over the time to undertake such activities.⁷⁵ The National Water Policy aims to increase involvement of Local Government in local water resource management, and seeks to expand private sector activities. Local government institutions however are only partially developed and under-resources.

⁷¹ *Ibid.*

⁷² Saeed A. Rana, *supra note 54*, p. 148.

⁷³ Saeed A. Rana, *supra note 54*, p. 147.

⁷⁴ M. Chadwick and A. Datta, *supra note 59*.

⁷⁵ Dr. Tofail Ahmed, 'Organisation Issues and IWRM: Bangladesh Perspective', A paper presented by the author at a seminar on IWRM arranged by the Bangladesh University of Engineering and Technology (BUET) in cooperation with Delft University of Technology, The Netherlands, Sep 28, 2003, Dhaka, Bangladesh

(iii) *The private sector*: The private sector is mainly involved in water supply and sanitation.

(iv) *The development partners*: It includes donor agencies and multilateral financial institutions.

Currently, planning and management of water resources, under such conditions, are for obvious reasons rather disjointed, disregarding critical factors in their use and allocation principles. Many of the government agencies mentioned above have their own programme and they act in a manner that has little coherence and much duplication.

Conclusions

As population growth and developmental pressures will continue to put increasing pressure on scarce water resources, the necessity for implementing IWRM can hardly be emphasised. The effective implementation of IWRM can not only ensure better management of scarce water resources, but also can contribute to sustainable development and poverty alleviation in Bangladesh through preventing unsustainable exploitation of water resources.

Although some elements of IWRM have been incorporated in various laws and policies on water resources management in Bangladesh, the implementation of IWRM faces numerous challenges in particular, those of legal and regulatory reforms. Legal and institutional reform is needed to define IWRM clearly and delineate the responsibilities of institutions to realise it unequivocally. To implement IWRM, attention should be paid to environmental, social, institutional and legal aspects of management of water resources. Prevailing legal and institutional arrangements for integration of water management with other government policies are not well-developed. In Bangladesh, the goal of water management should aim at achieving efficiency to make water resources accessible for all, equity in the allocation of water across different social and economic groups and environmental sustainability to protect the water resource base and associated eco-system. Currently, low level of legal recognition of IWRM and sectoral approach to water resource management cannot achieve these desired goals of IWRM. An appropriate legal framework should be adopted and such legal framework should comprehensively define water use entitlements, the structure of water administration, water resources planning and delineates institution's mandate and responsibilities, and make provision for integration in the functions of

different departments and agencies involved in the water management. At the same time, such legislative and policy framework should put emphasis on sustainable and rational utilization, protection, conservation of water resources based on community needs and priorities. The development of appropriate legal, regulatory, institutional framework that provides for transparency and accountability in the system is also essential for the promotion of improving water governance in Bangladesh.⁷⁶ However, mere existence of laws on IWRM does not automatically lead to the realisation of IWRM. Strong enforcement and compliance mechanisms and oversight bodies are needed to prevailing corruption in water management sector and to implement IWRM. The lack of human and financial resources can also inhibit water management authorities to fulfil their tasks. Therefore, adequate provisions should be made for ensuring human and financial resources for proper functioning of the enforcement mechanisms. Political willingness and administrative efficiency is also needed to put law and policy on IWRM into practice.

⁷⁶ See, Andrea Kramer, 'Explaining the Gap: The Effectiveness of Legal Norms Reconsidered', *The Journal of Water Law*, Volume 15, Issue 3 and 4, (2004), p. 131.