Towards poverty alleviation: the water sector perspectives

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Abstract Water and poverty interface in many different ways. Sustainable management (i.e. development, allocation and utilization) of water resources is therefore a process-element of sustainable human development. This paper looks into water-poverty interfaces as well as into approaches to, and tools of, managing water in such a manner that water sector activities can contribute to alleviation of poverty. It gives a southern perspective and includes a case study of the evolving water management regime in Bangladesh.

Keywords Bangladesh; IWRM; poverty processes; water deprivation; water-poverty interface

Availability of water
The availability of water (i.e. freshwater) usable by humanity has been shrinking because of water pollution of various types (through sewerage, industrial poisoning, and harmful chemicals, particularly from agricultural activities, polluting both surface and ground water); and as a result of this and increasing population, per capita availability of water has been declining. The total global availability of water is unevenly distributed across the world’s various regions and across countries within each region. Also, the availability of water within the same country is subject to wide spatial and seasonal variations. The developing world, as a whole, faces water scarcity much more than the developed world.

On the other hand, increasing population and expanding economic activities have been causing the demand for water to rise. Moreover, with increased urbanization and economic growth, per capita demand for water has also been increasing. There are certain countries, though, where both too much and too little water give rise to different types of severe problems in different seasons. For example, in Bangladesh, annual per capita availability of water is abundant, and while during the rainy season floods inundate certain areas of the country every year and play havoc in certain years in extensive areas – up to two-thirds – of the country, water scarcity causes serious adverse impacts on the lives and living conditions of millions of people during the dry season. Some parts of the country also suffer from drought during the dry season; and, in certain western areas, drought also occurs even during the monsoon. But, Bangladesh has very limited capacity to meet the adverse consequences of floods and water scarcity. Most of the developing countries suffer from capacity limitation in financial, institutional, and human terms.

What is poverty and who are the poor?
Despite the phenomenal technological and economic advancement the world has achieved, poverty persists at disturbingly high levels. In 1999, almost half the world’s population (2.8 billion) lived on less than US$2 a day, and about one-fifth (1.2 billion) precariously on less than US$1 a day. South Asia has the highest concentration of poverty (42.6 per cent of those living on less than US$1), followed by sub-Saharan Africa (26.0 per cent), East Asia and the Pacific (22.6 per cent) Latin America and the Caribbean (6.7 per cent), Eastern Europe and Central Asia (1.5 per cent), and the Middle East and North Africa (0.6 per cent). But while this measure of poverty is a very useful starting point, it does not tell the whole story.
Poverty is in reality a multi-dimensional phenomenon. It has physical, economic, human, social, and psychological dimensions including lack of access to land and other assets; poor housing facilities; lack of access to agricultural inputs such as water, seeds, and fertilizers; unemployment and underemployment; lack of access to financial resources; food insecurity; lack of access to safe water and sanitation; illiteracy and lack of skills and lack of educational and training opportunities; vulnerability to illnesses; social exclusion or lack of participation; lack of freedom of choice; cultural backwardness; vulnerability to exploitation under the ongoing socio-economic and political processes; lack of self-confidence; and overall, lack of opportunities for breaking out of the poverty syndrome.

Who, then, are the poor? They include the landless, smallholder farmers, cottage and tiny scale non-farm operators, artisans, small fishermen, urban slum dwellers, nomadic pastoralists, ethnic indigenous groups, displaced/refugee populations, and households headed by disadvantaged women.

Why the poor are poor

The poor are poor, not because they chose to be or are fated to be; but because they are forced to be by accident of birth, natural hazards, or the ongoing socio-economic and political processes, or any combination of these factors. Natural causes include such climatic events as disastrous floods, cyclones, storm surges, droughts, earthquakes and river bank erosion. In the socio-economic-political arena, there are international and domestic poverty inducing/increasing processes.

Insofar as international processes are concerned, mention may be made of fluctuating prices and declining terms of trade for commodity exports from developing to developed countries; protectionist agricultural policies in developed countries; developing countries facing high debt burden and low foreign direct investment (FDI) flows; restrictions on worker flows from developing to developed countries; and unequal sharing of transboundary rivers—e.g. an upper riparian may take unduly large shares of the dry season waters of a transboundary river causing water shortage in the lower riparian and, hence, adverse impacts on its economy and society, particularly hitting its poor people who suffer the brunt of water shortages.

Domestically, policy and institutional biases often prevent resource flows to agriculture, rural development, services and utility supplies for the poor, and capability development programmes focused on the poor; accentuate inequality through the growth-focused, private sector-led economic process; and work against creating an enabling environment for people’s participation in governance. Other domestic poverty processes include population pressure; environmental degradation; exploitation of the poor by various kinds of middlemen; political confrontations; civil strife; gender biases against women in relation to access to land and assets, wage rates, educational and other social facilities, and job stereotyping; and marginalization of ethnic minorities through discriminatory policies.

Mutually reinforcing nature of causes and processes of poverty

The causes and processes of poverty are often mutually reinforcing. Focusing on the water sector, the impact of water shortages from sources (river flows, stored water, rains) within a lower riparian on its economy, society, and ecology may be compounded by lack of equitable flows of waters received through transboundary rivers from the upper riparians. The impact of this water scarcity on, for example, the smallholder farmers may be further compounded by policy biases and unequal social/muscle power in favour of the larger farmers enabling them to appropriate the available water to the exclusion, by and large, of the former. Also, the poor farmers may not be in a position to meet the costs of accessing water. Their already precarious economic condition may thus be dealt a new blow in a
given season, rendering them even weaker to face the future. The pauperization process involving smallholder farmers thus continues, with the various causes and processes combining to push them down that path.

Other poverty groups, in addition to the smallholders, also often suffer from water scarcities in terms of quantity or quality or both. The situation is particularly severe in certain parts of the world. The poor also suffer the most as a consequence of such natural hazards as floods, river bank erosion, storm surges, and salinity intrusion. Moreover, there are further complications arising from seasonal and spatial differences and imperatives relating to water availability and its quality. These water sector vulnerabilities of the affected people and their economic and social vulnerabilities feed on one another as these people cannot address one vulnerability (lack of water) as they are afflicted with another (lack of money) and because they cannot address the former they will have even less of the latter; and, thus, their poverty trap becomes more and more entrenched.

**Addressing poverty**

Some people may find themselves suddenly poor because of a severe natural disaster or civil strife, while others may be in the grip of endemic poverty due to various reasons including those enumerated above. Although one’s parentage (in the case of the people born into poor families) is a given, their poverty circumstances can be addressed; and so can the other causes of poverty – whether suddenly befallen or endemic. However, some of the causes of poverty are more intractable than others. But if the strategies are appropriate to the contextual realities of the specific target groups, and if they are properly implemented, it is possible to address successfully all the causes of poverty, although the pace of progress may vary. But the choice of the strategy in relation to a particular target group must be made on the basis of a clear understanding of the nature and complexity of the relevant causes. It needs to be recognized also that all the members of even a particular target group are not homogeneous. Hence, while a strategy adopted in relation to a particular target group must be definitive in its construction in the context of the main causes of poverty of that target group, it must also be flexible enough to be discerning if need be.

As a guiding principle it is crucial that causes and processes of poverty and their interactions in any country or even in different parts of a country are clearly understood before embarking upon designing policies and programmes to address poverty in that particular context. Even when the purpose at hand is to pursue the goal of poverty reduction through water sector interventions, it is not enough to understand only the water related issues and processes at work and interactions among them; it is also necessary to understand the linkages of these issues and processes with major non-water issues and processes causing or accentuating poverty.

In order to move from the general poverty reduction approach to water sector interventions for the purpose, it is necessary to understand and specify how water and poverty interface with each other.

**Water-poverty interface**

Manifestations of the water-poverty interface would include the following: lack of access to clean water for drinking purposes and for other domestic uses can jeopardize the lives and living conditions of the poor; drinking and domestic use of polluted water can cause health hazards for them – arsenic contamination of groundwater in Bangladesh affecting the source of drinking water for millions of poor Bangladeshis is a case in point; lack of water for overall agricultural use or at critical times of crop growth and for other economic activities that generate employment opportunities adversely impact on the livelihoods of the poor people; the urban poor, who often live in urban slums, suffer from lack of access to
clean water for drinking and household purposes – in fact, they often have no alternative to drinking and using for other purposes contaminated water, which tells on their health and increases their economic vulnerability; water also causes such hazards as floods and river bank erosions constricting economic conditions of the affected people; the needed transfer of resources from developmental projects to providing relief to and rehabilitating the people affected by such a hazard and for the rehabilitation/reconstruction of the destroyed/damaged infrastructures causes the future developmental prospects to shrink, often directly hitting the poor – the poor are thus doubly affected, once as a consequence of the hazard itself and then due to longer term adverse implications of the budgetary reallocation; those who live on such lands as offshore islands, coastal areas, and river banks live in constant fear of water-related hazards, which visit them often, destroying/damaging their crops, assets, and infrastructures, destabilizing their livelihoods, and restricting their future prospects.

The projected anthropogenic climate change (the globally averaged surface air temperature is projected by the IPCC-Third Assessment Report to warm up by 1.4 to 5.8°C by 2100 relative to 1990) will introduce serious new difficulties in terms of more frequent and excessive precipitation during a short period of time in certain places and little or no rains over prolonged periods of time in others, resulting respectively in more intensive and more frequent flood occurrences and severe droughts. Extreme climatic events (severe floods, droughts, cyclones, storm surges) will be more frequent and more severe as a result of climate change. The projected sea level rises (globally averaged sea level is projected by IPCC-TAR to rise by 9 to 88 cm by 2100) will cause land quality deterioration or loss of land through inundation in extensive coastal areas of many low lying and island countries, and even loss of the whole country in the case of certain small islands. Such climate change-induced natural hazards or their severities are on top of the natural hazards that have been occurring or would occur anyway in the course of nature’s evolutionary activities. The physical, economic, and social impacts of these climate change-related hazards manifest themselves in such terms as increased crop losses and damage; increased destruction of and damage to assets, housing, and infrastructures; increased disruption of the educational calendar; and increased distress migration. There will also be large-scale outbreaks of waterborne diseases consequent upon flood waters remaining for a long duration and because of polluted waters in flood-prone areas and increased heat-related diseases in tropical and temperate areas. The poor will face the brunt of these adverse consequences of climate change.

**Water deprivation – a state and a process**

Water deprivation is both a **state** (e.g. so many people do not have access to adequate water at a given time) and a **process** that contributes to the creation and perpetuation of that state. Both the state and the processes of deprivation need to be analyzed, their nature and causes understood, and, on that basis, corrective measures put in place to improve water access all round, particularly to the currently deprived – the poor mostly. Some of the water deprivation processes at work, particularly in developing countries, are outlined below.

- **Water deprivation is not always naturally created. It is often created by human activities.**
  Water development/diversion infrastructures may benefit some and deprive others. The question is: how is the decision taken to build such infrastructures? Do the people whose water access will be influenced one way or another participate in decision making? The poor usually remain excluded.

- **The process of water allocation under scarcity conditions determines the outcome, which may imply deprivation for some and benefit for others. Allocative decisions may in fact be influenced by the more powerful beneficiaries. This results in the exclusion of others, who are usually the poor and the disadvantaged.**
• Unplanned and rapid urbanization in countries around the world has been putting tremendous stress on urban services, including water supplies. Rural-urban migration, as a result of both push and pull factors, is a major cause of this process. But many of the migrants find themselves in urban slums facing extreme shortages of various services including water supplies.

• The ecosystems may also be deprived unless the water needs of the ecosystems are consciously and adequately addressed through appropriate project design and implementation processes. The process constricts the capacity of the natural systems, which in turn restricts the scope and prospects of human systems that are again immediately or ultimately dependent on the natural systems.

• When lack of water leads to ecological unsustainability, this adversely affects long-term economic and social opportunities of this generation and, also, the prospects of future generations. The poor bear the brunt of the consequential sufferings.

• As noted earlier, projected anthropogenic climate change will adversely affect the water regime in terms of increased precipitation often within short periods of time, more frequent and more intense floods, more severe cyclones and storm surges, sea level rises, increased water and vector-borne diseases, and increased river bank erosion in certain parts of the world and in terms of longer duration of droughts and heat-related diseases in others. The rural poor are at the forefront of those threatened with these anticipated increased hazards.

Water management

The evolving water sector “crisis” is primarily one of management (i.e. of development, allocation and utilization of water). In the past, it has been sectorally focused with little regard to efficiency in its utilization and effective pollution control. This has been widely recognized in recent years. Towards addressing the syndrome, a shift of emphasis to a holistic approach to water management is advocated as the first step. The concept of Integrated Water Resource Management (IWRM) provides a holistic approach-based framework for water management, that places due emphasis on equitable social welfare which obviously focuses on, among other aspects, poverty reduction and sustainability of ecosystems. IWRM is defined as “… a process which promotes the coordinated development and management of water, land, and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.” The basic concern in IWRM is to achieve a sustainable water world. The concept is now being discussed around the world and, in certain countries, has begun to be used as the guiding framework for water policy making.

Such international institutions and processes as the Global Water Partnership (GWP) with its regional and national structures around the world, World Water Council, International Water Resources Association, the annually organized Stockholm Water Symposium, World Water Forums, Third World Centre for Water Management, and recently launched Joint Water Project (of International Geosphere-Biosphere Programme (IGBP)-International Human Dimensions Programme (IHDP)-World Climate Research Programme (WCRP)-Diversitas), working with other international, regional, and national institutions/networks have been spearheading the awareness raising campaign regarding the need for improved and equitable water management with due regard to its supply side constraints and prospects and its competing multiple uses and users. At the same time, these institutions and processes have been, in pursuance of that broad approach, undertaking/supporting/encouraging research and dialogues at international, regional, and national levels aimed at improving the conceptual framework and developing appropriate principles, approaches, and tools of water management.
All these activities have been taken up in view of the realization that there is a looming water sector crisis around the world with local to global implications, which must be addressed to avert the disastrous consequences that it would entail. IWRM is obviously the broad goal – explicit or implicit – of all these activities and processes, which is a dynamic concept and is subject to modification on the basis of emergent new knowledge and national/local level realities prevailing in particular countries in question. In a developing country, poverty reduction has to be particularly focused on, along with other objectives. The Bonn recommendations for action (December 2001), elaborated below, add to and further strengthen the IWRM framework of analysis and action. Also, following a speech of the UN Secretary-General Kofi A Annan, entitled Towards a Sustainable Future, delivered in May 2002, water management was put at the top of the agenda of the World Summit on Sustainable Development (held in Johannesburg, 26 August–5 September 2002). This indeed was a further and strong recognition of the looming water sector crisis and the urgency with which the global community needs to address it.

**Bonn recommendations for action**

The International Freshwater Conference held in Bonn in December 2001 established or reconfirmed a number of basic principles to guide future water policies and water management practices. Those principles which are particularly relevant to addressing poverty are outlined below. It was agreed that water is both an economic and a social good and that the basic human water needs, in particular water security needs (for livelihood, pure water for drinking and other household uses for health and welfare, production and food security, reduction in vulnerability to disasters) of the poor should be met first. Given that the assured access of the poor to water is a key to poverty reduction, policies and programmes concerning water access of the poor should be developed on the basis of consultations with the poor with respect to their priority water security needs. Men and women should be allowed equitable access to water and should also be equally involved in water management.

The principles of equity and sustainability have been invoked to guide the allocation of water to its various uses which include, in addition to those related to basic human needs and water security needs of the poor, the needs of the ecosystems and of various economic uses including food security. Decentralization of water management is another key to proper water management, which can provide the necessary framework for ordinary people to participate in water management, contributing to the development of water resources in both quantitative and qualitative terms as well as to an effective, equitable, and sustainable water allocation to its various uses. In particular, it would facilitate poverty reduction interventions to be properly designed and implemented by providing inputs based on local level realities and in terms of feedback on the implementation of the policies and programmes in place to the national policy making process. It has also been recognized that transparent and effective legal and regulatory frameworks are of crucial importance for proper implementation of the adopted policies and programmes.

A strong role of the state in ensuring equitable and sustainable water resources management has been envisaged, which includes setting and enforcing stable and transparent rules enabling all uses and users of water to gain equitable access to water and, at the same time, ensuring efficient use of the available water in all cases. Each level of governance – from central to local – has to take on an objectively assigned set of responsibilities within the overall proposed framework. It has been emphasized that water is best managed at the lowest appropriate level implying that local governments play a pre-eminent role, with the central government providing policy and regulatory support. It has been emphasized that the state will work with active participation of the people, including the poor, in
making the decisions. An appropriate active role of the private sector in water management has been recognized – to be carried out within the framework of the guiding principles and under the regulatory arrangements in place.

The Bonn framework thus provides prioritized water allocative guidelines within the broad IWRM approach. Top priority is given to water for people (basic human needs and poverty reduction), followed by water for environment and different economic uses including food security. Also, it has been recognized that a minimum flow of water through the ecosystems should be ensured to maintain their integrity. Hence, at a time of increasing water scarcity, agriculture, which now uses about 80 per cent of the available water in developing countries, may have to be allocated less water. On the other hand, adequate water needs to be provided to agriculture for its sustainable growth for making the maximum possible contribution to the national food security of these countries. But, under the ongoing water management regime, inappropriate or inadequate water development, use-inefficiency, wastage, and polluting processes are among the major water sector problems that these countries face. To the extent these negatives can be controlled, the availability of usable water will increase and perform better towards meeting the various water needs, with the available water allocated following IWRM/Bonn guidelines.

**Capacity of developing countries to implement IWRM**

Thus, while a developing country may adopt the IWRM/Bonn guidelines-based framework of water management, its ability to make much headway with its own resources is limited. However, if local resources are effectively mobilized and if local government’s and local people’s participation in water management is ensured, more progress is possible than otherwise. The private sector may also make a useful contribution, given an appropriate framework for their effective and responsible participation. But, international assistance would be necessary. The international community needs to work together to improve water management in the developing countries and, thereby, avert chaotic and disruptive economic, social, and political consequences of continued poor water management. That the developed world supports various international and regional processes and networks that are working to help devise and implement appropriate water sector strategies around the world is indicative of the intention of the developed world to work in the water sector together with the developing countries. But, to what extent would that intention be translated into actual transfer of resources and technologies is uncertain to say the least. The various ongoing awareness-building activities and processes, including the ones mentioned earlier, at the international level and a forceful articulation of their needs by the developing countries may make a difference.

**Responding to various water dimensions of poverty: the tools**

The tools for responding to various water dimensions of poverty include policies, legislative frameworks, regulatory arrangements and instruments, and financial arrangements so designed as to create an enabling environment. An appropriate institutional framework with adequate capacity for adjusting/formulating and implementing appropriate policies and programmes at various levels of society – local to central – needs to be established for creating that enabling environment. But, to proceed on the basis of solid background information and proper assessment of the needs, it is necessary to analyze the prevailing circumstances and, on that basis, prepare the plans and projects. Particular attention needs to be given to the specific needs of women, the poor, and the disadvantaged.

The issues that need to be analyzed and addressed towards devising appropriate country/locality specific needs-based policy/programming responses within the overall framework provided by the IWRM/Bonn guidelines would include:
• collection and analysis of all relevant information regarding the availability of water, its various uses, current supply status, future prospects, current water allocation details, the state and processes of water deprivation, etc., and dissemination of information and messages arising from the analyses thereof to all including the poor;
• decentralization of water management to ensure local government’s pre- eminent role and people’s effective participation;
• the question of equitable access of water to all, with particular attention given to the unmet needs of women, the poor, and the disadvantaged for various purposes;
• the question of quality of water and its efficient delivery at affordable prices;
• technological aspects;
• rate and pattern of urbanization and urban water needs for drinking, sanitation, and other purposes;
• mobilization of finances from public and private sources;
• valuation and pricing of water and subsidies for the deserving to guide water allocation and water demand management;
• institutional and delivery mechanisms;
• public and private sector management, as appropriate;
• educating the poor so that they understand their rights and are enabled to better respond to situations;
• sensitization of the non-poor regarding proper water allocation for social harmony and larger benefits of all concerned;
• sensitization/training of policy makers, administrators, water professionals, development experts, and community leaders with respect to the approaches, imperatives, and realities;
• how best to ensure participation of water users and other stakeholders in the decision and implementation processes relating to all water sector activities, including development (with due regard to appropriate technologies) and management of irrigation infrastructure and water allocation mechanisms; and
• conflict resolution – institutions, principles, and procedures.

**Evolving water management in Bangladesh: a case study**

Bangladesh is predominantly rural and agricultural. Over three-fourths of its population lives in rural areas; and agriculture still accommodates almost two-thirds of the country’s total labour force and accounts for about a quarter of its GDP. It is the most densely populated country in the world (over 130 million in an area of 147,570 km²) except for a few cities and tiny states. In the international league table, it belongs to the least developed category with per capita annual income of around US$370 (or ppp US$1,602 as of 2000).

**Poverty**

Bangladesh has achieved an average annual economic growth rate of about 5.5 per cent during the second half of the 1990s and of about 4.5 per cent during the past 30 years. There has also been a significant reduction in population growth rate – down from 2.17 per cent during 1981–91 to 1.5 per cent during 1991–2001, a significant reduction in infant mortality rate – down from 149 in 1960 to 58 in 1999 per thousand live births, and an appreciable increase in the adult literacy rate which is currently estimated at about 64 per cent. But, poverty persists at a high level. According to official statistics as of 1999, 45 per cent of the population is poor on the basis of per capita/per day intake of less than 2,122 kcal with reference to which the (food) poverty line is defined in Bangladesh. Moreover, some 23 per cent of the population is still extremely poor with access to less than 1805 kcal. In terms of numbers, about 59 million people are poor, of whom about 30 million are extremely poor.
The reasons for such high levels of poverty include low level of economic development, increasing population, and glaring inequalities in access to resources and opportunities as well as in human capability, i.e. education, training, and health.

There is a high rate of rural-urban migration, of the poor in particular, due largely to push factors, with the consequent shifting of much of that rural property to urban areas. Slum dwelling in unsanitary conditions and lack of access to clean water for drinking and other purposes are among the characteristic features of urban poverty in Bangladesh.

Water sector
On an annual basis, water is abundant in Bangladesh. But, the country faces serious problems in its water sector which is characterized by too much water in the monsoon and too little in the dry season. The country’s sectorally focused top-down water management in the past, which is still in place in practice, has exacerbated the problems arising from natural reasons.

Past water management
In the past, food production was the primary purpose of water management in Bangladesh so that the focus of water sector activities has been on flood control, drainage, and irrigation (FCDI) to support the agricultural sector. The role of water in other sectors such as domestic water supply and sanitation, fisheries, navigation, industrial use, hydropower, ecology and nature, and disaster management remained mostly neglected. Insofar as poverty alleviation is concerned, it has never been a consideration in water management in Bangladesh in the past. The National Water Policy 1999 (discussed later) calls for water management in a manner that will contribute to the national goal of poverty alleviation, along with other goals. But no steps have yet been taken even in terms of planning and programming, let alone activities on the ground, to that end.

Water-poverty linkages
The question is: how can water sector activities contribute to poverty alleviation? The pathway has to be defined with reference to access of the poor to water in the context of its various uses and the resulting benefits. The key areas of water-poverty linkages in Bangladesh include safe drinking water and sanitation, food production, impact of flood and drought, and water-related health hazards. In future, the country’s water sector will face major challenges consequent upon the impact of the projected climate change and sea level rise, particularly affecting the poor.

Until a few years ago, some 97 per cent of the rural population of Bangladesh had access to tubewells for drinking water, but the arsenic contamination of ground water has since jeopardized this achievement. In fact, arsenic has become a major health hazard in the rural areas of Bangladesh. Sanitation remains poor not only in rural areas but also in the urban slums. The people living in these slums are usually ones who were trying to escape from rural poverty. Unfortunately, they remain trapped in poverty in their new locations though, perhaps, they are able to eke out some kind of a living through selling of labour and running of tiny-scale businesses and trading activities. Often, during floods, water- and vector-borne diseases break out on a wide scale.

For food production, access to land is the critical issue; and in Bangladesh a very large proportion of the rural households own no land at all or not enough land to produce their own food. One question is: do those who own/cultivate some land have access to water at appropriate times and in adequate quantities during the dry season? Another is: how are they affected by floods? A larger issue is agrarian reform along with the question of water access for agricultural purposes. Also, a useful area to look into from the point of view of
the landless and land-poor is the common property access to rivers, ponds, and tanks for, for example, fishing purposes. The legal context is one important element in all these regards. Another is the local power structure, which needs to be addressed through appropriate local governance.

Also, a major poverty-related issue is flood damage to crops, cattle, property, and infrastructure. Floods visit Bangladesh every year, inundating 22–30 per cent of the country’s land area. From time to time, a deluge occurs inundating up to two-thirds of the country. The affected people, particularly the poor, suffer huge losses; loss of human lives also occurs; availability of drinking water becomes a serious problem; water- and vector-borne diseases spread; and budgetary reallocation, necessitated by the urgently needed relief and rehabilitation activities, adversely affects developmental activities. Measures for flood vulnerability reduction are therefore an important element in the strategy for reducing such miseries of the people, particularly the poor. Drought is also a problem in certain parts of the country during the dry season. Even during the monsoon, certain areas in the western part of the country suffer from drought or drought-like conditions.

Bangladesh’s water sector has elaborate regional linkages with the other riparians of the Ganges-Brahmaputra-Meghna (GBM) river systems, as the country is the lowest riparian of these river systems, with all the transboundary rivers coming down to Bangladesh from the upper riparians. For Bangladesh, both devastating floods during the monsoon and water shortages during the dry season, which have crucial GBM regional causal dimensions, are poverty inducing/accentuating. Equitable sharing of the dry season flows of the transboundary rivers is thus a major water management issue for Bangladesh. Of the 54 rivers coming down from India, there is a 30-year water sharing treaty with India on only one, viz the Ganges, signed in December 1996. Little progress has since been made in reaching agreements on other rivers. Also, effective flood management in Bangladesh calls for GBM regional cooperation, given that only about 7 per cent of the total GBM catchment area lies in Bangladesh and 93 per cent in upstream countries.

Bangladesh, being deltaic, low lying, and flat is at the forefront of the adverse impact of the projected climate change and sea level rise, which will exacerbate the above problems and perhaps give rise to new ones.

First National Water Policy

Although several attempts were made since the mid-1960s to prepare water management plans for the country, no water policy was adopted until 1999. The National Water Policy (NWP) adopted in 1999 has broadly embraced IWRM as will be seen from its objectives. This implies a paradigm shift from the project-based approach in the past to a strategic approach. The NWP enunciates principles and directions for water planning and utilization towards fulfilling the national goals of:

- economic development,
- poverty alleviation,
- food security,
- public health and safety,
- decent standard of living of the people, and
- protection of the natural environment.

Economic development is necessary for poverty alleviation and ensuring food security; food security and improved public health are pre-requisites for improvement in the standard of living of the people. Environmental protection is necessary to preserve the ultimate base of economic growth and social progress for this and future generations. It is, therefore, essential that in water allocation, its various uses are given due importance and that various socio-economic groups of people are ensured of equitable access to water.
The major objectives set out in the NWP are broadly:

- to address issues related to the harnessing and development of all forms of surface water and ground water and management of these resources in an efficient and equitable manner
- 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
- to accelerate the development of sustainable public and private water delivery systems with appropriate legal and financial measures and incentives, including delineation of water rights and water pricing
- to bring institutional changes that will help decentralize the management of water resources and enhance the role of women in water management
- to develop a legal and regulatory environment that will help the process of decentralization, sound environmental management, and improve the investment climate for the private sector in water development and management
- to 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 equity, social justice and environmental awareness to facilitate achievement of the water management objectives through broad public participation.

However, the National Water Policy has ignored the issue of the impact of the anticipated climate change and sea level rise on the country’s water resources. This is a major gap in the policy, which should be corrected. Also, flood, drought, and urban water supplies, which are among the key water sector problems the country faces but the management of which has not been specifically included in the list of major objectives, should be prominently flagged as major areas of focus.

National Water Management Plan

A draft National Water Management Plan (NWMP) has been prepared with reference to the National Water Policy 1999 to contribute to the overall national goals, and is awaiting approval by the government. It provides a framework to guide the activities of all water-related actors concerned with managing water resources and providing water services, in an integrated and comprehensive manner. It also offers guidelines for rationalizing and strengthening institutional and implementation capabilities in the water sector. If adopted, it will be reviewed and updated every 5 years with reference to achievements, failures, and emerging new realities.

Clearly, water sector policy and planning reorientation is in the desirable direction. But the actual changes on the ground are still at the nascent stage. Required institutional changes are yet to be fully worked out, and coordination, both horizontal and vertical, remains seriously wanting. Moreover, the NWMP outlines many proposals, but all cannot be implemented simultaneously due to resource and management limitations. Prioritization is necessary, a task to be undertaken in earnest once the NWMP is adopted.

Participatory Water Management

Draft Guidelines for Participatory Water Management (GPWM), applicable to all agencies in the water sector, were prepared. Participation is defined as “a process in which stakeholders influence policy formulation, alternative designs, investment choices, and management decisions affecting their communities and establish a necessary sense of ownership.”

Participation is to be ensured through the formation of water management groups (WMGs), which should include women, the poor, and the disadvantaged along with others. In certain irrigation projects, some WMGs have been formed, but except for a few, the WMGs formed are still not registered with the government. Procedures of their functioning...
are still evolving. On the whole, little has so far been achieved by way of introducing participatory management in the water sector.

Other activities and processes
The Bangladesh Water Partnership (BWP), in association with the think tank Bangladesh Unnayan Parishad (BUP), has formulated Bangladesh Water Vision 2025 as well as a framework for action. Work on preparing specific issue-focused action plans is ongoing.

Also, studies on various aspects of the prevailing water sector realities and formulation of future directions are being conducted by various public and non-governmental research organizations. The BUP, for example, has been working on a number of major issues, including sharing of transboundary rivers, agriculture in flood-prone areas, reduction of flood vulnerabilities, water and security in South Asia, cross-border hydropower trade, and climate change and its impact on water resources. In some cases, the research results have already been published or are available in pre-publication forms, while, in other cases, work is in progress. The findings are disseminated through various means (e.g. seminars, consultations, newspaper reports) to both the policy makers and society at large.

Thus, the paradigm shift at the policy level supported by ongoing research and advocacy conducted by various organizations should, one may expect, eventually lead to a desirable change on the ground in the management of water. The sooner this happens, the better it is. However, there are two prerequisites for moving forward sustainably. There needs to be a favourable political will, with broad consensus across political parties for both broad-based support for, and continuity of, policies and planning directions. Second, commensurate financial resources are required, which need to be mobilized from domestic (budgetary allocation, additional domestic mobilization of resources from various sources) and foreign (remittances, FDI, foreign aid) sources on the basis of appropriate policies and effective purposeful efforts.

The result
How the management of the country’s water sector shapes up in practice, given the adopted NWP, the drafted NWMP, the drafted GPWM, the proposed institutional restructuring, and the ongoing research and advocacy activities, briefly outlined above, remains to be seen.

Of course, if need be, as they are implemented and experiences gathered as a result, and as new knowledge and information are available, the NWP, the NWMP, the institutional structure, and the mechanisms for people’s participation can all be modified and improved.

References
MoWR (1999). National Water Policy, Ministry of Water Resources (MoWR), Government of Bangladesh (GoB), Dhaka.