

# THE ENVIRONMENT AND POLICY-MAKING IN BANGLADESH

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## ABSTRACT

There are a variety of environmental impacts, particularly non-market related, that are still considered to be non-quantifiable and, therefore, excluded from the decision making process in many developing countries. This paper discusses the importance of incorporating these impacts into the policy-making process. Using the case of Bangladesh, it demonstrates how a failure to properly account for environmental impacts has resulted in decisions that have had negative implications for the environment and society.

### Introduction

Developing countries are faced with many environmental problems. Although these problems differ from country to country in terms of scale and magnitude, some are common such as air and water pollution, land degradation, and loss of wetland and biodiversity. Some developing countries are rapidly exploiting their natural resources to increase incomes and achieve development goals, often at the cost of depleting natural resources and, to some extent, by way of degrading the environment. The issue is more complicated in the developing countries than in the developed ones in that, on one hand, development is required to address poverty, enhance per capita income and attain a better quality of life: On the other hand, the natural environment needs to be protected in a sustainable way due to the fact that a large section of the population directly depends on it for their food and livelihood. Depletion of these resources means further deterioration of their living standards and shrinking of resource stock for future use. Furthermore, limited resource endowment in these countries and competition among different uses may conflict with one another (e.g. economic growth may be seen to conflict with preservation of natural resources). Finding a delicate balance between development and conservation, therefore, is a crucial issue for developing countries.

Though considerable information now exists on the causes and consequences of the degradation of natural resources, it is still inadequate to resolve the issue of how to attain a balance between development and conservation goals. This issue has been discussed in the paper from the perspective of the importance of economic valuation in policy-making.

Many environmental problems arise in the process of production and consumption of different goods and services for a society. Any good or service, be it normal (e.g. provision of an industrial product and construction of a new road) or environmental (e.g. clean air, healthy waterways and improved riparian

buffer), either created or restored for the public, is expected to generate both market and non-market benefits. Market benefits are those kinds of benefits which have established markets or are exchanged through market mechanisms and thus have a price tag, while non-market benefits do not have any established markets and thus do not command a price. The term 'non-market' is used to cover a wide range of situations wherein "markets are nonexistent, incomplete or institutionally restrained from reflecting interaction between supply and demand" (ADB, 1999: 17). The concept, however, does not imply that the market has nothing to do with the goods and services in question. The market may provide information, but it is likely to be incomplete or indirect. In such cases, it will not reflect, if at all, the true value of the good or service. Shechter (2000) also distinguishes non-market benefits from conventional market benefits in that "their [non-market] use does not always involve market transactions. Consequently, explicit market-determined valuation, that is price, usually does not exist for them" (p: 72).

Marketed goods and services are well accounted for in the decision making process in both developed and developing countries,<sup>1</sup> due to the assignment of values<sup>2</sup> attached to them. However, most non-market benefits are not accounted for in the decision-making process, particularly in developing countries. Nevertheless, over the years, a wide range of economic valuation methods have been developed and applied mainly in the developed countries. These techniques are now equally applied in developing and transition economies (Georgiou *et al.*, 1997; Whittington, 1998; Mourato, 1998). Although the application of economic valuation techniques is growing in developing countries, often as part of the assessment of externally funded environmental projects (Ardila *et al.*, 1998; Russell *et al.*, 2001), it is still far from being satisfactory. Most importantly, the level of application varies across countries; some are quite advanced, while others are lagging behind. This paper reviews the role of the environment,

specifically the use and potential of non-market economic valuation, in the policy decision-making context of developing countries. As a case study, Bangladesh has been chosen for discussion. However, it has implications for many developing countries. The remainder of the paper is organized as follows: the role of the environment in the decision making process in Bangladesh is discussed in the next section. The following sections review methodological issues of economic valuation, application of non-market valuation in Bangladesh, the consequences of non-compliance with non-market benefits, and the main conclusions.

### **The Environment in Decision-making in Bangladesh**

During the 1990s, there was considerable progress in Bangladesh regarding the formulation of environmental policies and strategies. Much of this development resulted from the signing of different International Conventions, Treaties and Protocols (ICTPs) and the overwhelming emphasis on environmental issues by the global community. So far Bangladesh has signed a significant number of ICTPs that include environmental considerations. The country, however, has implemented relatively few of its obligations under these ICTPs. Some noteworthy milestones framing policies and strategies, include: Environmental Policy 1992, National Environment Management Action Plan 1995, Environment Conservation Act 1995, Environment Conservation Rules (ECR) 1997, Environment Court Act 2000, and Environment Conservation Act (Amendment) 2002. A new ministry named the Ministry of Environment and Forest (MOEF) was established and the Department of Environment (DOE) was upgraded in 1989. Despite these achievements, little progress has been made in the area of integrating environmental concerns into policy-making.

Two events in the late 1980s created the need for change in Bangladesh. First, after the 1987 and 1988 floods<sup>3</sup>, a multi-donor program called the Flood Action Plan (FAP) was undertaken in coordination with the World Bank. During the FAP studies, a substantial amount of information was generated that impacted variously on water resource development projects, particularly flood control, drainage and irrigation (FCDI) projects. As part of the FAP studies, the *Guideline for Environmental Impact Assessment (EIA)* was prepared in 1992 for use in ongoing and future FAP to portfolios, similar FCDI and other water management projects. As a companion to the guideline, the *Manual for*

*Environmental Impact Assessment* was prepared in 1995 to cover the technical aspects of EIA. These two documents are the first attempt to identify the environmental impacts of development activities in Bangladesh. They are still in use for medium and large-scale projects in the water sector. Another manual, titled *Guidelines on Environmental Issues Related to Physical Planning*, developed by the Local Government Engineering Department in 1994, is being used for small projects undertaken at the local level. Second, concern for the environment started to mount when development partners, particularly the World Bank and the UNDP, raised environmental issues in the course of implementation of various aided development projects. During the early 1990s, particularly after the Rio Summit, many donor agencies insisted on conducting EIAs for their aided projects. It was essentially the donors who inspired the application of EIAs in Bangladesh (Alam, 1996). The ECR 1997 also made it mandatory for industries in the private sector to have an EIA, and to obtain a clearance from the Department of Environment before placing a request for approval to relevant departments.

Since then, many EIAs have been conducted in Bangladesh; some are project-specific, others are general. The EIA, however, is yet to be incorporated into the formal planning process in the public sector. In 1992, the Government made provisions for 'environmental scrutiny' of all development projects, which mandates input from the Ministry of Environment and Forest during project appraisals in the Planning Commission. However, this professional judgment both at the Ministry and the DOE is limited due to the lack of appropriate skills and capabilities to examine environmental consequences of development projects (Alam, 1995; Momtaz, 2000). A major problem under the existing procedure is the lack of mandatory provision for environmental assessment. The existing project appraisal formats (Project Proforma or PP and Project Concept Paper or PCP) of the Planning Commission<sup>4</sup> include a question asking for assessment of the environmental impacts of development projects. The common practice is to provide only subjective judgments in reply. The PP and PCP do not require either the identification or the quantification of environmental costs and benefits<sup>5</sup>.

Most importantly, the existing assessment procedures are not adequate to examine the impact of a development activity on the environment. In the best case scenario, the environmental impacts of development projects are only described or enumerated in physical terms without assigning

monetary values. This leaves the decision-maker with the unenviable task of trying to judge, for example, whether the welfare gains will outweigh the ensuing loss (i.e. cost) associated with the project. Even with the best of intentions, this becomes an intuitive process. If environmental impacts were to be valued in monetary terms, it would be easier to assign an appropriate weight to them in the decision-making process.

Being a developing country, public sector investment still plays a significant role in Bangladesh's socio-economic development<sup>6</sup>. The planning process of the public sector investment lacks a systematic appraisal procedure, such as the use of cost-benefit analysis (CBA), which is mostly used on an *ad hoc* basis. Current practices demonstrate many cases of project-level distortions or biases against efficient resource use and maintenance of environmental quality. This hinders the achievement of sustainable development. Some of these distortions/limitations are as follows:

- CBA is not being applied to all sectors as it is felt that quantification of environmental impacts and economic valuation of some goods and services produced by the concerned project 'are not possible'. For instance, projects in the social sector<sup>7</sup> are still considered not to be amenable to economic analysis as the benefits are 'non-quantifiable'.
- In most cases, when CBA is applied, the selection of projects is predominantly based on financial appraisal, that is, on simple cash flow (e.g. projects in the agriculture sector). Less often, the selection is based on narrow economic analysis, that is, narrow in the sense of shadow pricing some inputs and not others (e.g. projects in the energy sector). In other cases, practices of project appraisal mainly focus on cost control or minimization rather than a more professional appraisal using economic techniques.
- By and large, aided-projects<sup>8</sup> are appraised with greater rigor and on the basis of the donor's own methodologies. The donor's perspective, however, has the least impact on the country's public sector policy making. Projects which are financed exclusively by the government are often prepared and appraised with less technical rigor. As the World Bank put it: "[i]t is not uncommon that the selection of such projects [fully government-financed projects] is influenced by non-economic criteria" (WB, 1996: 59).

Besides involving inadequate application of economic criteria, the decision-making process is often biased due to the failure to appreciate the environmental impacts of development projects; for example:

- The environmental benefits and costs tend to be too narrowly defined in space and time (normally they exclude externalities and non-market benefits) for development projects, regardless of whether they are financed by the government or a donor.
- The environmental effects are not normally considered at the design stage of the project and only in a few cases are environmental impacts described in qualitative terms.
- Neither any scope for nor any attempt to quantify and value environmental impacts in project analysis exists in the project appraisal format in the public sector.

Therefore, the appraisal procedure used to evaluate development projects is inadequate to appreciate the scarcity values and true costs of resources, and does not take these issues into account in the project analysis. The environmental impacts of development projects are largely ignored. This leads to inefficient policy decisions with regard to project selection.

### **Methodological Issues of Economic Valuation**

#### ***Total Economic Value***

Economic value is defined by economic behaviour in the context of supply and demand. It is simply the amount of money individuals are willing to forgo (pay) in order to receive a good or service or state of the world, or the amount of money they are willing to accept in compensation for the loss of a good or service or state of the world. This sum of money is demonstrated or implied by the choices or preferences individuals make. Therefore, economic value is regarded as a measure of utility of individuals in a society through the concepts of willingness to pay (WTP) and willingness to accept (WTA) compensation. From an economic point of view, values can be associated equally with the consumption of goods and services purchased in markets as well as with the utility or satisfaction from a good or service for which no payments are made (e.g. clean air or water) or even where there does not exist any market (e.g. aesthetic beauty and cultural heritage). In this sense, anything from which an individual gains satisfaction or utility is considered to be of value, so long as the individual is willing to

give up limited resources for it (Imber *et al.*, 1993 and Binning *et al.*, 1995).

The value society places on environmental resources (i.e. non-market goods and services) depends on their different uses and services which are captured by the concept of total economic value (TEV). Based on a case of the preservation of the Osmany Uddyan in Dhaka City, this concept can be elaborated. Components of the TEV of the *uddyan* (garden) may include:

- Direct use values: values arising from consumptive and non-consumptive uses of the *uddyan* (e.g. timber value of trees and recreational values);
- Indirect use values: values arising from ecological function of trees such as the carbon storage and sequestration; and
- Non-use values: values arising from existence benefit (i.e. satisfaction from knowing that the *uddyan* exists or will continue to exist which is unrelated to residents' current and future uses), bequest benefit (i.e. satisfaction from knowing that the *uddyan* exists for the use of future generations), and option benefit (i.e. from having the option of utilising the *uddyan* at some time in the future even though no current use is made of it).

For rational decision-making, it is important to include all components of the TEV. Studies show that even in developing countries like Bangladesh, non-use values constitute a significant portion of the total value of an environmental resource (Alam, 2005). Ignorance of such values will provide misleading information to policy-making.

### **Valuation Methods**

At the broadest levels, there are two main types of approaches that are employed to assist in valuation tasks: revealed preference technique and stated preference technique. The choice of a particular approach depends on the characteristics of the valuation problem. A wide body of literature is available today which documents these techniques and illustrates how they are related to a particular problem (Mitchell and Carson, 1989; Freeman, 1993; Pearce *et al.*, 1994; Georgiou *et al.*, 1997 and Bateman and Willis, 1999). Each of these techniques is summarised below<sup>1</sup> and a taxonomy of these techniques is presented in Figure 1.

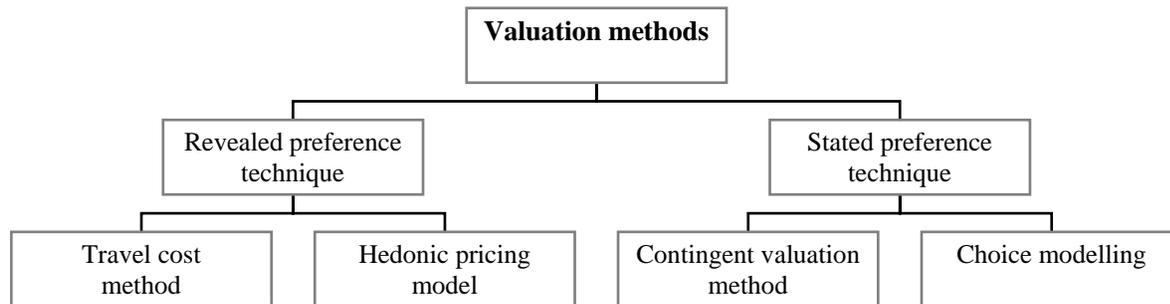
Revealed preference techniques rely on observations of actual market behaviours to make inferences about behaviour and value. Individuals respond to different types of environmental conditions by changing their behavior. These changes in behavior are often reflected in purchasing decisions, travel decisions, and recreational decisions. Economists use data on these changes to measure the value individuals place on environmental resources. The most common revealed preference techniques are travel cost method (TCM) and hedonic pricing model (HPM).

The travel cost method (TCM) estimates the value people place on recreational sites or amenities. Using travel costs as a proxy for price and number of trips as the quantity demanded, the TCM estimates a demand curve. This demand curve helps to calculate the money value individuals would be willing to pay in excess of their current travel costs for continued access to the site. This money value is known as the maximum net WTP or consumer surplus for continued access to the recreation site. Using this method, it is possible to measure the economic value of tourism and recreation resources in Bangladesh such as the Foy's Lake in Chittagong, Himchari at Cox's Bazar and Madhabkunda waterfall in Sylhet.

Hedonic pricing model (HPM) is used to capture the relationship between the bundle of characteristics a good has and its price. Its application depends on there being an observable market (such as a housing market) that might be affected by an environmental quality characteristic of interest. HPM estimates the implicit price of the characteristics of a good or service. For example, property prices may be influenced by the proximity to and quality of environmental amenities or disamenities. Air and water quality has been found to be a determinant of housing prices even in the developing countries. Where residential properties suffer from the deterioration of air and water quality in the Hazaribagh area of Dhaka City due to the externalities caused by tannery industries, HPM can be used to estimate the impact of these disamenities on the price of housing properties.

All of the methods previously mentioned rely on information about actual human behavior. However, in many cases, individuals' choices are not reflected through their behaviour. For instance, residents in Dhaka City may value the conservation of the Royal Bengal tigers in the Sundarbans or the restoration and preservation of the Mahasthangarh in Bogra, the oldest archaeological site of Bangladesh with

**Figure 1: Economics Valuation Methods**



immense heritage significant (i.e. non-use values), even if they do not have any intention to visit the place. These preferences are not reflected by their behaviours in the market; however, economists have developed techniques for eliciting these values using surveys wherein some form of hypothetical situation is created and participants are asked to predict their behaviour in that situation. The two most common of these techniques are contingent valuation method (CVM) and choice modelling (CM).

In the CVM, contingent on a specific hypothetical scenario and description of the environmental resource, respondents are directly asked through surveys about their WTP for an environmental improvement or their WTA compensation for the loss of a specific environmental asset. Theoretically, CVM is based on welfare economics and assumes that stated amounts (i.e. WTP or WTA) are related to a respondent's underlying preferences. CVM is the most widely used valuation technique and is capable of measuring both use and non-use benefits.

Choice modelling (CM) was developed originally in the fields of marketing and transport; however, over the years it has been applied in resource economics and health contexts. In CM, respondents are presented with several sets of resource attributes and are asked to choose their preferred option from each set. By observing and modelling how people change a preferred option in response to the changes in the levels of attributes relevant to a resource allocation decision, it is possible to determine how they trade-off between the attributes. For example, in a decision about how much payment a respondent would be willing to accept to restore riparian buffers along the waterways, relevant attributes that may emerge include percentage of river frontage covered, length of agreement and managing authority. The CM technique makes it possible to determine the relative importance of these attributes to people in making

their choices (EPA, 2003 and Rolfe *et al.*, 2004). Although CM is statistically complex and is expensive to implement, it allows the identification of the relative worth of characteristics of an environmental resource. Its application is growing both in developed and developing countries.

### ***Benefit Transfer***

Full-scale economic valuation of an environmental resource requires detailed study, often involving several methods as described above. However, due to constraints of time and financial resources to conduct a primary study, researchers often employ a benefit transfer approach to assess values in a case study of interest. Benefit transfer is an approach whereby results from one or more empirical studies (i.e. benefit estimates, functions, and/or raw data sets) are used in another valuation situation, avoiding the need for conducting primary research. However, EPA (2003) cautions that this approach could be abused if care is not taken to ensure that the scope of the original study closely matches the situation being considered.

Economic valuation techniques are being used as an input to assist governments and other decision-makers in the design of projects and programs, policies, planning exercises, environmental accounting and investment strategies. Although originally developed and widely used in western economies, its application is growing in developing countries. In the next section, an overview of the application of valuation techniques in Bangladesh is presented.

### **Non-market Valuation in Bangladesh: A Review**

Various methods have been used in the past few decades for the valuation of non-market goods and services, both in developed and developing countries.

However, there has been surprisingly little empirical work on economic valuation of non-market goods and services in Bangladesh. There have been a few preliminary valuation exercises in the country with regard to development projects, programs or policies. Chowdhury (1999) used the contingent valuation method (CVM) to estimate the willingness to pay (WTP) of poor urban households in two slum areas in Dhaka City for public water connection (common tap for shared use). Shammin (1999) applied the travel cost method to determine people's willingness to pay for the services of the Dhaka Zoological Garden. Haque *et al.* (1997) applied the hedonic price method to estimate the loss of human health and land values due to a deteriorating environment caused by pollution from the tanneries in Hazaribagh. Alam (2002) used an extended CVM to estimate the total benefits of the cleanup of a dying river which revealed that not only a significant proportion of the residents were willing to pay for the environmental improvement, but an even larger portion was willing to contribute in non-monetary ways (mainly their time). The share of non-market benefits was found to be about 34 percent of total benefit of the cleanup. An integration of non-market benefit of river cleanup into economic analysis also reveals that the cleanup of dying rivers is not only an environmental imperative, but is also socially and economically justified (Alam and Marinova, 2003). Torero *et al.* (2003) estimated the rural households' willingness to pay (WTP) for access to public telephone services in Bangladesh and Peru applying CVM. Using both parametric and non-parametric approximations, they estimated households' WTP. The results suggest that rural telecommunications services in Bangladesh are welfare enhancing, since households' WTP are higher than the prevailing tariff rates for local, long-distance and international calls.

Economic valuation studies are not only in their infancy in Bangladesh; most importantly, these studies are conducted either as part of an MS/PhD research undertaken overseas or funded by donor agencies as an obligation of their own requirements. These sporadic attempts to apply economic valuation techniques to estimate non-market benefits of environmental improvement and integrate the environmental impacts into the economic analysis still remain confined to academic exercises. Economic valuation of environmental impacts is not incorporated in the formal planning process in the country. Because of the key role of public sector policy decision making in Bangladesh, an attempt to integrate environmental considerations into the policy decision making is warranted<sup>9</sup>.

The non-monetization of environmental impacts means that they are either under-valued or over-valued in the decision-making process. Under-valuation occurs when environmental benefits are given little or no weight, which results in low levels of investment in many areas of the environment. For instance, there was no investment in air quality improvement in Dhaka City until 1999, although many studies described the situation as the worst in the world. Conversely, environmental benefits would be over-valued if environmental considerations are given too much weight by decision-makers, when balancing the unquantified or intangible disbenefits caused by projects against the quantified net benefits estimated in project analysis. A recent tendency that has been observed is to include an environmental component in a project in order to attract foreign aid or to get a quick approval. Such projects can divert limited resources to areas that do not provide optimal social, economic and environmental outcomes.

Furthermore, if environmental costs are neglected or ignored, the net benefits of a project tend to be over-valued. For example, traditionally in the case of flood control and irrigation projects in Bangladesh, the cost of the destruction of wetlands and floodplains have been ignored against the benefits from increased irrigable land. In the past, many projects have become 'white elephants', 'project failures', or 'development disasters' because of the failure to properly incorporate all the environmental implications (Alam, 1995; Rahman, 1995; Haque, 1998).

Therefore, the absence of (i) application of non-monetization of environmental benefit; and (ii) an integration of monetization of non-market goods and services into economic analysis, leads to resource use conflicts and its misallocation. The following section offers some examples of how a failure to appreciate non-market benefits leads to the misallocation of resources and the destruction of natural resources in Bangladesh.

### **Consequences of Ignoring Non-market Benefits**

The consequences of failure to consider non-market benefits in policy-making have severe implications for resource allocation and its sustainable use in Bangladesh. A few examples are described below:

#### ***Destruction of Wetlands and Open Spaces***

Over the past few years, particularly in Dhaka City, wetlands and open spaces such as playgrounds and parks have been converted into residential houses or

commercial enterprises. Government agencies and even the custodians of the city – Dhaka City Corporation (DCC) and Rajdhani Unnayan Kartripakkya (Capital City Development Authority/RAJUK) – are in some cases responsible for such short-sighted decisions. Some recent reports which appeared in the national daily newspapers in Bangladesh are as follows:

The Gulistan Park, one of the last remaining parklands in the Old City, is vanishing fast. The Dhaka City Corporation (DCC) has rented a stretch of the parkland for building of commercial shops... [the DCC] rented 840-square feet of land... at Tk<sup>10</sup> 3,360 (Tk 4 for each square foot) as monthly rent on a temporary basis for commercial use (*The Daily Star*, 7.3.02).

Indiscriminate filling of Gulshan-Banani-Baridhara Lake, RAJUK's bid to build commercial structures on public parks and open spaces, and unplanned commercialization of residential plots are fast changing Gulshan Residential Model Town into an urban ghetto. The ever-shrinking silhouette of the Gulshan-Banani-Baridhara Lake snaking through the posh residential areas tells a grim story of indiscriminate land filling, resulting in possible extinction of the waterbody... At the nearby Gulshan Avenue, a playground has disappeared... At Gulshan-2 roundabout, at least three public parks have disappeared or are in the process of disappearance (*The Daily Star*, 8.3.02).

The Dhaka City Corporation (DCC) has 'secretly' revived a project to fill up a natural canal in the city's Mohammadpur area next to the martyred intellectuals' monument and build a truck terminal there. The Haikkar Khal winds its way from Turag in the northwest through Mohammadpur and joins the Buriganga River in the south. Over the years, Dhaka has already lost 22 natural canals due to similar 'mindless' decisions by the successive governments. ...The Haikkar Khal is one of the last remaining and fast flowing canals in the city, which remains 'alive' even during lean periods (*The Daily Star*, 18.8.02).

### ***Disappearance of Chalan Beel***

Since the 1960s Bangladesh has followed a policy of self-sufficiency in food production. The main strategy was to expand the irrigation network and cultivable land under crop production. To do so, many wetlands and floodplains were converted, often under the prescription of the main donor agency, the World Bank, into rice fields, ignoring the benefits of their value for maintaining ecological balance. After decades of prescriptions of such 'development', the World Bank (1997) later recognized that "[t]he habitat of fish, a major source of protein for the rural poor, is under threat from the increasing conversion of land to agricultural use. Inland navigation is hindered by blockages in the river delta" (p: 3). However, by that time, most parts of the largest wetland in the country, *Chalan Beel*, has been converted into agricultural farmland. This is not an isolated example in destroying wetlands and natural resources. The benefits of preserving floodplains and wetlands have hardly been weighed in the decision-making process against the benefits of conversion into agricultural uses which lead to massive destruction of unique natural resources in many parts of the country.

### ***Conversion of Chokoria Mangrove Forest***

Once the country was very rich with dense mangrove forests, particularly in the south and south-eastern region. In the early 1980s, the government with financial assistance from the UNDP and the World Bank undertook a program to promote shrimp farming in the coastal region. In this process, it started to lease out the second largest mangrove forest, known as *Chokoria Sundarbans* in Cox's Bazar. As a result, mangrove cover in *Chokoria Sundarban* forest declined from an area of 18,000 ha in 1976 to just 973 ha in 1988 (Hossain *et al.*, 2001). Currently, one can hardly see any remnants of mangrove vegetation in *Chokoria* largely due to conversion of forest land into shrimp farming and because of other human interventions (e.g. extension of settlement). This is an example of how forest land-use changes, ignoring its many non-use benefits (e.g. biodiversity and ecosystem functions, species loss, ability to harness cyclonic storms, and tourism and education) on the one hand and failing to foresee negative externalities, such as salinization of coastal aquifers and agricultural land, displacement and loss of employment for locals, and deterioration of law and order situation (Battacharya *et al.*, 1999), causing unprecedented harm to the unique mangrove system and creating massive socio-economic disruptions.

### ***Misuse of Public Funds***

Another consequence of the non-compliance of non-market benefits is to create further avenues for the misuse of public funds concerning development projects and programs<sup>11</sup>. A failure to consider such benefits facilitates both the inclusion and termination of projects in the Annual Development Program (ADP)<sup>12</sup> and makes them more vulnerable to the influence of purely political considerations<sup>13</sup>. It creates an opportunity both for bureaucrats and the political regime to misuse public funds for 'prestige projects'<sup>14</sup>. Extensive political interference in choosing projects in the ADP also leads to inadequate spending in key areas. A case is the inadequate allocation for environmental improvement/protection projects in Bangladesh. Following the recent floods and severe water logging within Dhaka City and the overdependence on ground water sources for its municipal water supply, there was a great need to clean up the surrounding rivers, particularly the Buriganga River and to restore the encroached sections of the city canals. Such environmental improvement activities would find it difficult to pass a cost-benefit test as most of the potential benefits are non-marketable. Consequently, these areas received little allocation of public funding both from the central and local government, whilst road dividing project in Dhaka City received funding both from the donors and the government despite the alleged corruption and misuse of fund.

There are many areas where benefit estimation or monetization of non-market goods needs urgent attention for efficient allocation of scarce resources in order to facilitate the decision-making process. Trimming of ADPs is a regular phenomenon concerning project management in Bangladesh. For instance, the funding for the original ADP in 2001 was proposed to be Tk 19,000 crore, while the revised ADP was set at Tk 16,000 crore, roughly a 16 percent reduction. The downward revision of ADP funding was required for various reasons including (i) failure to mobilize internal resources, (ii) failure to mobilize external resources, (iii) external shocks (e.g. the war in the Middle East, Asian currency crisis and recession in Western economies), (iv) internal shocks (e.g. flood, cyclone and other natural disasters), (v) change of political regime, and (vi) change of priority (e.g. a shift from nationalization to privatization). Due to the non-availability of details about the projects/programs and their components responsible for such a reduction, this issue was raised with concerned officials at the Bangladesh Planning Commission in 2001 during a field visit. It was revealed that at all levels of pruning – micro (at the

agency level), meso (at the ministry level) and macro (at the Planning Commission level) – projects/programs which generate 'intangible' benefits (i.e. non-market) are usually subject to indiscriminate allocation cuts. Even at the agency-level, while making any internal adjustment, such activities are given lower priority in terms of resource allocation.

All these aspects features of non-monetization lead to misallocation of resources and, particularly, underinvestment in areas which need urgent intervention from public funds. For instance, the annual development allocation for the Ministry of Environment and Forest in 2000/01 was Tk. 26.33 crore which is only about 0.15 percent of the total allocation for the public sector.

These examples are not isolated cases. Over the years, major conflicts have been observed over the use of the country's scarce resources. Some of the most prominent disputes have centered on the use and management of water, forest, land and mineral resources. Disputes have focused on whether fragile natural resources should be allowed to be restored and preserved or be destroyed for the sake of 'development'. These disputes show that non-market benefits have not been adequately accounted for in the decision-making process. As a whole, the protection and conservation of key natural systems and important ecological functions are not considered in terms of their non-use values (e.g. these systems and functions may provide invaluable support and protection for economic activity and human welfare) in the decision-making calculus.

### **Conclusion**

Natural resources are over-exploited in countries like Bangladesh because, *inter alia*, markets for them are imperfect in the sense that they are either missing or not fully developed. Policy decisions are also misguided as the benefits of some goods and services (e.g. environmental improvement) are non-monetized. Failing to value environmental resources properly leads to general misallocation and distortion in policy making. Consequently, although many areas of the economy deserve investment, this is not done as such investments result in non-market benefits.

The proper valuation of non-market environmental goods has significant policy implications. As many of the environmental impacts are non-market outputs, one extremely important policy measure is to ensure that, as far as possible, the 'true' economic value of environmental resources is accounted for when

making investment and environmental policy decisions. Such goods have generally been assigned zero<sup>15</sup> or low values. The evidence of the depletion of floodplain and wetland resources in Bangladesh demonstrates that the failure to properly account for the values of environmental resources has resulted in decisions that have had negative implications for the environment and society.

Although market forces are perceived as the ruling mechanism in the sense that they will ensure “getting the prices right”, there are ample examples, particularly in the context of developing countries, where the market mechanism cannot ensure either efficient allocation of scarce resources or the protection of natural environment, specifically due to the publicness of some goods and services and externalities which lead to market and policy failure. Monetization of non-market benefits is not a decision criterion *per se*; rather assigning a monetary value will at least provide some information and will facilitate the decision-making process. As Pearce *et al.* (1994) state “... unless environmental resources are correctly priced – so as to be reflected in actual decisions – there will be distortions in the economy which will have the effect of biasing investments and policy decisions against environmental concerns” (p: 239). A failure to account for such benefits could lead to a misallocation of public funds, which is very important for the socio-economic development of these economies. Ignorance of such benefits may mean that they are either under-valued or over-valued in the intuitive decision-making process. In the developing country context, particularly in the absence of democracy and good governance, this often leads to a situation wherein coterie politics and corruption plays a greater role in policy making. Furthermore, failure to account fully for the environmental benefits means that its net economic worth is misrepresented. Continuing such practices will have long-term negative impacts on the ecology and sustainable development of the country. This policy failure can inadvertently put environmental improvement projects in an unfavorable competition for public funds with projects that are designed to produce more market oriented goods and services. Quite often restoration of ecosystems, preservation of natural resources, and development of degraded environmental resources bear the consequences. This also has an impact on future generations who may confront problems that may be costly or even impossible to resolve. Therefore, an integration of non-market values can be seen as providing important information in the planning and decision-making process in selecting optimal resource allocation in developing economies.

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## Endnotes

1. Although prices may not reflect the “full cost” because of perverse subsidies or taxes.
2. Economic value is defined by economic behaviour in the context of supply and demand in the market. It is simply the amount of money individuals are willing to forego (pay) in order to receive a good or service or state of the world, or the amount of money they are willing to accept in compensation for the loss of a good or service or state of the world.
3. During the monsoons of 1987 and 1988, Bangladesh suffered two of the most serious floods on record. Vast areas of the country, including the capital city, were flooded to an unprecedented degree with flood levels about 1.5 meters higher than normal for a period of more than four weeks.
4. The planning process in Bangladesh is centralised. Every public sector project needs to go through an appraisal process in the Planning Commission.
5. In most cases, it is stated in the PP/PCP that there will be no adverse effect of the proposed project on the environment; rather, it will help to improve the environment.
6. The share of public investment to total investment is about 32 percent, which is implemented by different ministries and allied departments and agencies. The public investment is important for its role in developing infrastructure and bringing socio-economic development of the country.
7. It is difficult to define a social sector. Often, what is social is also economic and vice-versa. In this case, social sector includes health, education, religion, sports, culture, population and family planning, communication, social welfare, women and youth development, public administration, science and technology.
8. Aided-projects comprise both investment and technical assistance projects financed partly or

- wholly by bilateral or multilateral donor country or aid agency.
9. In recent years, the role of project appraisal has also become important due to aid fatigue for developing countries such as Bangladesh. Foreign aid has declined sharply due to new priorities of donors, rigid conditionalities, and the poor performance of recipient economies. The absence of donor vigilance may create more scope for malpractice in project selection. The judicious use of domestic resources requires more sophisticated and reliable project appraisal procedures.
  10. Taka (Tk) is the Bangladesh currency, 1US\$ = TK 60.00.
  11. Misuse of public funds would likely continue even when the environmental concerns are fully integrated in the decision-making process.
  12. Annual Development Program (ADP) is the list of public sector projects to be funded by the government in a particular financial year. Project execution starts once it is included in the ADP. After inclusion, projects may be terminated from the ADP based on the performance and other criterion set by the government.
  13. After resuming power by the new political alliance in November 2001, the Planning Commission, under the direction of the new government, took steps to cut 'unnecessary' and 'superfluous' projects off the ADP for 'saving scarce resources of the country'. The Planning Commission trimmed the ADP by Tk 3000 crore, which is about 15.80 percent of its actual allocation. As it was reported in the press (Ahmed, 2001), "Mysteriously, the government did not touch two vital heads – TK 140 crore unallocated block amount and TK 500 crore block amount – both regarded as good ground to be obliterated from the ADP without touching any real project. Politics played the trick in this regard as the government feels that funds from such block accounts can be easily diverted to politically motivated projects: (p:1).
  14. These projects are aimed at enhancing the image of the political party in power and its leaders or to provide services to particular constituencies which the concerned bureaucrats/politicians represent.

15. Zero price in the sense that no market place exists in which their true values can be revealed through the acts of buying and selling.

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