ECONOMIC DIALOGUE ON GREEN GROWTH

EDGG

Greening Public Financial Management for Sustainable Development: *A Green Fiscal Framework for Bangladesh*

Bushra Ferdous Khan

UKaid from the British people

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“When the Last Tree Is Cut Down, the Last Fish Eaten, and the Last Stream Poisoned, You Will Realize That You Cannot Eat Money”

- Native American Saying

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Abbreviations

ADP	Annual Development Programme
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BCCTF	Bangladesh Climate Change Trust Fund
BCR	Benefit-Cost Ratio
BESF	Bangladesh Environmental Statistics Framework
BFRS	Bangladesh Financial Reporting Standards
BMB	Budget Management Branches
BMC	Budget Management Committees
BWG	Budget Working Groups
CETF	Climate Expenditure Tracking Framework
CFF	Climate Fiscal Framework
CIPFA	Chartered Institute of Public Finance and Accountancy
CNG	Compressed Natural Gas
CPEIR	Climate Public Expenditure and Institutional Review
CPTU	Central Procurement Technical Unit
DoE	Department of Environment
DPP	Development Project Proforma
ECC	Environmental Clearance Certificate
ECR	Environmental Conservation Rules
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FIMA	Financial Management Academy
GDP	Gross Domestic Product
GRI	Global Reporting Initiative
GoB	Government of Bangladesh
ICMAB	Institute of Cost & Management Accountants of Bangladesh
IEE	Initial Environmental Examination
IFAC	International Federation of Accountants
IMED	Implementation Monitoring and Evaluation Division
INDC	Intended Nationally Determined Contributions
INTOSAI	International Organisation of Supreme Audit Institutions
IRR	Internal Rate of Return
ISSAI	International Standards of Supreme Audit Institutions
MTBF	Medium-Term Budgetary Framework
K-water	Korea Water Resources Corporation
MTSBP	Medium-Term Strategy and Business Plan
MBF	Ministry Budget Framework
MoEF	Ministry of Environment and Forests
MoU	Memorandum of Understanding
NAMEA	National Accounting Matrix including Environmental Accounts
NAPA	National Adaptation Programme of Action
NPV	Net Present Value
NSDS	National Sustainable Development Strategy
OCAG	Office of the Comptroller and Auditor General
OECD	Organisation for Economic Co-operation and Development
PEFA	Public Expenditure and Financial Accountability
PAC	Public Accounts Committee
PET	Polyethylene Terephthalate
PFM	Public Financial Management
PPA	Public Procurement Act
PPR	Public Procurement Rules
PRSP	Poverty Reduction Strategy Paper
SEEA	System for Environmental and Economic Accounts
TPP	Technical Project Proforma
UN	United Nations
UNEP	United Nations Environment Programme
UNU-IHDP	United Nations University- International Human Dimensions Programme on Global Environmental Change
WAVES	World Bank led Wealth Accounting and the Valuation of Ecosystem Services

Summary

What Is Green Public Financial Management and Why Does Bangladesh Need a Green Fiscal Framework?

Over the last decade, there has been an increasing acceptance of the argument that economic growth based on unplanned exploitation of natural resources is not sustainable; prominently so for a small developing country like Bangladesh which has to sustain 164 million people in an area of only 147,570 square kilometers while adapting to the effects of climate change. With its population projected to grow over 200 million in the next 30 years, Bangladesh needs to take immediate actions to prudently manage its natural capitals and protect its environment to ensure its fast economic growth is lasting as well.

This is where greening the public financial management (PFM) system draws its relevance to the economic dialogue on Bangladesh's green growth. PFM system offers some of the strongest tools to government to signal its development priorities and to concentrate actions towards achievement of the precedence development outcomes. Correspondingly, PFM system presents Government of Bangladesh with the necessary apparatus to signal its intent to focus on sustainable management of natural resources and environment protection by providing a clear mechanism for policymaking and action.

The PFM system comprises of four major phases-planning and policy development, budget formulation, budget execution, and accounting and oversight. Each component of the PFM system can be greened by embedding environmental conservation and sustainable management of natural capital as a decision making and evaluation criterion. This paper offers suggestions on how principles of environmental conservation and sustainable use of natural capital can be embedded in, and delivered through the PFM system of Bangladesh. The core offer of this paper is design and implementation plan of a Green Fiscal Framework that will facilitate greening of the country's PFM system, in spite of it having its unique set of weaknesses and strengths. For each component of the PFM system, we offer an assessment of immediate, medium-term and long-term green reform priorities.

Greening Planning and Policy Development

Greening of Bangladesh's PFM system has to begin with greening of the planning and policy development phase of the PFM cycle. As environment and natural capital base stand to be affected by policies made in just about any domain (national or sectoral), potential impacts of any proposed or existing policies on environment and natural capital reserves should be evaluated before any policy is adopted or reformed. Planning Commission may consider setting up institutional arrangements to assess environmental sustainability of policies answering critical questions about renewability, convertibility, depletion rate, susceptibility to pollution, usage efficiency, recyclability, usage authority, and valuation of environmental services provided by the environmental resource the policy under assessment stands to impact, before the policy is sent to Cabinet Division for approval. Even though quantitative assessment along these criteria is desirable, until the environmental statistics support base as planned in Bangladesh Environmental Statistics Framework (BESF) is developed mostly qualitative assessment might only be possible. In the long-term, as environmental statistical capacity is developed through implementation of BESF, quantitative appraisal of potential impact of proposed or existing policies along the criteria listed above should be obligated.

Based on careful analysis of potential impacts of policy decisions, next, environmental preservation and natural capital management goals should be set. For any such goals to be achievable, they must be conceived in the broader context of socio-politico-economic realities surrounding them. Identifying the winners and losers in different policy scenarios and their ability to facilitate or oppose implementation of specific policy actions is fundamental to making practical policy decisions.

Once the goals have been set, appropriate policy instruments have to be selected to realise them. Selection of market-based or non-market-based policy instruments should be guided by considerations involving their execution cost, administration capacity, and politico-economic suitability. Our analysis suggests that, in the context of Bangladesh, in the short-term deployment of policy instruments like prohibiting environmentally harmful products or practices, promoting voluntary agreements, and taxing proxies for pollution would be suitable; whereas in the medium-term policy instruments like promoting green technology by providing fiscal incentives and setting technological standards, and guiding set-up of private-sector managed deposit-refund systems could be utilised. In the long-term, only if strong environmental statistical support base is in place and if the economy is considerably strong, application of policy instruments like mandating environmental performance reporting in financial statements, retracting environmentally harmful subsidies, and levying direct pollution tax could be considered.

Greening Budget Formulation

Greening Bangladesh's budget formulation process would essentially involve greening individual ministry/division's Ministry Budget Framework (MBF).

Towards that end, in Section 2 of the MBFs, each ministry/division should be expected to pronounce relevance of their strategic objectives to environmental conservation and sustainable management of natural capital (how such relevance can be drawn is shown in Annex-1), and specify what activities they are adopting in this regard. This will resultantly green Sections 4 and 6 of the MBF as well. Towards truly greening Bangladesh's national budgets this will be a critical step as this will formalise embedment of environmental concerns in development and non-development budgets. The current approach of poverty reduction and gender reporting (and from the upcoming fiscal year reporting on climate action in the MBF of twenty select ministries/divisions) in Section 3 of the MBF limits conceptualisation of these development outcomes as a positive externality of core activities of ministries/divisions; our recommendation, in contrast, is aimed to ingrain environmental conservation and sustainable management of natural capitals as an integral part of the core activities of ministries/divisions itself.

Further, new KPIs should be introduced in Section 5 of ministries/divisions' MBFs to make evaluation of their environmental performance more concrete. In Annex-1 we propose some new KPIs that can be helpful to operationalise how different ministries/divisions are expected to contribute towards environmental protection and natural capital management. Placement of the KPIs in the MBFs of different ministries/division should be rolled out in phases considering the capacity development drives that will be needed prior to their effective usage. KPIs suitable to be implemented in the short, medium, and long-terms, and capacity development needed before their implementation are listed in Table 6.1, 6.2, and 6.3 respectively.

Poor linkage between resource allocation to ministries/divisions and government's priorities as reflected in national policy documents is a core weakness of budget formulation process, and Government of Bangladesh is already adopting measures to address that. A promising development is that the Medium-Term Strategy and Business Plan (MTSBP) guideline that has been prepared to strengthen the linkage between budgetary allocations and national strategy papers already mentions the issue of performing

environmental cost-benefit analysis. Importance of undertaking significant capacity development initiatives to ensure actual performance of such analysis in preparing the MTSBP cannot be overstated.

Greening Budget Execution

Greening of two key elements of budget execution, public investment management and public procurement, are discussed in this paper.

For greening public investment management,

In the short-term, the proforma used to submit investment project implementation related information to Implementation Monitoring and Evaluation Division (IMED) should be updated to include environmental issues like waste management, pollution control, and Environmental Management Plan execution so that agencies implementing the projects become more mindful of these issues in the project implementation phase. Since Bangladesh's PFM system already has a reasonably satisfactory investment project implementation monitoring mechanism graded B in 2016 PEFA assessment in place, the recommendation should not be too hard to implement.

In the medium-term, concentrated efforts would be needed to improve the Development Project Proforma (DPP) preparation process. Towards that end, firstly, an independent institute of environmental economists should be created to perform financial and economic analysis of environmental costs and benefits, and climate change related benefits generated by development projects. Even though the current version of DPP calls for implementing agencies to supply such analysis, the reality remains that agencies responsible for creating DPPs lack the skills to perform such scrutiny and that DPPs are prepared by implementing agencies mostly based on 'stock knowledge'. Question of economic analysis of environmental costs and benefits apart, even regular economic analysis of investment projects was rated D in the 2016 PEFA assessment. A DPP preparation system heavily reliant on external consultants is not ideal as well as consultants proficient in such sophisticated environmental and economic analysis are in short supply in Bangladesh. Thus, a better option might be to invest in creation of an independent institute of environmental economists with top-notch expertise in financial and economic analysis of environmental costs and benefits, and climate change related benefits. Resources invested in setting up and operating such an institute could generate significant return on investments as valuation of the environmental and climate change related benefits calculated by them could be used by Government of Bangladesh to negotiate better access to international climate funds.

Secondly, also in the medium-term, the legal and technical loopholes that weaken the utility of Environment Impact Assessment (EIA) reports for Red Category projects and Environmental Clearance Certificates (ECC) for all investment projects would need to be addressed. To strengthen the efficacy of EIA process for environmentally risky projects, development of a legally binding code of conduct and introduction of accreditation system for EIA consultants, and creation of an electronic database of EIA reports submitted to Department of Environment would be needed. Plus, relevant provisions of Environmental Conservation Rules 1997 must be amended so that ECCs with more practical validity period can be issued to infrastructural development projects, reissuance of ECC is mandated for major project expansions, and the provision of starting land development work simply after obtaining site clearance is eliminated.

In the long-term, a decision matrix should be designed to reduce reliance on subjective judgments and to make project approval process based on environmental grounds as objective as possible. Such a decision matrix would help control political influence in project approval process. Creation of the matrix

and justifying its utility to policy makers would require substantial environmental statistics support which should be available in the long-term after implementation of the BESF is complete.

Along with the aforementioned initiatives that will help green public investment project formulation, approval, and implementation processes, measures that will help green the post-approval phase of public investment project management include: developing sustainability monitoring capacity within public institutions, and conducting more impact evaluation studies after the project has been implemented. For both of these suggestions to be implemented into action extensive capacity development of IMED will be required.

For greening public procurement,

On the onset, policy support in the form of development of a Green Public Procurement Plan or issuance of an official circular to give a concrete signal about Government of Bangladesh's commitment in this regard would be needed. Implementation schedule of green public procurement would have to be planned factoring in the time that will be required to develop technical capacity to label items as green based on pre-determined criteria, and also to develop a domestic market for procuring green items from. In the initial stages, any requirement to adhere to green procurement practices should be completely voluntary and used selectively only for projects that are heavily reliant on international procurement.

After a policy level commitment for promoting green procurement has been made, in the medium-term Government of Bangladesh will have to support development of a domestic market for green items through measures like easing access to green finance for potential suppliers of green items and providing them guarantee of buying the items they will produce fulfilling government's green technical requirements. This may require non-competitive methods to award green procurement contracts with the approval of head of agency at the initial stages of promoting green procurement. Alternatively, agencies with good green public procurement performance and suppliers that provide quality green items could be rewarded as promotional measures. Relevant training of procurement staff and suppliers would need to be established as a core function of Central Procurement Technical Unit and continued on a regular basis.

Plus, also in the medium-term, a national eco-labeling scheme should ideally be launched in Bangladesh. The eco-labeling framework could potentially be developed in conjunction with other countries in the region which has already taken steps towards greening their public procurement. Creation of a national eco-labeling scheme will require institutional arrangements and may well run into the long-term. Until such an eco-labeling scheme is in place, Government of Bangladesh may rely on ISO 14001 (or equivalent systems) in making green public procurement decisions.

In the long-term, after a domestic market for procuring green items from and technological capacity for certifying green items are developed, green procurement should be made mandatory for public agencies. At this phase, necessary amendments in Public Procurement Act 2006 and Public Procurement Rules 2008 to solidify legislative support for green public procurement would be needed.

Greening Accounting and Oversight

Given the limited institutional capacity of public accounting and auditing offices in Bangladesh, we suggest modest incremental steps for greening this phase of PFM cycle.

For greening accounting practices,

In the short to medium-term, while the implementation of BESF is in process, Government of Bangladesh may consider adopting a donor funded technical assistance project to conduct research on how to best implement green accounting practices in Bangladesh in consultation with International Federation of Accountants and enlist itself as a partner in the World Bank led Wealth Accounting and the Valuation of Ecosystem Services consortium. In the long-term, calculation of Green GDP along with its traditional counterpart may be considered only if a tried and tested method of calculating the measure has internationally been promulgated.

For greening auditing practices,

Following the Canadian example, a position for a Commissioner for Environment and Sustainable Development, directly reporting to the Auditor General, within the Office of the Comptroller and Auditor General (OCAG) could be created. As in Canada, the Commissioner could be assigned the task of reporting to the Parliament on behalf of the Auditor General on issues pertaining to environmental conservation and sustainable development. The Commissioner would have to be supported by a team of environmental sustainability auditors within OCAG.

Since compliance audits are comparatively easier to conduct than financial audits, and most audits in Bangladesh are compliance audits, in the short to medium-terms, green auditing should be introduced in the PFM system of Bangladesh as part of it. Green auditing as part of compliance audits would require auditing for compliance with Environmental Conservation Act 1995, Environmental Conservation Rules 1997, and other national environmental policies by public offices.

In the long-term, performing green audits as part of financial audits could be initiated. Green auditing as part of financial auditing would require checking for the impacts of environmental expenditures, liabilities, outcomes, and impacts on financial statements. However, an important concern to be noted here is that in Bangladesh financial statements are prepared using cash basis of accounting which limits the scope of recognition of environmental impacts in financial statements. Cash basis accounting recognises environmental impacts that occurred only during the fiscal year in question but in reality environmental impacts are seldom contained in specific periods of time and often for practical reasons are expected to be projected.

1 Introduction

1.1 Relevance of Greening Public Financial Management to the Discourse on Bangladesh's Sustainable Economic Development

Bangladesh, the 12th most densely populated nation in the world, is developing fast. Its gross domestic product (GDP) grew 7.24% in the 2016-17 fiscal year, the highest in the country's history so far (The Daily Star, 2017). National accounts statistics like GDP, however, tell only part of the story about the economic performance of any nation. It is argued that national accounts currently used around the world are a poor measure of economic performance evaluation since they fail to take into account swaths of relevant information, particularly pertaining to natural resource utilisation (UNU-IHDP and UNEP, 2014). GDP, for example, tells only what a country earned in total from the goods and services it produced in a fiscal year without shedding any light on the value of natural assets utilised in or impacted by their production: for instance, while the earnings from textiles, leather, fisheries sectors are included in determining Bangladesh's GDP, depletion of the value of the country's precious water resources caused by their pollution footprint is not accounted for in GDP calculation.

Demand for 'green national accounts' that factor in a nation's use of natural capital is on the rise (UNU-IHDP and UNEP, 2014). Natural capital, defined as a nation's stock of environmental assets including ecosystems, sub-soil resources, and the atmosphere (UNU-IHDP and UNEP, 2014), constitutes the fundamental conditions required for making human life possible. A depleting stock of natural capital takes away from the wealth of a nation creating liabilities in ecological, social, and economic fronts (World Forum on Natural Capital, 2017). While the ecological impacts of natural capital exhaustion are addressed in the ethos of environmental protection, its financial impacts are hardly recognised beyond the damage caused by environmental disasters.

Lately, however, there is increasing acceptance of the fact that economic growth based on unplanned exploitation of natural resources is not sustainable in a world grappling with the challenge of feeding a growing population while adapting to the impacts of climate change (OECD, 2012). Overexploiting natural capital strains productivity of natural resources making sustainable economic growth unfeasible. The challenge is more prominent for a small developing country like Bangladesh which has to sustain 164 million people (Worldmeters, 2017) in an area of only 147,570 square kilometers (Banglapedia, 2016). With its population projected to grow over 200 million in the next 30 years (Figure 1.1), Bangladesh needs to have a plan in place to preserve its nature to support life within its borders while chasing economic prosperity for its people.

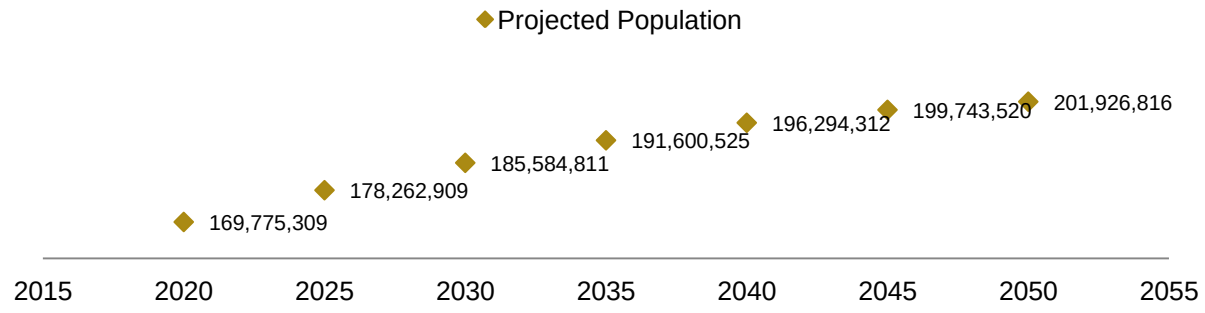

Figure 1.1 Projected Population of Bangladesh Data Source: (Worldmeters, 2017)

Long-term concerns aside, even in short to medium-terms for the economic growth of the nation sustainable management of environmental resources is critical. In a country where most of the economically deprived segments of population are decidedly reliant on natural resources, prudent management of environment is a core condition for poverty reduction (General Economic Division, GoB, 2005). On one hand environmental conservation is important for continued supply of livelihood for the Bangladeshi people, and on the other hand controlling environmental pollution is central to protecting human health and atmosphere (General Economic Division, GoB, 2005). Poverty reduction is already a stated priority for the Government of Bangladesh; in fact, so much so that all ministries and departments are required to identify in their budgets how their operations are contributing towards it. What more is required is stronger acknowledgement and concrete actions for catering to the fact that sustainable use of natural resources is a key to attaining sustainable economic development for the poorest segments of Bangladeshi populace. Policies and actions, thus, must be orchestrated to prevent excess exploitation of the country's natural resource base which may dampen economic growth in the long run or make Bangladeshi people, particularly the poor, more exposed to the perils of pollution (General Economic Division, GoB, 2005).

This is where greening the public financial management (PFM) system draws its relevance to the discourse on Bangladesh's sustainable economic development. Greening the growth of Bangladesh is not just a question of how awareness about environmental conservation can be raised, but also of how economic cost of environmental degradation can be recognised. PFM offers some of the strongest, if not 'the strongest', tools to government to plan for and act on delivering its development goals. Each component of the PFM cycle can be greened by embedding environmental conservation as a decision making and evaluation criterion.

In section 1.2 we define what Green PFM is supposed to mean and set out how the Green Fiscal Framework envisioned in this paper differs from Climate Fiscal Framework (CFF) Government of Bangladesh has already developed. In section 1.3 we comment on significance of the study and lay out how this paper is organised.

1.2 What Is Green PFM and How Does Green Fiscal Framework Differ from Climate Fiscal Framework?

Environmental sustainability interacts with public finance in a two-fold way. Support of the environment, in a very literal sense, is important for achievement of the development goals PFM system aspires to achieve, and at the same time design of the PFM system determines continuity of the environment's capacity to facilitate achievement of the development goals of a nation (Figure 1.2).

Figure 1.2 Interactions Between Environment and PFM System

PFM system needs to be greened to address this very concern of making economic growth sustainable. Even though projects and initiatives connecting public finance and environmental protection can be easily found, especially in the form budget allocations for the Ministry of Environment and Forests (MoEF), such standalone approaches to environmental conservation is not enough for protecting the natural resource base for the long run. For environmentally sustainable economic growth, i.e. for green growth, a thorough embedding of the tenor of environmental conservation in each phase of the PFM cycle is required. The question that needs to be answered is thus, 'How can the PFM system be greened?'

PFM system refers to the entire budget cycle of a nation-from strategic planning to oversight (OECD, 2012). It a process through which a country decides how to collect and spend financial resources to support day-to-day operations of public institutions and fulfill strategic priorities of the government in an effective and efficient manner. Strategic planning, preparation of the medium-term expenditure framework, and annual budgeting constitute *"upstream components"* of the process, whereas the *"downstream components"* feature revenue management, procurement, accounting, audit and oversight (OECD, 2012).

As illustrated in Figure 1.3, there is room for greening every phase of the PFM cycle. Unless the requirement of pursuing a path of economic growth that makes sustainable use of natural resources is recognised in policy documents, allocations will not be made to green annual budgets. When it comes to the phase of executing budgets, environmental impact and cost-benefit assessment should be an integral part of every public investment and public procurement decision. To ascertain integrity of the green PFM system, public sector will also need to take on capacity enhancement programs to perform green accounting and green audits.

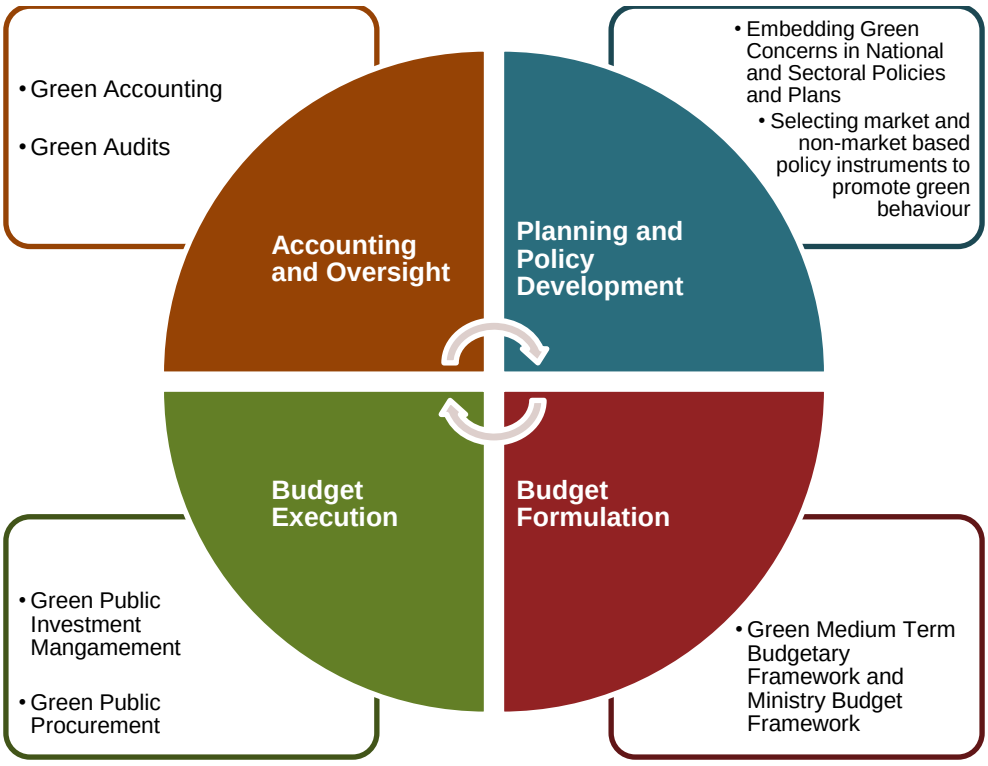

Figure 1.3 Green PFM System

While academic elites from around the world are still at work to develop unanimously accepted tools to quantify economic value of environment or environmental services, it is practically not possible for a developing country like Bangladesh to green its PFM system overnight: the country's PFM system is still in need of basic structural improvements. This does not mean that Bangladesh can afford to ignore the importance of greening its PFM system for now or wait until more sophisticated, easy to use tools and techniques for economic valuation of natural assets and services are developed. For the small country with a big, mostly poor population and scarce natural resources the challenge of sustainably managing the environment and recognising the economic value of natural assets is urgent.

This is not to be confused with the urgency of adapting to the effects of climate change which is better recognised by the political elites of Bangladesh. The Government of Bangladesh adopted the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2009 which started a chain of series of climate response actions. Establishment of the Bangladesh Climate Change Trust Fund (BCCTF), performance of the Climate Public Expenditure and Institutional Review (CPEIR), and development of the CFF are some of the breakthrough initiatives taken by the Government of Bangladesh in the past decade. The major concern for Bangladesh is adapting to the effects of climate change and the recommendations set forth in CFF for designing a Climate Inclusive PFM system are meant to cater to that. This paper, on the other hand, is meant to suggest how the principle of environmental conservatism and sustainable use of natural capital to green Bangladesh's economic growth can be embedded in and delivered through Bangladesh's PFM system. The conceptual difference between Green PFM as envisioned in this paper and Climate Inclusive PFM as envisaged in the CFF is indicated in Table 1.1.

Table 1.1: Difference between Green PFM and Climate Inclusive PFM

Stage of the PFM Cycle	Greening of the Stage as Envisioned in the Green Fiscal Framework Proposed in this Paper	Making the Stage Climate Inclusive as Envisaged in CFF
Planning and Policy Development	▪ Offers principles for greening the policy formulation process ▪ Presents a menu of policy instruments for putting the green policies into action and comments on their suitability for application in Bangladesh factoring in the politico-economic reality of the nation	▪ Builds on BCCSAP and recommends its regular revision ▪ Offers tools and principles for climate fiscal policy making
Budget Formulation	▪ Suggests principle for greening the national budget by incorporating required changes to the Ministry Budget Framework (MBF), and Medium-Term Budgetary Framework (MTBF)	▪ Offers a Climate Expenditure Tracking Framework (CETF) Module to track climate change related expenses ▪ Suggests changes in MBF, and MTBF for incorporating climate change concerns in the budgeting process
Budget Execution	▪ Suggests principles for greening public investment by incorporating changes in the project formulation (DPP preparation), approval, implementation, and post-implementation phase.	▪ Provides suggestions for embedding climate-change issues in the DPP/Technical Project Proforma (TPP) format.

Stage of the PFM Cycle	Greening of the Stage as Envisioned in the Green Fiscal Framework Proposed in this Paper	Making the Stage Climate Inclusive as Envisaged in CFF
	▪ Suggests principles for greening public procurement system.	
Accounting and Oversight	▪ Elaborates the importance of adopting green public accounting practices. ▪ Provides suggestions on greening auditing based on the principles set by International Organisation of Supreme Audit Institutions (INTOSAI).	▪ Briefly discusses the challenges of including climate change in audit policy.

1.3 Signifance and Organisation of This Paper

This paper is the first of its kind to discuss greening of the entire PFM cycle, not just of Bangladesh but of any country, in one document together. While the discussion here is customised for the context of Bangladesh, the broader principles of greening PFM detailed in this paper is relevant to any nation aiming to green its path of economic growth.

Greening of the four major phases of PFM cycle-Planning and Policy Development, Budget Formulation, Budget Execution, and Accounting and Oversight- are discussed in the four chapters that follow, in that order. Chapter 6, the concluding chapter, then puts the pieces discussed in the preceding chapters together to provide a coherent roadmap for greening Bangladesh's PFM system in the years to come factoring in the reality of the basic structural reforms the country's PFM system is yet to undergo.

2 Planning and Policy Development

2.1 The Case for Greening Development Policies and Plans

The PFM cycle begins with the formulation of national and sectoral policies and planning documents. To deliver on its political pledges and statutory duties, Government of Bangladesh formulates policies and plans covering different time-frames. The country has a long-term Perspective Plan to guide the formulation of medium-term planning documents like Five Year Plans, MTBF, and sector specific policy papers. The medium-term plans are then broken down into short-term Annual Development Programme (ADP) and Annual Budgets (Figure 2.1).

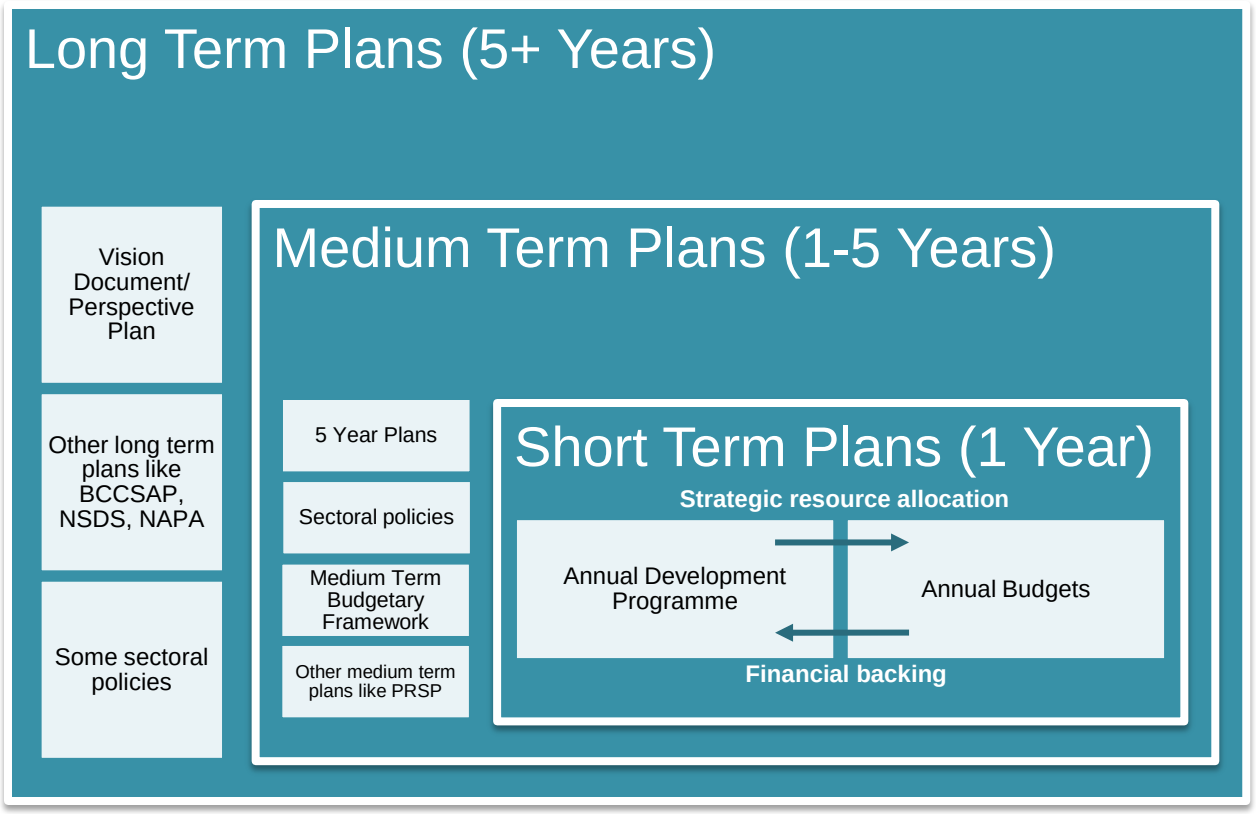

Figure 2.1: Time-frame Covered by Different National and Sectoral Policy Documents

Budgets, the most pronounced planning document detailing the allocation of resources of the government, have a political element and a technical element: the political element seeks to balance differing interests to gain political benefits and avoid political burdens, and the technical element crunches the numbers about expected revenues and projected expenses (Alam, 2012) (Figure 2.2). Authority of the technical aspects of budgets come second to the influence exerted by political preferences; the decision-making process involving allocation of resources in the annual budgets is intrinsically political making budgets both a political and policy document (Hall, 2017).

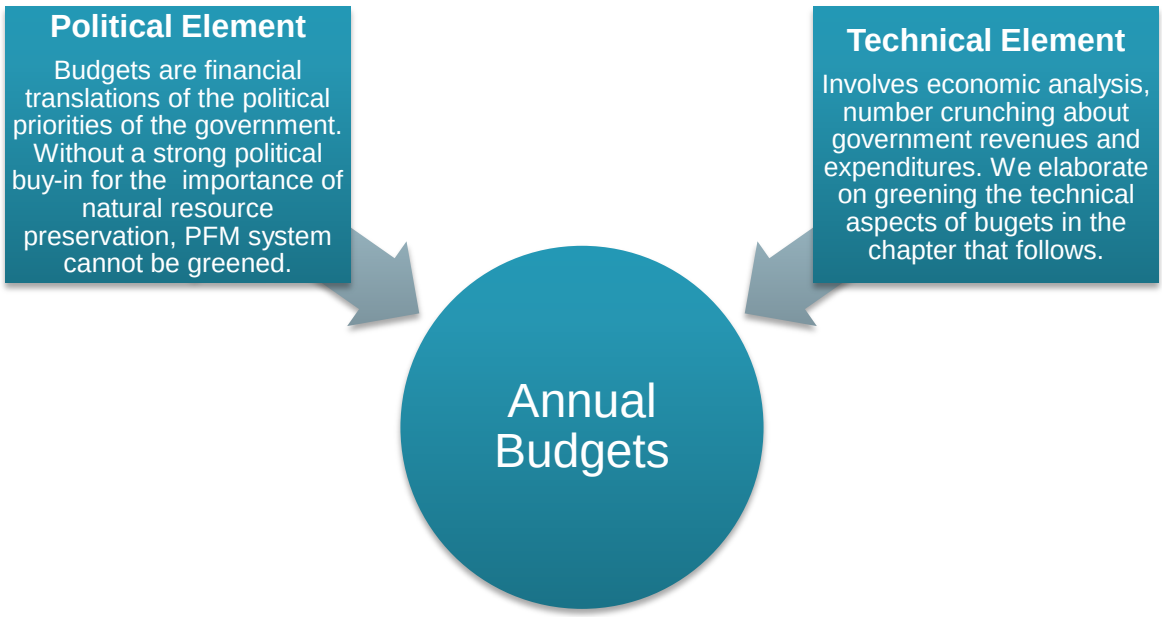

Figure 2.2: Political and Technical Elements of Annual Budget

The political priorities of the government set out in the planning and policy formulation process guides the formation of budgets. Greening of Bangladesh's PFM system, consequently, has to begin with greening of the planning and policy development phase of the PFM cycle.

2.2 Environmentally Concious Policy Making: Key Considerations

Given the all encompassing nature of environment, it is not only environmental policies that stand to impact the quality of environment or natural resources; but in fact, policies taken at any level, for any sector can, and frequently do, have a direct or indirect impact on environment and natural capital reserves. Environmental impact potential of policy decisions, thus, should be methodically considered while making any policy at national or sectoral levels to initiate the process of making PFM system green.

Initiatives taken to green Bangladesh's PFM system for sustainable economic development, starting from greening of its planning and policy formulation process, have to be based on politico-economic considerations about natural resource utilisation and management. Greening the policies and plans for sustainable use of natural capital has to be informed by detailed analysis of the natural capital's characteristics (for example, property rights, usage authority, renewability, functions, presence or lack of market price, valuation of its environmental services) and the governance framework surrounding it (OECD, 2008).

A series of questions needs to be asked to devise the most appropriate policy for sustainable management of environment and natural capitals to facilitate sustainable economic growth. Greening the planning and policy formulation process would involve providing consideration to the following factors when policies and plans bearing a direct or indirect impact on natural capitals or environment are formed:

- **Is the natural capital renewable or non-renewable in the planning horizon?**

Natural capital whose rate of consumption is greater than the rate of replenishment 'in the planning horizon' should be considered non-renewable and policies impacting their usage rate which may lead to their overuse or exhaustion in the stipulated time-frame should be cautiously formed.

For example, apart from the two prominent non-renewable natural resources, natural gas and coal, Bangladesh has several other 'technically' renewable natural resources which cannot be readily replenished in short, medium, or near long-terms; examples of such natural resources include: forests and ground water. When policies in any domain impacting reserves of such slowly-renewable or non-renewable resources are formed caution should be taken to avoid approval of actions that may trigger their fast depletion.

- **Is the natural capital susceptible to accelerated depletion or pollution due to human actions induced by any present or proposed policy and, if yes, what is the financial loss exerted by its accelerated depletion or pollution?**

Unintended side-effects of some otherwise effective policies may lead to accelerated depletion of certain natural capital or environmental pollution. Environmental impact assessment, economic valuation of environmental costs vs. benefits, and appraisal of economic costs of potential side-effects in different implementation scenarios thus should be an integral part of policy making and plan development process.

For example, in 2005 Government of Bangladesh took initiatives to promote Compressed Natural Gas (CNG) as a vehicular fuel to tackle the extreme air pollution problem caused by the use of petroleum based fuel by motorised vehicles in Dhaka city. As a result of that initiative, petroleum based vehicular fuel induced air pollution indeed decreased, but the demand for CNG as a cheap transport fuel experienced a sharp spike. The cost-effectiveness of CNG as a transport fuel encouraged many from the middle-class to take easily available bank loans to buy private cars. As a result, number of private cars on the street increased which contributed to amplify the level of traffic congestion on the streets which, in effect, reduced fuel efficiency. According to government's own estimations the traffic congestion crisis costs the economy a loss of USD 2,418 million (BDT 20,000 crore) annually (The Daily Star, 2016).

- **Should the natural capital be converted to other uses?**

Decision to convert non-renewable natural resources should be based on meticulous cost-benefit analysis. Conversion of natural resources to lesser uses must be avoided for economic growth to be sustainable (OECD, 2008). Some key questions to be answered when deciding whether or not to convert a natural capital into other uses is outlined in Figure 2.3.

As summarised in the figure, the first thing to consider is whether the present value of all the future benefits to be received from the natural capital in its present form is greater or less than the present value of all the future benefits to be received from the converted form of capital (OECD, 2008). If the natural capital, in its original form, stands to provide more total benefit then it should not be converted. Based on the preliminary analysis if the decision of converting the natural capital into some other form is reached, some additional questions need to be answered for planning the optimal rate of extraction, allocation of the proceeds from the conversion to other forms of capital formation, and management of negative environmental impacts that may accompany the decision to convert.

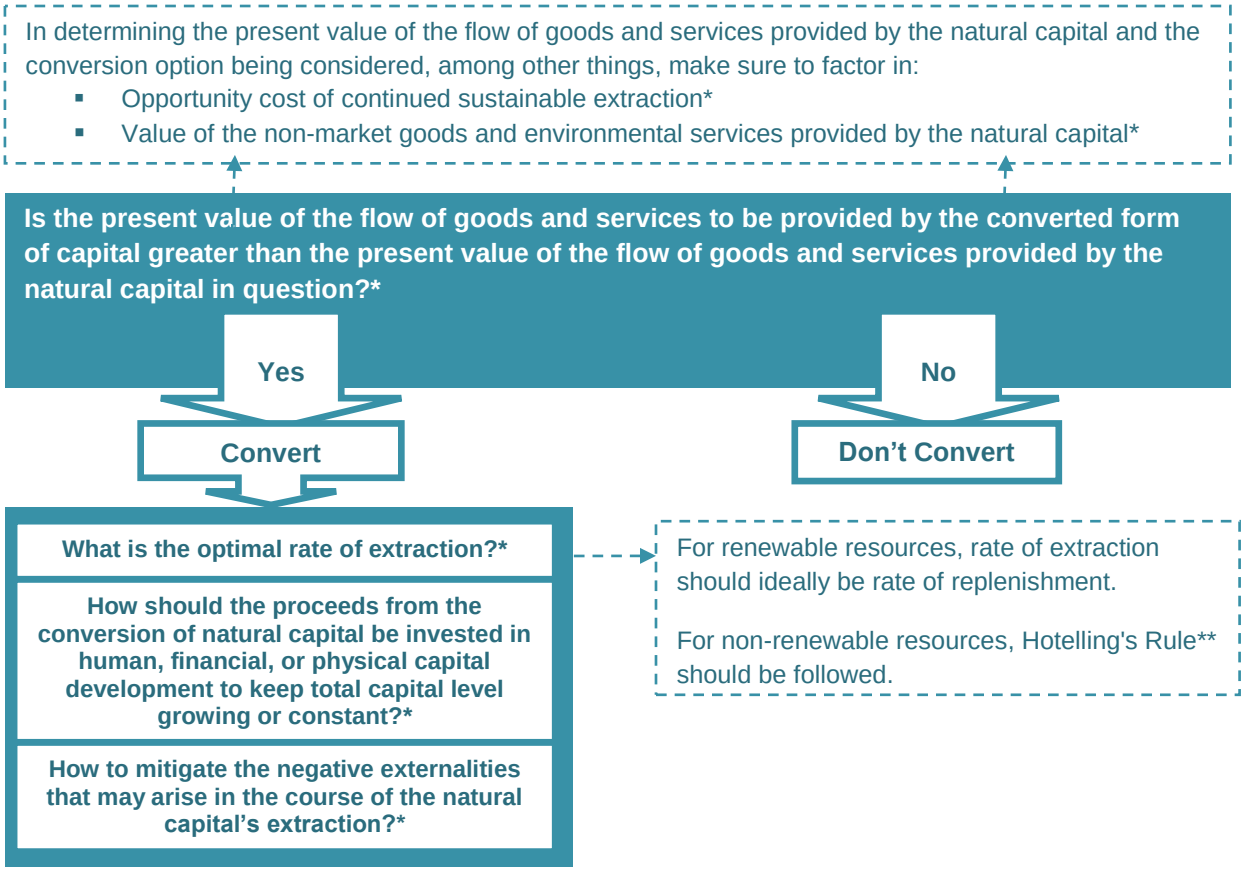

Figure 2.3: Questions to be Answered in Making Decision About Natural Capital Conversion

* These questions are drawn from a broader discussion presented in (OECD, 2008).
** For details on Hotelling's rule see Hotelling, H. (1931). "The Economics of Exhaustible Resources". J. Political Econ. 39 (2): 137–175

- **Is the natural resource being used efficiently? Is the resource recyclable and, if yes, is it being recycled? What are the reasons for inefficient use of a resource or a recyclable resource not being recycled and is a policy intervention needed to change that?**

Even though economic valuation of environmental costs vs. benefits may lead to the decision of converting some scarce natural resources for other uses it may still be possible to avoid their fast depletion by recycling them. However, lack of fiscal incentives or regulatory pressure may come in the way of motivating private sector users from recycling such natural capital. Politically feasible policy interventions to promote recycling of such resources should be taken to the extent possible.

For example, the textile industry of Bangladesh uses excessive amount of water in their production processes which is causing fast depletion of groundwater in areas where the textile factories are located (Khan, 2017). The industry uses 300 litres of water to produce 1 kilogram of fabric, whereas the international standard is to use well below 100 litres of water for producing 1 kilogram of textiles (The Financial Express, 2015; Khan, 2017). According to Sagris & Abbott (2015), the industry wants to increase its export revenue to USD $82.5 billion by 2030, and if current practices of water misuse continues, this will be accompanied by an added water demand of over 3,400 billion litres by that time: an amount comparable to the yearly water demand of about 75 million people.

- **Should fiscal (e.g. taxes, user fees) or non-fiscal (e.g. zoning, permits) policy instruments be used to establish access and usage rights to the natural capital in question?**

Absence of properly established, 'and enforced', regulations guiding rights to access and use natural resources leads to their inefficient exploitation (OECD, 2008). Pricing of rights to access and use natural resources, including taxation or subsidisation where relevant, should be utilised as a policy instrument to promote efficiency in their usage.

For example, for the shortage and inconsistent supply of surface water, groundwater acts as the main source of water supply for agricultural use in Bangladesh. Agriculture, or more narrowly cultivation of *Boro* rice, is the major user of groundwater in the country. From only 6.8 million tons in 1991 (Qureshi, et al., 2014), *Boro* production had increased to 18.9 million tons by 2016 (Parvez, 2016). According to Qureshi, et al. (2014), the remarkable rise in *Boro* production was mostly made possible by extensive exploitation of groundwater. Currently, about 80% of the extracted groundwater is used for irrigation, of which 73% is used exclusively for *Boro* cultivation (Rahman and Ahmed, 2008; Qureshi, et al., 2014). Such heavy reliance on groundwater for irrigation has serious environmental and economic consequences as energy costs are rising, groundwater levels are falling, and groundwater quality is worsening.

- **What is the time lag between policy adoption and its impact?**

The environmental impact of a policy may be discernible only after a significant time-delay (OECD, 2008). Well intended public policy in any domain designed to boost economic growth may end up causing unintended damage to the environment or natural resource base. While such a situation cannot always be positively prevented, policy formulation in any domain must be accompanied by thorough analysis of potential environmental impact under different scenarios.

For example, a key binding constraint for the growth of the agricultural sector and, in effect, for boosting food production in Bangladesh is limited supply of arable land (Hossain, 1988). Net cropped area in Bangladesh has remained pretty stagnant over the years with increases in gross cropped area been attributed to multiple cropped land. On back of the Green Revolution, the country has been able to achieve tremendous success in producing sufficient rice to fulfill the demand of its population through adopting measures like intensive cultivation of modern rice varieties, increasing reliance on multiple crops, and extensive use of agrochemicals (Dey & Haq, 2009). Over time, these practices have caused degradation of the paddy micro environment and downfalls in rice yield growth (Pingali & Rosegrant, 1994). Problems caused by intensive cropping include but are not limited to: "*increased pest infestation, mining of soil micronutrients, reductions in nutrient-carrying capacity of the soil, build-up of soil toxicity, and salinity and waterlogging"* (Pingali & Rosegrant, 1994).

- **What policies are currently in place and who are the winner and losers of current and alternative policies?**

Exploiting a resource for economic benefits in the short-term is often at odds with the goal of protecting it for the long-term. Identification of the immediate, direct beneficiaries of a policy impacting environment or any kind of natural resource base, and their political and economic power is important for making prudent policy decisions.

For example, as noted earlier, the textile industry of Bangladesh uses excessive amount of water in its production processes. Its political power comes from having strong relationships with the political elites of the nation, while its economic power comes from generating employment for thousands of people and earning the country valuable export revenues. As such, they are well able to oppose regulatory reforms

that may cost them money to adopt environmentally sustainable mode of practices putting forward the reason that any added costs to their business will make the industry less competitive in the international textiles market (Khan, 2017). Policy interventions to promote efficient use of water by the textiles sector thus have to be devised with this politico-economic reality in mind.

2.3 Menu of Instruments for Greening Bangladesh's Policies and Plans

Picking the right policy instrument is a core condition for successful regulation in any public policy domain, and environment and natural resource management is no different. Based on careful analysis of the answers to the questions listed in section 2.2, once the goals related to sustainable management of environment and natural capital have been established, policy makers can employ a range for policy instruments to achieve those goals.

Policy instruments can broadly be categorised into two groups: market-based policy instruments that aim to influence people's behaviour in the market through price mechanisms, and non-market-based policy instruments that seeks to influence people's behaviour through 'commands-and-controls'. While the relevance of market-based policy instruments to PFM system is very direct and does not require any special justification, the relevance of non-market based policy instruments to the discourse on greening PFM system may not be equally intuitive. However, in reality, any on-budget costs to the government of implementing environmental laws and regulations are direct costs (Stavins, 1997) of sustainably managing the environment and natural capitals of a nation (Figure 2.4).

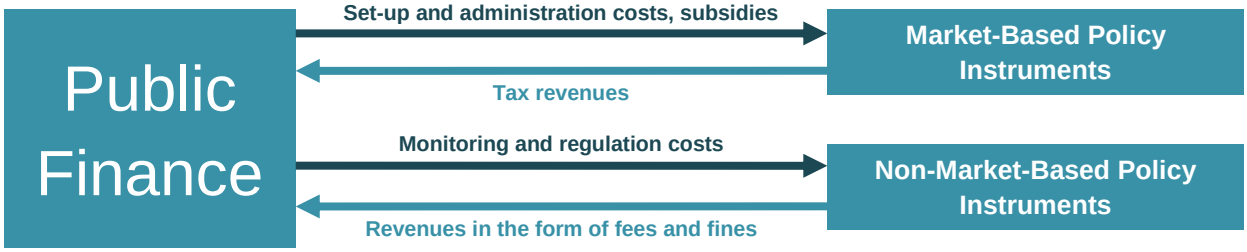

Figure 2.4: Relevance of Market-Based and Non-Market-Based Policy Instruments to PFM System

In section 2.3.1 we list some market-based policy instruments and in section 2.3.2 we list some non-market-based policy instruments that policy makers in Bangladesh can chose from to green the country's development policies and plans. We also comment on the suitability of their potential application in the socio-politico-economic context of the nation.

2.3.1 Market-Based Policy Instruments for Achieving Environmental Goals

- **Cap-and-Trade Permit System**

In the cap-and-trade system, a cap is set on the maximum amount of greenhouse gas emissions, and allowances are issued by the government for being traded among emitters. Through such trading between firms for buying and selling emissions allowances, market establishes a price for emissions (Center for Climate and Energy Solutions, 2017).

Emitting less than 0.35% of global emissions (Ministry of Environment and Forests, GoB, 2015), reducing greenhouse gas emissions is not one of Bangladesh's core green growth concern, but the country has still committed to cut its emissions in the power, transport and industry sectors by 5% below business-as-

usual scenario by 2030 (Ministry of Environment and Forests, GoB, 2015). Given the low voluntary emissions reduction target and Bangladesh's need for fast economic growth to build resilience against the emerging impacts of climate change, any cap-and-trade permit system is not suitable to be implemented in the country in at least short to medium-terms.

High administrative and transaction costs associated with setting up such a system and added costs to producers or consumers (OECD, The World Bank, The United Nations, 2012) further reduces political incentives to implement such a system in Bangladesh. The emissions market in Bangladesh is simply not large enough for such a system to function properly anytime soon.

- **Baseline-and-Credit Permit System**

A baseline-and-credit permit system sets emissions intensity for emitting activities against a baseline (the most common baseline is business-as-usual). Activities that realise emissions intensities below the baseline get credits from the government, whereas activities whose emissions intensities are above the baseline are required to buy the credits from the same. Since firms can get credits for reducing emissions below the baseline, but have to buy credits for emitting above the baseline, they find themselves motivated to find lower emission production processes (McLennan Magasanik Associates , 2009).

Baseline-and-credit permit systems are simpler and more flexible compared to cap-and-trade permit systems. Such a system can be attached to and eventually transformed into a cap-and-trade system. Another good thing about such a system is that baselines can be set and verified at affordable costs (OECD, The World Bank, The United Nations, 2012).

In the medium-term, Bangladesh can employ a baseline-and-credit permit system to meet the emissions reductions target for the energy, transport, and industry sectors set in Intended Nationally Determined Contributions (INDC). The baseline of emitting below 5% of business-as-usual scenario is already set; in the short-term Bangladesh can now focus on setting up the administrative structure for creating credit permits for being awarded to entities emitting below the baseline and for being sold to entities emitting above the baseline in the energy, transport, and industry sectors. It will be a win-win for Government of Bangladesh because if the system is successful it will help it meet the emissions reduction target set in INDC, but even if the system fails to motivate firms to limit emissions below the baseline government will earn fiscal revenue selling the credit permits.

- **Pollution Taxes**

Pollution taxes are meant to discourage pollution by imposing a financial payment for it. It is expected that polluters will reduce pollution if the cost of adopting cleaner mode of operation is less than or equal to the imposed pollution tax. If the cost of reducing pollution is higher than the imposed tax, polluters will continue to pollute and just pay the tax (Department of Environment, GoB, 2012).

A properly implemented pollution tax system can provide continuous incentives to firms to innovate clean cost-effective modes of operation (OECD, The World Bank, The United Nations, 2012). However, a pollution tax system has high monitoring cost (OECD, The World Bank, The United Nations, 2012), and the decision to charge added taxes to businesses and consumers can prove politically costly in a developing country like Bangladesh. Plus, the capacity of Bangladeshi public institutions to administer such a tax is a question of concern.

- **Taxes on Proxies for Pollution:**

In absence of technical capacity to directly measure levels of pollution or institutional capacity to impose pollution tax, taxes can be imposed on proxies for pollution. The most prominent example of such a tax is carbon tax: since carbon emissions cannot be easily measured in most situations, carbon content in primary fossil fuel is often used as the basis of a carbon tax system (Stavins, 1997).

Taxing proxies for pollution usually have lower administrative and monitoring costs than cap-and-trade systems and direct pollution taxes, and its implementation is possible through adjustment to existing tax codes (OECD, The World Bank, The United Nations, 2012)entation is possible through adjustment to existing tax codes (OECD, World Bank, United Nations, 2012) (OECD, World Bank, United Nations, 2012) (OECD, World Bank, United Nations, 2012): features that make it a suitable policy instrument to be deployed in Bangladesh in short to medium-terms.

Such taxes can also be used to promote recycling of different products. For example, Government of Bangladesh may consider taxing virgin materials at a higher rate than recycled materials for promoting recycling of environmentally harmful materials across different categories-specially of plastics.

- **Subsidies and Other Direct Support**

Governments around the world use different kinds of subsidies and direct support mechanisms to promote environmental conservatism. Some specific examples of such supports include: preferential tax treatment, preferential procurement policies for green products, low-interest loans, and grants (Falco, 2012).

Using subsidies for promoting environmental conservatism is sometimes criticised for 'rewarding polluters': the idea is that people should not be paid added benefits for not doing the wrong thing. It is argued that, removing environmentally harmful subsidies can be more effective than providing new subsidies for promoting environmentally responsible behaviour (Falco, 2012).

Subsidies already constitute a substantial percentage of Bangladesh's national budget, and for the country budget deficit is essentially the norm. While it may practically not be possible for the Government of Bangladesh to heavily financially subsidise green growth, it may start developing a plan to eventually phase out environmentally harmful subsidies in the medium to long-terms. In the short-term, whenever fiscal space is created for low prices of oil in the international market a strategy could be adopted to invest the available funds in developing cleaner sources of energy.

In general, however, environmental subsidies should be offered only when influencing prices or behaviour in the market through other policy instruments is very challenging. Environmental subsidies should have a specific phase out plan and be offered with the motivation on triggering positive changes in the market-not to make the market permanently reliant on it.

- **Deposit-Refund Systems**

A deposit-refund system combines a charge on product consumption (the deposit) with a subsidy (the refund) when the product or its packaging is properly disposed or returned for recycling (U.S. Environmental Protection Agency, 2001; Walls, 2011). Deposit refund systems are usually set up to dampen irresponsible disposal of environmentally harmful materials and to reroute recyclable items from waste fields. There is strong evidence that these systems are more effective than many instruments utilised under the command-and-control approach (U.S. Environmental Protection Agency, 2001).

Deposit refund systems have higher adoption incentives and lower potential political side-effects than taxes, permits, or subsidies. However, potentially higher administrative costs come in the way of their mass implementation.

Bangladesh had a successful private sector managed deposit refund system in the 90s when beverages used to be sold only in glass containers. That deposit refund system still exists in very limited scope participated by only a handful of restaurants. At the consumer level, beverages are now sold in polyethylene terephthalate (PET) plastic bottles which is steering the country towards a post-consumer non-biodegradable plastic induced environmental hazard.

Whether the public or private sector should be responsible for managing a deposit refund system depends on the economic value of the item in concern after it has been used by the consumers. Government of Bangladesh should consider setting up public sector managed deposit refund systems for post-consumer solid waste products that do not have any economic value but whose irresponsible disposal poses the threat of causing damage to the environment. For post-consumer solid waste products with an economic value, government should consider mandating private sector to set up such systems. Public or private sector managed deposit refund systems can be an effective means of diverting environmental pollution caused by used tires, lead acid batteries, beverage containers, plastic products, electronics, etc. and of generating employment in the recycling industry of Bangladesh.

2.3.2 Non-Market-Based Policy Instruments for Achieving Environmental Goals

- **Technology Standards**

Setting technological standards are a popular means of controlling pollution by governments around the world. The strengths of technology standards as a regulation tool are that they have low monitoring costs and high compliance incentives, and that they provide more certainty over pollution levels (OECD, The World Bank, The United Nations, 2012). Even though promoting green technology involves influencing its market price, it also requires strong regulatory interventions and standard setting exercise and therefore is considered a non-market-based policy instrument (Climate Policy Info Hub, 2017).

Government of Bangladesh already has set several vehicular emissions standards to control air pollution. It may next consider setting energy efficiency standards economy wide at household and industrial levels. However, for Government of Bangladesh an inherent risk to setting such standards is creating opportunities of rent seeking by corrupt public officials.

Imposing technology standards should be accompanied by promotion of green technologies. Government of Bangladesh can take initiatives to promote green technology by promoting research and development, and ensuring patent protection in the supply side, and removing barriers to green technology adoption by offering tax reductions or tax rebates, capital allowances, faster depreciation, direct payments or subsidised loans in the demand side.

- **Voluntary Agreements**

Voluntary agreements are expected to influence consumer behaviour in the market through appealing to people's moral sense and modifying cultural environment. These instruments influence public opinion and action by sharing information and raising awareness. Typical examples include product labeling, awards for environmentally responsible behaviour, and information campaigns (Climate Policy Info Hub, 2017).

One of the most prominent advantages of such measures is that it can dramatically enhance social and political support for green growth. However, effects of such schemes are difficult to assess, and design and implementation of such schemes can be challenging (OECD, The World Bank, The United Nations, 2012).

- **Environmentally Harmful Products or Practices Prohibition**

Banning the use of environmentally harmful products or practices is another popular non-market-based policy instrument used by governments around the world. However, this measure is only effective when government has adequate capacity to enforce it on the ground.

Government of Bangladesh, for example, banned the use of polythene bags in 2002 but such bags are still observed to be manufactured and traded in different parts of the country (Alam, 2010; Dhaka Tribune, 2017). Even though the ban has significantly reduced the use of polythene bags, complete elimination of plastic bags' usage has not been possible till date. Meanwhile, the use of disposable plastics in other forms has significantly increased in the nation presenting the country with severe environmental threats.

Government of Bangladesh should consider reaffirming its stance of banning environmentally harmful products and substances but not without ensuring it has adequate capacity to enforce such bans on the ground.

- **Reporting Requirements**

Reporting requirements are often introduced as the basis of future legislation with the motivation to increase information available to the government (Climate Policy Info Hub, 2017). The central bank of Bangladesh, Bangladesh Bank, has pioneered the concept in the country by requiring banks and financial institutions to report their green banking activities. Government of Bangladesh can enhance the scope of such reporting further by requiring all businesses and incorporated ventures to report their environmental performances in their annual financial statements that are submitted to National Board of Revenue (NBR).

Country Case Study 2.1: Indonesia's Experience with Green Agricultural Policy Making

Agricultural policies in Indonesia have been designed with the social, environmental, and economic benefits to be gained from green growth of the agricultural sector in mind. Minimising environmental footprint of the agricultural sector is a core priority of the country's Green Growth Program.

Indonesian policy makers are faced with four key barriers coming in the way of ensuring green growth of the country's agricultural sector - (1) conversion of forests to agricultural land leading to loss of biodiversity and ecosystem services; (2) soil and water pollution caused by excessive use of fertilisers; (3) depletion of aquifers caused by inefficient use of water; and (4) land erosion caused by poorly planned site selection and management of soil nutrients.

To tackle the barriers, Indonesian policy makers have deployed a mix of market and non-market based policy instruments to advance their green growth mission. Market-based policy instruments used by Indonesian policy makers for greening the growth of agricultural sector include-promoting green procurement by the public sector, subsidising production of organic fertilisers, paying farmers or land managers for sustainably managing their land to maintain or improve its ecosystem services, levying environmental taxes, establishing a deposit-refund system for post-mining reclamation, and imposing full-cost charges on the extraction of water from underground or surface level sources.

On top of these market-based measures, non-market-based policy instruments used for greening agricultural sector in Indonesia include- governing the use of land for agriculture according to official land-use plan of the local government, mandating environmental impact assessments prior to any significant agricultural investment, restricting the use of chemical pesticides and herbicides, conducting educational campaigns for civil society on the importance of sustainable management and environmental risks associated with agriculture, raising awareness among farmers about green agricultural technology adoption, establishing collaborative forest management and dispute resolution systems, and promoting eco-certification.

Key lessons to be derived from the Indonesian experience are-

- Policy makers are best advised to use non-market based measures only when their potential effectiveness outweighs the cost.
- Non-market based instruments are best deployed when their administrative and monitoring expenses are part of regular public service administration expenditure.
- Levying taxes without the capacity to collect them can limit success of such market-based policy instruments.
- Well planned awareness campaigns can substantially increase effectiveness of regulatory instruments.

This case study is based on a broader discussion pursued in (Leimona, et al., 2015).

2.4 Summary of Pointers for Greening Planning and Policy Development Process

Based on the discussion presented in this chapter so far, the key pointers for greening Bangladesh's planning and policy development process are summarised below:

- **Potential impact of proposed or existing policies in any domain (national or sectoral) on environment and natural capital reserves should be methodically evaluated before any policy is adopted or reformed.**

Considerations to be included in such evaluation include answering critical questions about renewability, convertibility, depletion rate, susceptibility to pollution, usage efficiency, recyclability, usage authority, and valuation of environmental services provided by the natural capital or environmental resource in concern. Systematically answering the questions listed in section 2.1 will be useful in this regard.

- **Based on careful analysis of answers to the questions listed in section 2.1, environmental preservation and natural capital management goals should be set.**

For any goal to be worthy of the time and resources invested in its formation, it has to be achievable. For the environmental preservation and natural capital management goals to be achievable, they must be conceived in the broader context of socio-politico-economic realities surrounding them. Identifying the winners and losers in different policy scenarios and their ability to facilitate or oppose adoption or implementation of specific policy actions is fundamental to making practical policy decisions.

- **The right mix of market or non-market based policy instruments to achieve environment and natural capital management goals should be selected.**

Once the goals have been set, appropriate policy instruments have to be picked to realise them. In selecting among the different kinds of market-based or non-market-based environmental policy instruments, administrative expenses, enforcement capacity, and politico-economic feasibility associated with their utilisation have to be considered. In sections 2.3.1 and 2.3.2 we provided lists of policy

instruments that can be useful in achieving environmental goals of the government, and also commented on their suitability for potential application in Bangladesh against the backdrop of the country's socio-politico-economic reality.

3 Budget Formulation

3.1 Greening Bangladesh's National Budget: What Would It Entail?

Budgets are a core pillar of PFM systems laying out how the government of a country uses public resources to maximise the wellbeing of its patrons. In Bangladesh, budgetary allocations for ministries and divisions are made under two heads – Development Budget and Non-Development Budget. Development Budget details funding for the ADP of the government, whereas Non-Development Budget details financing required for keeping public offices and services in operation (Ministry of Finance, GoB, 2012).

On recommendation of the Public Expenditure Review Commission, which was set up in 2002 to provide suggestions for modernising Bangladesh's PFM system, Government of Bangladesh adopted MTBF for budget preparation in 2004[1] (Ministry of Finance, GoB, 2008). MTBF offered a mechanism for allocating resources according to the strategic priorities of the government and a way for establishing direct links between policy documents of the governments, and medium-term plans and annual budgets of ministries, and divisions as laid out in their respective MBFs. Two key contributions were institutionalisation of a system for measuring return on the resource allocated, and establishment of key performance indicators (KPIs) down to the level of line ministries of the government (Ministry of Finance, GoB, 2008).

Figure 3.1 shows how budgets are structured in the country.

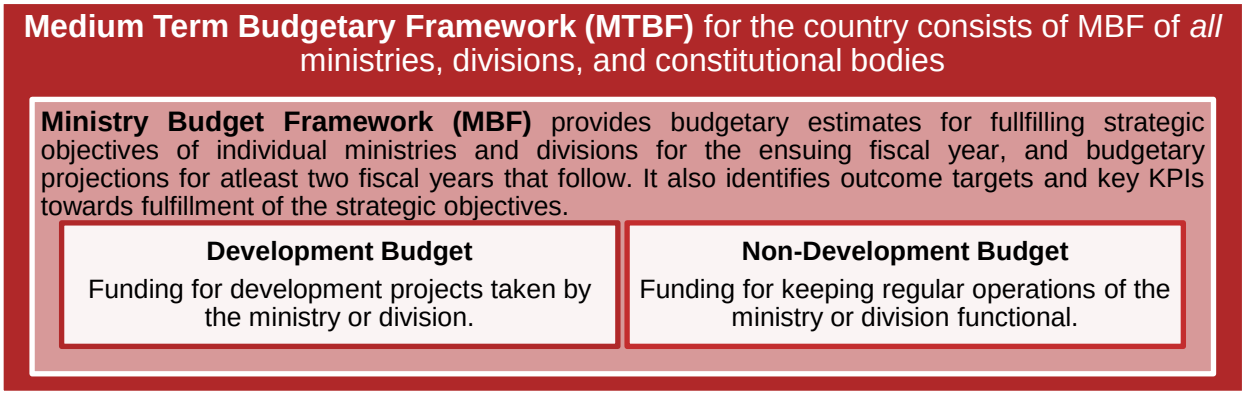

Figure 3.1: Building Blocks of National Budgets in Bangladesh

To green Bangladesh's PFM system the policy priorities pertaining to environmental conservation and natural capital management have to be translated into budgetary allocations for the ministries. Greening Bangladesh's national budget would primarily entail greening the MBF: the aspect of budget formulation we focus our discussion on in this chapter.

[1] In 2004, budgets for Ministry of Education, Ministry of Social Welfare, Ministry of Women and Children's Affairs, and Ministry of Agriculture were prepared for the 2005-06 fiscal year using MTBF on a pilot basis (Ministry of Finance, GoB, 2008) and the system was gradually rolled out for all other ministries in the years that followed.

We talk about greening of the two key elements of budget execution – public investment management-which primarily relates to selecting ADP projects financed by the Development Budget, and public procurement-procurement for investment projects financed by the Development Budget and also for regular government operations financed by the Non-Development Budget, in the chapter that follows.

3.2 Greening Ministry Budget Frameworks: A Detailed Discussion

Updating the MBF is the first step of annual budget formulation process in Bangladesh. The Finance Division of Ministry of Finance issues Budget Call Circular-1 (BCC-1) with detailed instructions on how the MBF is supposed to be updated by individual ministries/divisions for being submitted to Finance Division and Planning Commission for review and eventual approval.

The MBF is comprised of two parts and six sections. Part-A is prepared by individual ministries/divisions/constitutional bodies, and Part-B is prepared by the departments/operational units/agencies under them. The basic structure of the MBF is shown in Table 3.1 below:

Table 3.1: Contents of the MBF (Translated from: Finance Division, GoB, 2017)

MBF Part-A **(To be prepared by ministries/divisions/other constitutional bodies)**
Section 1: Mission statement and major functions of the ministries/division.
Section 2: Strategic objectives and key activities of the ministries/divisions
Section 3: Reporting activities related to poverty reduction, women empowerment, and climate change adaption and mitigation
Section 4.1: Priority spending areas/programmes
Section 4.2: Medium-term expenditure estimates (for the ensuing fiscal year) and projections (for the following two fiscal years)
Section 4.2.a: Expenditure by department/agencies/operational units
Section 4.2.a: Expenditure by Economic Group Codes
Section 5: Key Performance Indicators (KPIs) of the ministries/divisions/constitutional bodies
MBF Part-B **(To be prepared by departments/agencies/operational units)**
Section 6.1: Recent achievements of the departments/agencies
Section 6.2: Activities, outputs indicators, and targets of the departments/agencies
Section 6.3: Medium-term expenditure estimates by operational unit, programmes, and projects

An important feature to be noted in the table is the inclusion of reporting activities related to climate change adaptation and mitigation in Section 3 of the MBF. From the 2018-19 fiscal year, in implementing the recommendations put forward in CFF, twenty ministries/divisions have been asked to report their climate change adaptation and mitigation related activities under the six thematic areas prescribed in BCCSAP. While most of the 44 programmes identified under the six thematic areas in BCCSAP are related to climate change adaptation, 10 programmes identified under Thematic Area: 5 - Mitigation and Low Carbon Development - are relevant to environmental conservation and natural capital management.

The 20 ministries/division which have been asked to report on their climate change related activities and the ten programmes under Thematic Area: 5 of BCCSAP appear in Table 3.2 and Table 3.3 respectively.

Table 3.2: Ministries/Divisions Which Have to Identify Climate Change Related Expenditure and Activities in MBF (Source: BCC-1, 2018-19)

1. Ministry of Primary and Mass Education
2. Secondary and Higher Education Division
3. Health Services Division
4. Ministry of Social Welfare
5. Ministry of Women and Children's Affairs
6. Ministry of Housing and Public Works
7. Local Government Division
8. Rural Development and Co-operatives Division
9. Ministry of Industries
10. Energy and Mineral Resources Division
11. Ministry of Agriculture
12. Ministry of Fisheries and Animal Resources
13. Ministry of Environment and Forests
14. Ministry of Land
15. Ministry of Water Resources
16. Food Division
17. Disaster Management and Relief Division
18. Roads Division
19. Ministry of Chittagong Hill Tracts Affairs
20. Power Division

Table 3.3: Programmes Under Thematic Area 5 of BCCSAP (Source: BCCSAP, 2009)

P1. Improved efficiency in production and consumption of energy
P2. Gas exploration and reservoir management
P3. Development of coal mines and coal fired power stations
P4. Renewable energy development
P5. Lower emissions from agricultural land
P6. Management of urban waste
P7. Afforestation and reforestation programme
P8. Rapid expansion of energy saving devices
P9. Energy and water efficiency in built environment
P10. Improvement in energy consumption pattern in transport sector and options for mitigation

While this is an important initiative, there are further opportunities for 'greening' the MBF of most other ministries and divisions beyond the 20 listed above, and thus making the national budget 'greener'. The question that arises now is then, 'How can this be done?'

Firstly, we suggest that the relevance of strategic objectives of ministries/divisions as mentioned in Section 2 of their MBF to sustainable usage of natural capital and environmental conservation should be clearly stated, so that they can be motivated to adopt special programmes as part of their key activities in this regard funded by their development budget, or embed environmental responsibilities in their regular activities that is funded by their non-development budget. This way, in effect, Sections 4 and 6 of their MBFs will also be greened.

Further, we suggest that new KPIs should be introduced in Section 5 of the ministries/divisions' MBF to measure their performance in fulfillment of their environmental responsibilities. Introduction of such KPIs in the MBFs of ministries/divisions would make evaluation of their performance in achieving environmentally sustainable development for Bangladesh more concrete and verifiable.

In the table in Annex-1 we demonstrate how our suggestions can be implemented by showing the relevance of strategic objectives of most ministries/divisions to environmental conservation and sustainable management of natural resources, and proposing new KPIs that can be useful in evaluating their environmental performance.

As the table in Annex-1 demonstrates, environmental conservation and sustainable management of natural resources could and should rationally be considered to be most ministry/division's business – not

just of the Ministry of Environment and Forests. Environment is a public good that is impacted by and impacts every one of us; long-term success of any development project adopted by the Government of Bangladesh relies on the ability of environment to support it (see Figure 1.2, page 9). Thus, as custodians of public well-being and natural resources, contributing towards sustainable management of natural resources and environment should be accepted as responsibility of most ministry/division. They can deliver on their environmental duties as part of their core operations that is funded by their non-development budget or adopt special projects in this regard funded by their development budget, as illustrated in the table in Annex-1.

Politically bargaining for allocation of public funds for environment protecting activities or projects is, however, quite tricky. Activities meant to protect the environment and natural capital base have some unique features that separate them from other public development or non-development work: (1) they benefit dispersed individuals or group of people: public investments made for protecting the environment cannot usually be sold to electorates as proof of development work as constructions of roads, schools, bridges, hospitals meant to serve a specific community can be; and (2) their benefits are often deferred in time, sometimes even across generations, while legislative and executive power players in the government involved in budgetary bargaining usually define time-frame to be the time between two parliamentary elections (Peszko, 2000). Environmental commitment of the top-most authority of the government, and those in the leadership positions in Ministry of Planning and Ministry of Finance, would thus be indispensable for greening Bangladesh's national budget.

3.3 Summary of Pointers for Greening Budget Formulation

Based on the discussion presented in this chapter so far, key pointers for greening Bangladesh's budget formulation process are summarised below:

- **Greening Bangladesh's budget formulation process would essentially involve greening individual ministry/division's MBF.**

In Bangladesh, national budgets are formulated using the MTBF. Since MTBF is comprised of MBFs of all individual ministries and divisions, greening Bangladesh's national budget would essentially entail greening individual ministry/division's MBF.

- **In Section 2 of the MBFs, each ministry/division should be expected to pronounce relevance of their strategic objectives to environmental conservation and sustainable management of natural capital, and specify what activities they are adopting in this regard.**

Currently, all ministries and divisions are required to identify how their strategic objectives impact the overarching national priorities of poverty reduction and women's advancement in Section 3 of their MBF. From the 2018-19 fiscal year, 20 specific ministries are going to have to report their climate change related activities in Section 3 of their MBF as well. While this is a very commendable initiative, such a gesture will not be enough to 'green budget' in its true sense. Environmental protection or sustainable use of natural capital should not be limited to be expected as a positive externality of core activities of ministries/divisions, but an integral part of their core activities itself. If this is done, then Sections 4 and 6 of the MBF will also resultantly be greened.

- **New KPIs should be introduced in Section 5 of ministries/divisions' MBFs to make evaluation of their environmental performance more concrete.**

Government of Bangladesh already uses KPIs in the MBF to evaluate performance of its many ministries/divisions against fulfillment of their strategic objectives. New KPIs should be introduced to operationalise how each ministry/division is expected to contribute towards environmental protection and natural capital management. In the table in Annex-1 we propose some new KPIs that can be helpful in this regard.

- **Even if the technical aspects of greening budgets discussed in this chapter are addressed, budgets cannot be greened without strong political commitment of the top leadership of the government to environmental protection and sustainable management of natural capitals.**

National budget is the apparatus through which public resources are allocated to competing priorities of the government. Traditionally, in most resource starved countries like Bangladesh, infrastructural projects that produce tangible results in the short to medium-terms have been observed to win funds over environmental projects whose benefits are often intangible or time delayed. Environmental commitment of the top-most political and bureaucratic leadership of the government is a necessary condition for greening budgets

Country Case Study 3.1: India's Experience with Green Railway Budget

Government of India signified its commitment to the green growth of country's railway transport system in the Railway Budget for 2016-17. The budget made financial commitments for setting up waste segregation and recycling centres in railway stations, funding awareness campaigns to promote cleanliness at the stations, installing energy efficient lighting in all railway stations, setting up rain water harvesting systems to recycle up to 250 million litres of water per day, replacing steel sleepers with environment friendly composite sleepers made of recycled plastic waste, installing solar micro-grids at railway stations located in remote regions, and establishing water efficient automatic coach washing plants among other measures (Indian Railway, 2016) (Ministry of Environment, Forest, and Climate Change, Government of India, 2016)

Along with the funding commitments, the Railway Budget 2016-17 also had a plan to earn green revenue for the railway sector. The budget mentioned that Indian Railway has vast area of land available neighboring the railway network which it plans to lease out to encourage horticulture and tree plantation (Indian Railway, 2016) (Ministry of Environment, Forest, and Climate Change, Government of India, 2016).

4 Budget Execution

In this chapter we talk about greening two key elements of budget execution – public investment management and public procurement.

4.1 Greening Public Investment Management

4.1.1 What Would Greening Bangladesh's Public Investment Management Entail?

Public investments are capital expenditure made by the government. These expenditures can be made towards building 'physical infrastructure' like roads, buildings, and bridges, or towards developing 'soft infrastructure' like human capital or research-based innovation. Benefits derived from such public capital expenditure are expected to last over a year (OECD, 2014).

In Bangladesh, the most important planning document guiding budget preparation is the Five Year Plan (Ministry of Finance, GoB, 2012) which lays down general and sectoral directions to be pursued over the specific planning horizon. The Five Year Plan is then put into action through ADP (General Economic Division, GoB, 2014 (a)). ADP is the sum of development projects adopted by different wings of the government in a fiscal year and is financed by the development budget approved by the parliament on an annual basis. ADP is central to the public investment management process in Bangladesh (JICA, 2012).

As Bangladesh is reaching the point of exhausting its natural capital and is nearing its environmental pollution limits, the country is faced with the urgent need of minimising environmental costs of its development ventures. Since capital expenditure required by ADP projects usually have lock-in environmental effects, it is critically important to design the development projects included in ADP to be environmentally sustainable. Towards that end, the process surrounding formulating, approving, implementing and monitoring the ADP projects has to be greened.

Two distinct types of projects are usually included in the ADP of Government of Bangladesh-(1) Investment Projects, and (2) Technical Assistance Projects[2] (General Economic Division, GoB, 2014 (a)). Investment Projects are adopted to build 'physical infrastructure', while Technical Assistance Projects are adopted to develop institutional capacity and 'soft infrastructure'. Since Investment Projects usually require larger sum of capital expenditure and have greater lock-in environmental effects, we talk about greening only Investment Project Formulation, Approval, and Monitoring and Implementation Process in this section.

4.1.2 Greening the Investment Project Management Process

4.1.2.1 Greening Investment Project Formulation Process

Formulation of investment projects begins when the agency that plans to implement them develops a proposal using the Development Project Proforma (DPP). The DPP is then submitted to the executing

[2] Occasionally some projects involve implementation of schemes by Ministries (General Economic Division, GoB, 2014 (a)) and feasibility studies.

Ministry/Division. As part of the Poverty-Environment-Climate Mainstreaming Project (PECM), Government of Bangladesh adopted several changes to the DPP format in recent years to integrate climate change adaptation and disaster risk response in project planning phase. However, there remains room for doing more to green the DPP. Below, we identify the specific sections of DPP that can be made greener and elaborate how:

- **The Project Log Frame**

In Section 10 of the DPP, the implementing agency is expected to lay out logical framework of the project. Figure 4.1 depicts the format used for preparing the log frame in DPPs.

In the table depicted in the figure, implementing agencies should be expected to specifically identify natural resource inputs required to generate the project outputs; and also to specify key assumptions related to environmental support required for generating outputs and outcomes (Figure 4.1). This information is usually not spelt out because input of natural capital is assumed to be free for the government and environmental support is often taken for granted. Requiring implementing agencies to provide the details and spell out the assumptions would enable the ministries to interrogate those assumptions, and at-least consider the impact on the natural capital.

Narrative Summary	Objectively Verifiable Indicators (OVIs)	Means of Verification	Important Assumptions
Goals			**Specify important assumptions related to environmental support**
Objectives/Purpose			
Output			
Input **Identify planned input of natural capitals**			

Figure 4.1: Format Used for Preparing the Log Frame in DPP

- **The Procurement Plan**

Section 12.1 of the DPP requires the implementing agency to provide a detailed procurement plan for goods, works, and services required for implementing the project. All such procurements have to be made according to the latest Public Procurement Regulations (General Economic Division, GoB, 2014 (a)). We talk about greening public procurement in the section that follows (section 4.2), so skip the discussion here.

- **Financial Analysis**

A detailed financial analysis of the proposed project that includes calculation of Net Present Value (NPV), Benefit-Cost Ratio (BCR), and Internal Rate of Return (IRR) is compulsory for preparing the DPP. The implementing agency needs monetary evaluation of the total cost to be incurred for completing the project

and of the total benefit to be derived from it over its life-time or relevant time horizon for calculating each of these three measures. Including monetary evaluation of the environmental costs and benefits associated with the project would make calculation of these three measures green.

The changes introduced in DPP on recommendation of the PECM project addressed this concern. However, the adequacy of the instructions provided in the DPP Manual to value environmental costs and benefits could be debated. The manual comes with very limited discussion on the alternative tools usually used by economists for valuing environment or environmental services (pages 105-106 of DPP Manual Part-2), detailed discussion on benefits and costs analysis for roads, water, irrigation, flood, urban protection and other infrastructure construction/repair related projects-all of which has high environmental relevance (pages 135-158 of DPP Manual Part-2), and a detailed theoretical discussion on assessing benefits of projects in the context of climate change (pages 159-168 of DPP Manual Part-2). While the instructions for evaluating benefits and costs associated with roads, water, irrigation, flood, urban protection and other infrastructure construction/repair related projects are reasonably rich, the instructions for valuing environment or environmental services is grossly inadequate, and the instructions on evaluating benefits in the context of climate change is highly theoretical with insufficient guidance on how the theory could be translated into practical application.

We do not point out the aforementioned issues to question Government of Bangladesh's sincerity towards making the DPPs green, but only to suggest that there are is room to green the DPP further. Advanced tools for monetising environmental costs and benefits, and climate change related benefits are still being developed, and to a large extent it is rather impractical to expect generalist bureaucrats working for the Government of Bangladesh to be able to apply such tools in doing the financial analysis for DPPs. An option could to invest in creation of an independent institute of environmental economists with top-notch expertise in financial analysis of environmental costs and benefits, and climate change related benefits. Resources invested in setting up and operating such an institute could generate further return on investments as valuation of the environmental and climate change related benefits calculated by them could be used by Government of Bangladesh to negotiate better access to international climate funds.

- **Environmental Sustainability**

In Section 24.2 the agency preparing the DPP is expected to report on environmental sustainability issues involving the project like its impact on land, water, air, bio-diversity, and ecosystem services. If the project belongs to Red Category[3] Environmental Impact Assessment (EIA) report must be attached as well. Even though mandating submission of EIA reports for environmentally critical projects is a sound practice on its face for safeguarding the environment, the quality of the EIA reports produced in Bangladesh is questioned.

In a study that sought to investigate the quality of EIA reports of development projects, Kabir & Momtaz (2012) found that at least one-third (34%) of them are of unsatisfactory quality, while quality of the others is often only moderately satisfactory. The reports tend to do a good job of describing the development project and objectives, policies, and legal framework for conducting the EIA, and presenting the information in an easy to follow layout using maps, charts, tables, executive summary, non-technical summary etc. However, when it comes to the more critical parts like - providing reliable, methodically collected baseline data; predicting the nature and magnitude of environmental impacts comprehensively; providing rationale behind the consultant's judgement calls or selection of models for predicting the

[3] Bangladesh Environmental Conservation Rules 1997 classifies industrial units or projects in four categories based on their location and impact on environment-Green, Orange-A, Orange-B, and Red- with Green projects posing the least threat to environment and Red projects' potential impact on environment being highest.

impacts; justifying mitigation measures suggested; prescribing monitoring mechanisms with details of parameters to be monitored and methods to be used for monitoring them - the reports perform rather poorly. Their analysis shows that the reports do an overall good job of describing basic project related facts but are weak in scientifically analysing environmental impacts.

The reasons for such weaknesses are many. Limited time and funding allotted to conduct the EIA, unavailability of sufficient ecological baseline data, lack of legal provisions establishing code of conduct for the consultants, short supply of consultants with necessary scientific skills for conducting the assessments (Kabir & Momtaz, 2012) - are some among them. However, another key reason that tops most other in weakening the quality of EIAs is the principal-agent relationship between the project proponents and EIA consultants, irrespective of whether the projects are to be implemented by the public or the private sector. Since EIA consultants are paid by the project proponents they tend to produce reports that serve the project proponents' purpose of getting the Environmental Clearance Certificate (ECC) from Department of Environment (DoE) touching by the key points only and playing down the more critical environmental impacts acknowledgment of which is required for effectively designing mitigation measures (Kabir & Momtaz, 2012).

Being the cornerstone for environment impact management of Red Category development projects, the quality of EIA reports must be strengthened for greening public investment management. Initiatives that may help achievement of that goal include: developing a legally binding code of conduct for EIA consultants (Kabir & Momtaz, 2012), introducing accreditation system for EIA consultants (Kabir & Momtaz, 2012), and creating an electronic database of EIA reports submitted to DoE.

- **Environmental Clearance Certificate**

In Section 25 of the DPP the implementing agency has to attach the ECC obtained from DoE. Both Initial Environmental Examination (IEE) report and EIA report is necessary for obtaining ECC for Red Category projects. For Orange-B Category projects, only IEE report is required. For projects belonging to Orange-A or Green Category, neither IEE report nor EIA report is necessary. However, projects in Orange-A Category have to submit process flow diagram, layout plan, effluent disposal mechasim etc. for obtaining ECC.

Some key weakness in the legal provisions surrounding issuance of ECC and possible options to overcome them are briefly discussed below:

Validity of ECC of Major Infrastructural Development Project: The ECCs issued to Orange-A, Orange-B, and Red Category projects are subject to annual renewal and those issued to Green Category projects are subject to renewal every three years. While annual renewal of ECC for industrial projects producing toxic effluent on a regular basis makes absolute sense, annual renewable of ECC for infrastructural development projects like construction of dams, roads, and bridges does not serve any practical purpose (Kabir & Momtaz, 2010). Relevant provisions of Environmental Conservation Rules (ECR) 1997 should be updated to make initial issuance procedure of ECC for such projects more stringent so that ECC with a larger and more practical validity period can be issued for them.

EIA for Expanded Portions of Projects: The ECR 1997 is silent on whether new EIA should be conducted and whether ECC should be obtained again if a project is expanded beyond its original plan-a phenomenon very common in Bangladesh. Expansion of a project may significantly amplify its environmental impact and require updated Environmental Management Plan (EMP), but because of the

legal loophole the real necessity of updating the EMP is often bypassed (Kabir & Momtaz, 2010). ECR 1997 should be updated mandating reissuance of ECC for major project expansions.

Site Clearance for Initiating Land Development Work before Obtaining ECC: ECR 1997 allows land development work to be initiated after obtaining site clearance even before ECC has been issued. Once the project proponents have already invested their resources in the project site, it becomes difficult for DoE to deny issuance of ECC on a later date (Kabir & Momtaz, 2010). The provision of starting land development work simply after obtaining site clearance should be eliminated.

4.1.2.2 Greening Investment Project Approval Process

Once the DPP has been formulated it has to go through the approval process shown in Figure 4.2. In this phase, outside influence, especially political considerations come to bear. Ideally, project approval should be based strictly on analytical criteria in consideration of overall costs and benefits associated; however, in reality, political considerations often influence project approval decisions. To mitigate this to the extent possible, technical solutions such as development of a decision matrix to be used by Planning Commission officials to accept, reject, or request revision a project for environmental or natural capital utilisation related reasons need to be considered alongside attempts to secure political buy-in for these reforms at the highest levels of government. The decision matrix should be designed to reduce reliance on subjective judgments and make project approval process based on environmental grounds as objective as possible. Making project approval decision making criteria transparent to the public may also be useful in forcing a degree of objective analysis.

Country Case Study 4.1: South Korea's Experience with Green Public Investment

Management of water resources is a core outlay of public investments and South Korea has taken exemplary measures in making such investments environmentally sustainable. Korea Water Resources Corporation (K-water), the national utility company responsible for management of water resources, has established a successful system for managing water resources with the application of cutting edge technology. K-water has developed a mechanism for remote data analysis which it uses to detect problems like emergence of leaks, and usage or installation of suboptimal equipments (Asian Development Bank, 2014).

South Korea's Green Growth Strategy, adopted in 2008, promotes public investment for initiatives to recycle waste water, develop water management technologies to improve efficiency in water usage, and improve sewerage systems among other things. Such investments have produced visible success as water use per capita has been on decline. The country's estimated irrigation efficiency of 65% signifies above-average competence (Asian Development Bank, 2014). Auto-irrigation systems used in South Korea ensures accurate and uniform use of irrigation water. The system electronically measures soil moisture and irrigation flows (Asian Development Bank, 2014). The green growth results generated by well planned public investments in water quality management in South Korea, in particular the application of sophisticated technology to match water supply and demand, is promising of the potential of public investments being a catalyst for green growth .

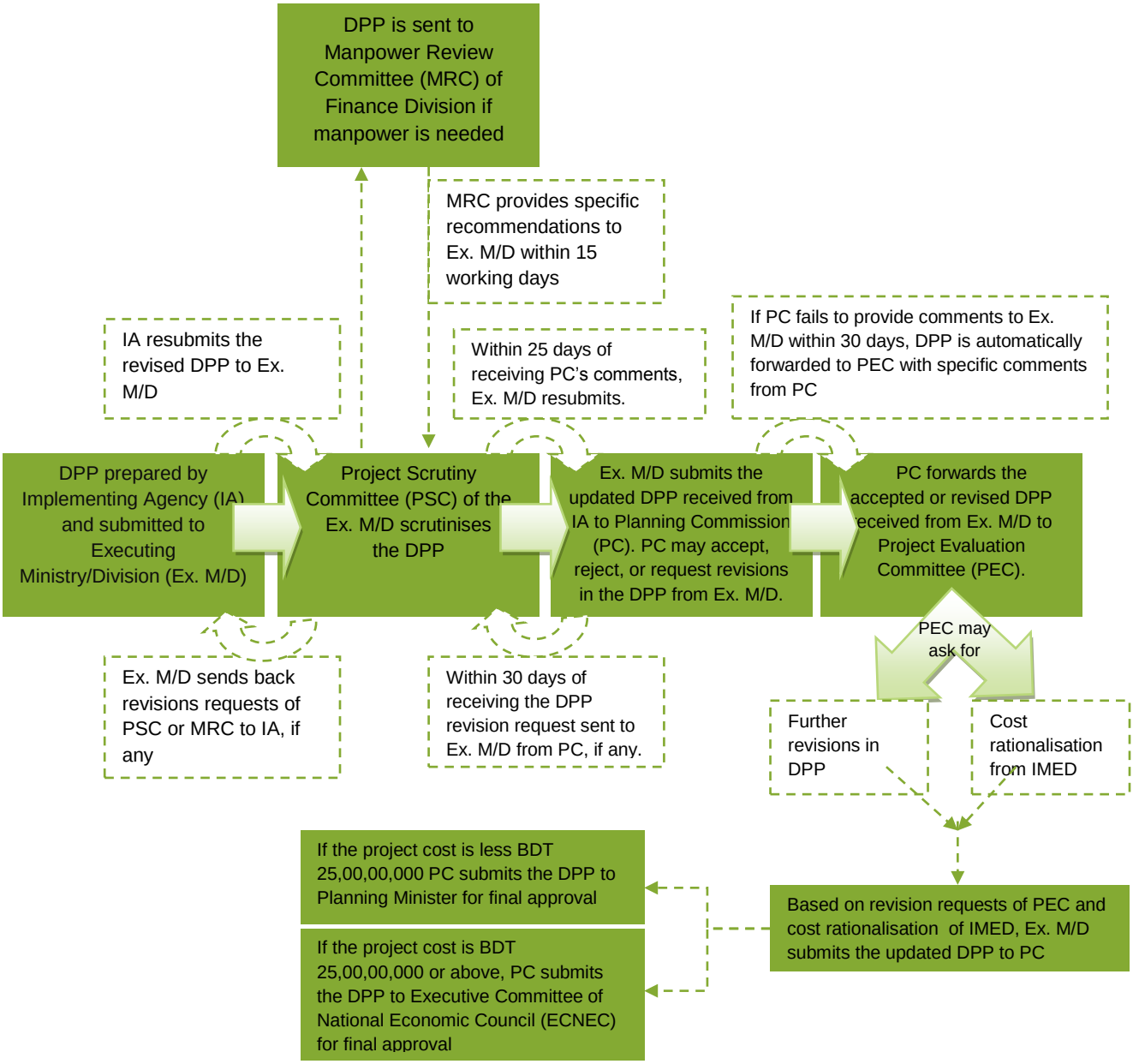

Figure 4.2: Investment Project Approval Process

4.1.2.3 Greening Investment Project Implementation and Monitoring Process

After a project has been approved, the next task would be to ensure principals of environmental conservatism and sustainable management of natural resources is duly observed in the implementation and monitoring process. Factors to aid greening of this phase will primarily necessitate:

- Updating the proforma used to submit project implementation related information to Implementation Monitoring and Evaluation Division (IMED) to include environmental issues like waste management, pollution control, and EMP execution. This will eventually help green the project evaluation reports which is prepared based on the information supplied on the pro-forma and also field verification.

- Developing sustainability monitoring capacity within public institutions. Owing of the newness of the notion of monitoring for sustainability, Government of Bangladesh does not have institutional setup to conduct it on a regular basis. Some agencies, namely Bangladesh Water Development Board, Bangladesh Rural Development Board, Bangladesh Academy for Rural Development, Bangladesh Institute of Development Studies, undertake sustainability monitoring in a very limited scope and IMED undertakes it only randomly on special request of ECNEC, Planning Commission, or other ministries/agencies (Planning Commission, GoB, 1997). Substantial capacity development of IMED will be required before sustainability monitoring can be conducted on a more regular basis.

- Conducting more impact evaluation studies after the project has been implemented. IMED conducts impact evaluation studies more frequently than sustainability monitoring but still in very low numbers than what could be considered ideal. Lack of officials skilled to perform impact evaluation and weak logistic support to conduct such studies comes in the way of IMED's being able to evaluate impacts of investment projects more regularly (Planning Commission, GoB, 1997). Substantial capacity development of IMED is needed in this regard too.

4.1.3 Summary of Pointers for Greening Public Investment Management

Based on the discussion presented in sections 4.1.1 and 4.1.2, key pointers for greening Bangladesh's public investment management are summarised below:

- **On recommendation of the PECM project DPP has been updated to incorporate environmental considerations but rooms for making it greener remain.**

Our analysis particularly recommends that an independent institute of environmental economists should be created to perform financial and economic analysis of environmental costs and benefits, and climate change related benefits generated by development projects. Further, legal and technical loopholes that weaken the utility of EIA reports and ECCs must be addressed. Towards that end a legally binding code of conduct for EIA consultants should be developed, accreditation system for EIA consultants should be introduced, and an electronic database of EIA reports submitted to DoE should be created. Further, relevant provisions of ECR 1997 must be amended so that ECCs with more practical validity period can be issued to infrastructural development projects, reissuance of ECC is mandated for major project expansions, and the provision of starting land development work simply after obtaining site clearance is eliminated.

- **A decision matrix should be developed to accept, reject, or request revision a project for environmental or natural capital utilisation related reasons as objectively as possible.**

To control political influence in project approval process, a decision matrix should be designed to reduce reliance on subjective judgments and make project approval process based on environmental grounds as objective as possible.

- **The proforma used to submit project implementation related information to IMED should be updated to include environmental issues like waste management, pollution control, and EMP execution.**

Other measures that will help green the post-approval phase of public investment project management include: developing sustainability monitoring capacity within public institutions, and conducting more

impact evaluation studies after the project has been implemented. For both on these suggestions to be implemented into action substantial capacity development of IMED will be required.

4.2 Greening Public Procurement

4.2.1 Why Should Bangladesh Green Its Public Procurement System?

Public procurement is the purchase of goods, services and works by the money from the public exchequer. The public procurement process includes assessment of procurement needs, conducting the tendering process, awarding contracts, and subsequently managing the contracts that have been awarded. In Bangladesh 70% of the development budget and 25% of the revenue budget is disbursed for public procurement (Siddique, 2017). With this scale of funds going through the public procurement system, there is considerable scope for this element of the PFM cycle to incorporate environmental considerations and be part of a green fiscal framework. The scale of public procurement also means that any change by Government of Bangladesh to better consider green impact or stipulate environmental requirements in procurement decisions can influence the development of a broader market of green products and services in the nation.

Before further discussion, it is necessary to agree on a definition of green public procurement. In this paper, we use the definition provided by European Commission which defies green public procurement as:

> *"a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured"* (European Commission, 2008).

Government of Bangladesh can adopt a number of different routes to green its public procurement system. These include-embedding green specifications in award criteria like proportion of renewable energy or recycled material to be used, requiring tenders to evaluate life-cycle costing including environmental externalities instead of just the up-front cost of provision, requiring suppliers to meet certain environmental requirements to be eligible to bid, subjecting products to eco-labeling certification and providing preferential treatments to such eco-labeled products in evaluating tenders.

In procuring this way, the same goods, works, or services that would have been procured otherwise will be obtained but with the added benefit of minimising negative environmental impacts and seizing any opportunity of positive environmental externality that may be available. Further, green public procurement will take Government of Bangladesh closer towards achieving Sustainable Development Goals as Goal No. 12.7 expects national governments *"to promote public procurement practices that are sustainable in accordance with national policies and priorities"* (United Nations, 2016).

4.2.2 Key Considerations for Implementing Green Public Procurement in Bangladesh

Public procurement in Bangladesh has undergone a substantial reform in recent years. On back of the recommendations made by the 2002 Country Procurement Assessment Report (World Bank, 2002) the World Bank supported a comprehensive reform of the public procurement system. This resulted in the Public Procurement Act 2006 (PPA 2006) and the Public Procurement Rules 2008 (PPR 2008). In addition, a central procurement entity was established – the Central Procurement Technical Unit (CPTU) under the Planning Commission. All of these actions signal a commitment to establish a transparent and accountable public procurement system.

The reforms, however, did not address the issue of embedding principles of environmental sustainability within the public procurement system, and as such implementation of green public procurement in Bangladesh has to be tackled as a new mission accomplishment of which will be met its own challenges. Below we identify some key considerations relevant for rolling out green public procurement system in Bangladesh:

- **Establishing Legislative Support of Green Public Procurement:**

Currently, there is no government policy on sustainable public procurement in Bangladesh, although there are some provisions in the government's General Conditions of Contract for Civil Works regarding environmental protection on construction sites and concerning social protection in civil work contracts[4]. Greening Bangladesh's public procurement system will require development of a Green Public Procurement Policy which on a later date should inspire necessary amendments in PPA 2006 and PPR 2008 to solidify legislative support for green public procurement.

- **Developing of Technical Basis to Support Green Public Procurement:**

Countries that have successfully implemented green public procurement systems have been enabled and, in fact, facilitated by presence of eco-labelling schemes. Eco-labels are legally protected labels signifying that the products or services they are awarded to adhere to some predetermined environmental criteria (Naumann, 2001). Asian countries like Thailand, Japan, China have used eco-labelling schemes as the technical basis for green public procurement programmes which helped them to avoid the proverbial "reinventing the wheel" (UNEP, 2017). Certification schemes for awarding eco-labels have been introduced in each of these three countries forming a strong foundation on which these countries are building their green public procurement programmes.

Linking green public procurement with eco-labelling schemes reduces the administrative and technical costs of developing detailed customised environmental specifications for each product category; as well as the responsibility for keeping them up-to-date. At the initial stage, Government of Bangladesh may consider conducting a scoping study for introducing a national eco-labelling scheme, and based on its recommendations the scheme can then be put into operation. Until such an eco-labelling scheme is in place, the government may rely on ISO 14001 (or equivalent systems) to evaluate compliance with environment management measures by suppliers in making public procurement decisions.

- **Making Plans to Justify Higher Costs of Green Procurement in the Initial Stages:**

Considering the cost over life-cycle, green public procurement saves money compared to regular procurement, but the cost at the time of purchase for green procurement may be higher in a range of cases (Lama, 2014). Higher prices for green products may serve as a significant barrier to introducing green procurement in Bangladesh, especially when lowest price is the primary determinant of a successful bid. As procurers and auditors usually focus on the initial cost at the purchase point due to stringent public accounting and budgetary restrictions, such added cost can slow down the process of greening procurement system (Lama, 2014). To overcome this challenge, Government of Bangladesh must demonstrate commitment towards creating the demand conditions for the development of green product markets, which will in effect create greater economies of scale and price competition. Further,

[4] In the General Conditions of Contract for Civil Works it is mentioned that the contractor has to ensure people or property are not damaged by pollution, noise, or any other negative externality resulting from the contractor's mode of operation. Further it is mentioned that if consultants are to selected through a design competition the evaluation criteria may include *"innovation, aesthetic content, adequate blending with the surroundings, efficient use of the available space, attractiveness for the potential users, incorporation of energy savings and other environmentally friendly considerations, revenue generation potential, if any, and estimated construction cost"* (General Conditions of Contract for Civil Works, clause 27; PPA 2006, Rule 111) (Roos, 2013).

implementation of 'life-cycle' analysis should be utilised to highlight the medium/long-term cost effectiveness of sustainably procured products/works/services.

- **Developing Staff Awareness on Green Public Procurement:**

Lack of staff awareness on green public procurement may serve as yet another impediment towards its implementation. As green public procurement till date is not practiced in Bangladesh, most public-sector official would naturally lack the technical knowledge or confidence to effectively carry out green public procurement directives. Although training can address this issue, frequent rotation of officials across public offices in Bangladesh makes it challenging to ensure the trained individuals will continue to serve in procurement office. To ensure smooth roll out of green public procurement, Government of Bangladesh will need to develop and deliver training and capacity building programme for all civil servants involved in procurement, as well as main private sector suppliers.

- **Planning Implementation Schedule Factoring in the Time Required for Market Development:**

Given the lack of present demand for green products in Bangladesh, it is natural that availability of sustainable or environmentally preferable products in the local marketplace is also meagre. Thus, the implementation schedule for greening public procurement must be carefully planned. To develop the market for green products, Government of Bangladesh will need to support producers and suppliers of green products and services providing them access to green finance, technical guidance, guarantees of demand etc. (Lama, 2014). Development of a strong eco-labeling framework potentially in conjunction or collaboration with other countries in the region which has already taken steps towards greening their public procurement like India, Japan, China, Thailand could be considered. Roll-out should be planned in phases starting off with a well-resourced and managed pilot phase. In the short-term, any requirement to adhere to green procurement practices should not be mandatory and rather be used for selective projects that are heavily reliant on international procurement. This is because in the short-term, given the lack of green products/works/services supplier in Bangladesh, the probability of receiving quality bids for green procurement processes from international suppliers is higher (Roos, 2013). Gradually, in the medium to long-terms as local market develops requirement for adhering to green procurement practices should be made more stringent.

- **Identifying Priority Sectors for Rolling Out Green Public Procurement:**

Government of Bangladesh will have to identify priority sectors for rolling out green public procurement in consideration of the magnitude of their environmental impacts, volume of public expenditure directed to them, possible impact on the suppliers, possibility of setting example of responsible procurement practices for private sector, politico-economic feasibility, availability of pertinent and easy-to-use environmental sustainability compliance criteria, market availability, and economic efficiency (European Commission, 2008). Priority sectors for green public procurement currently identified in some Asian countries are shown in Annex-2. These sectors can be prioritised for green public procurement in Bangladesh as well.

4.2.3 Summary of Pointers for Greening Public Procurement

To green Bangladesh's public procurement it would be necessary to:

- **Establish legislative support for greening public procurement.**

Initially, this would involve formulation of a Green Public Procurement Policy which should on a later date inspire necessary amendments in PPA 2006 and PPR 2008 to solidify legal backing for green procurement.

- **Develop technical basis to assess sustainability features of goods/works/services to be procured.**

In the short to medium-terms ISO 14001 (or equivalent systems) could be used for this purpose, while in the long-term an eco-labeling scheme could be launched.

- **Absorb higher costs of green procurement in the initial stages until a competitive market for green goods/works/services in developed.**

Using 'life-cycle' analysis to highlight the medium/long-term cost effectiveness of sustainably procured products/works/services would be necessary to justify the added costs.

- **Financially support development of a domestic market of green goods/works/service.**

Government of Bangladesh will need to support producers and suppliers of green products and services providing them access to green finance, technical guidance, guarantees of demand etc.

- **Develop staff awareness on green public procurement.**

To ensure smooth roll out of green public procurement, Government of Bangladesh will need to develop and deliver training and capacity building programme for all civil servants involved in procurement, as well as main private sector suppliers.

- **Plan implementation schedule of launching green public procurement factoring in the time that will be required to develop domestic market for green goods/works/services.**

In initial stages, any requirement to adhere to green procurement practices should be optional and used for selective projects that are heavily reliant on international procurement.

- **Identify priority sectors for rolling out green public procurement.**

For this, Government of Bangladesh can take inspiration from best practice examples of countries that have successfully implemented green public procurement system. The priority sectors should be selected in consideration of a host of factors including: the magnitude of their environmental impacts, volume of public expenditure directed to them, possible impact on the suppliers, possibility of setting example of responsible procurement practices for private sector, politico-economic feasibility, availability of pertinent and easy-to-use environmental sustainability compliance criteria, market availability, and economic efficiency etc.

Country Case Study 4.2: Japan and Thailand's Experience with Green Public Procurement

Japan and Thailand are at two very different stages in greening their public procurement. Below a comparative analysis of their approach to green public procurement is shown for Bangladesh to draw inspiration from.

	Japan	Thailand
Eco-labeling legislation	Eco Mark eco-labelling scheme was launched 1989. In 2008, updated guidelines for eco-labeling was issued following the passage of Act on Promotion of Procurement of Eco-Friendly Goods and Services in 2001.	There is no formal legislation for eco-labelling. However, the country has an Environmental Quality Management Plan that states its government's intention of shifting towards eco-friendly procurement which mentions eco-labelled products as an indicator of successful implementation.
Green Public Procurement Legislation	Green Purchasing Law (2001) Green Contract Law (2007)	No formal legislature but plans. 1st Green Public Procurement Promotion Plan issued in 2008 and 2nd Green Public Procurement Promotion Plan issued in 2012
Implementation Structure	Decentralised. Green Purchasing Law requires central and local governments to prepare their own green public procurement policies and programmes.	Decentralised.
Institutions Leading Green Public Procurement Implementation	Ministry of Environment	Ministry of Natural Resources and Environment Pollution Control Department
Target Groups	Public and private sectors	1st Green Public Procurement Plan targeted on public sector but 2nd version of the plan also targets private sector and consumers
Quantitative Targets	None	Specific targets for increase in government spending on green procurement, and the total number of government agencies adopting green public procurement

(Continued in the next page)

	Japan	Thailand
Eco-labels	Type I voluntary labels[1]	Type I voluntary labels[1]
Mandatory vs. Voluntary Programmes	Mandatory	Voluntary
Number of Product Categories Chosen for Green Public Procurement	21	17
Training for Procurement Staff	Provided by Ministry of Environment and Green Purchasing Network	Provided by Pollution Control Department
Fiscal Incentives	Information unavailable	Rewards are given to government agencies showing good green public procurement performance and to suppliers that consistently provide green products or services
Monitoring Mechanism	Monitoring system implemented by Ministry of Environment	Monitoring system augmented by electronic platform for monitoring and reporting implemented by Pollution Control Department

[1] Details about Type I environmental labels is available at ISO Standard 14024:1999 Environmental labels and declarations – Type I environmental labeling – Principles and procedures

The above table is based on information collected from a detailed discussion pursued in (United Nations Environment Programme, 2017) which provides a comparative analysis of green procurement system in four Asian nations: China, Japan, Thailand and the Republic of Korea. Interested readers are suggested to read the source material the above summary is drawn from for a detailed analysis.

5 Accounting and Oversight

In order to ascertain integrity of the other building blocks of green PFM system discussed in the previous chapters, public sector in Bangladesh will need to perform green accounting and green auditing as well. In this chapter we talk about greening the accounting and auditing phases of PFM cycle in Bangladesh.

5.1 Green Accounting for the Public Sector in Bangladesh

In recent times, national wealth accounting, including natural capital accounting, is experiencing growing appreciation in the international community for the instrumental role it stands to play to enable nations in achieving sustainable development. As noted in (World Bank, 2016):

> *"Long-term development is a process of accumulation and sound management of a portfolio of assets- manufactured capital, natural capital, and human and social capital. As Nobel Laureate Joseph Stiglitz has noted, a private company is judged by both its income and balance sheet, but most countries only compile an income statement (GDP) and know very little about the national balance sheet."*

The crippling limitation of traditional public accounting practices, as it has come to be pronounced more and more these days, is that it has limited, if any, representation of natural capitals of a nation. In the traditional method, economic value of natural capitals like forests, agricultural land, wetlands do not show up in the accounts of the nation, and thus, traditional accounting falls short of providing a complete picture of wealth reserves of the country. As the full contribution of natural capitals in national economic growth remains unrecognised in traditional public accounting practices, the importance of preserving natural resource base does not gain as much attention as it should.

On the other hand, green accounting can enable Bangladesh manage its natural resources better by keeping accounts of national and sectoral consumption of natural capitals, and production of pollution. This kind of information is critically important to develop models of alternative green growth options (World Bank, 2016). For example, accounting for land can help Bangladesh evaluate contending land uses and settle at most advantageous use of the limited land reserves the country has. Green accounting can aid Bangladesh develop the optimal strategy for capitalising on its environmental supplies so that economic growth is maximised without sacrificing environmental sustainability.

Even though the idea of green accounting has been around for over three decades, a major breakthrough came in 2012 when the UN Statistical Commission adopted the System for Environmental and Economic Accounts (SEEA). SEEA offers internationally-agreed techniques for accounting for material natural capitals like fisheries, minerals, and timber. Till date, more than 30 countries have started implementing SEEA and some have even demonstrated interest of going beyond SEEA-approved material natural resource accounting to include non-traded, tougher to measure ecosystem services and other non-material natural resources (World Bank, 2016).

For Bangladesh, the first step towards greening its national accounting practices would have to be developing environmental statistics collection and analysis capabilities. Luckily for Bangladesh, the country has policy makers who already realise the importance of environmental statistics for planning sustainable development, and through their initiatives Government of Bangladesh has already developed

a detailed report titled Bangladesh Environmental Statistics Framework (BESF) 2016-2030 which lays down a detailed plan for how the country is going to develop its environmental statistics capacity according to SEEA over the next decade (Bangladesh Bureau of Statistics, 2016).

Once implementation of BESF is complete, Government of Bangladesh will be equipped with environmental statistics and accounting capabilities in light of SEEA. The next step towards signifying its environmental capabilities could be calculating Green GDP along with its traditional counterpart. While SEEA goes to the extent of enabling calculation of natural capital depletion adjusted aggregates of economic performance, Green GDP goes beyond that to include estimates of environmental damages caused in a fiscal year (Hass, 2015). However, theoretical underpinning for calculation of such measures is still under development and Government of Bangladesh would be ill advised to try to calculate Green GDP until BESF is implemented and post-implementation its effectiveness has been tested.

In the short to medium-terms, while the implementation of BESF is in process, Government of Bangladesh may consider adopting a donor funded Technical Assistance Project to conduct research on how to best implement green accounting practices in Bangladesh in consultation with International Federation of Accountants (IFAC) and enlist itself as a partner in the World Bank led Wealth Accounting and the Valuation of Ecosystem Services (WAVES) consortium.

Country Case Study 5.1: Netherlands' Experience with Green Accounting

The Netherlands was one of the first countries to realise availability of high-quality data on economic value of natural capital and ecosystem services can support sustainable development policy making process. As such, as early as in late 1960s the country started developing its environmental statistics capabilities. By early 1990s, the country had already developed National Accounting Matrix including Environmental Accounts (NAMEA) preceding the launch of SEEA by a decade. The NAMEA is a hybrid accounting system that merges national accounts and environmental accounts in a single matrix.

Key lessons from the Netherlands' experience with green accounting include:

- **Strong co-operation and clear division of tasks between different key actors is needed for successful compilation, dissemination, and analysis of environmental information.** While the key responsibility of assuring accuracy and reliability of the environmental data lies with the country's central statistical office, Statistics Netherlands, a host of other public and private sectors institutions (including Dutch government's executive agencies for public health, environment, public works, water management, NGOs, volunteer networks, assessment agencies, research institutes) are involved in the process.

- **There must be an effective line of communication between accumulators and users of environmental information.** Policy makers need environmental information in easy-to-understand, policy-relevant formats. As such, the raw environmental information must be translated into ready-to-use, policy-relevant versions to ensure effective usage of environmental statistics and accounts in policy making processes.

- **Environmental statistics and accounts should be made openly and readily available to public at large to enhance their reach and scope of usage.** Making such data available to enable policy research by academics and think-tanks will serve to strengthen social and political awareness about environmental issues and evidence based policy making by the policy makers.

This case study is based on a broader discussion pursued in (Oosterhuis, et al., 2016).

Country Case Study 5.2: China's Experience with Calculating Green GDP

Government of China first took initiatives to calculate Green GDP in 2004, and recently re-launched the plan in 2015 (Wee, 2015). China's first attempt at officiating calculation of Green GDP faced many challenges which led to discontinuation of the efforts in 2009 (Chi & Rauch, 2010). Lessons learned from the Chinese experience of introducing Green GDP calculation include:

- **The push to calculate Green GDP should be championed by powerful ministries of the government.** In China, even though State Environmental Protection Administration was fully convinced of the utility of calculating Green GDP it couldn't rid National Bureau of Statistics, National Reform and Development Commission, State Forestry Administration of their skepticism about it (Chi & Rauch, 2010).

- **The central government must give coherent signal to local authorities about the importance of environmental conservation.** Even though central authorities in China endorsed the idea of calculating Green GDP, local authorities were rewarded for their economic performance only and not penalised for causing pollution which made them reluctant to enforce strict environmental regulations locally (Chi & Rauch, 2010).

- **Countries should start attempting to calculate Green GDP only after robust theoretical framework has been developed by academia.** One of the reasons China's attempts at calculating Green GDP failed might have been lack of theoretical underpinning to support such calculation. Until academic elites have agreed on methodologies for calculation of the measure, countries would be better advised to focus on implementing SEEA (Alfsen, et al., 2006) (Chi & Rauch, 2010).

5.2 Green Auditing for the Public Sector in Bangladesh

5.2.1 Overview of Auditing Mechanisms in the PFM System of Bangladesh

Three layers of auditing mechanisms are in place in the PFM system of Bangladesh: internal audit, external audit, and third-party independent audit. Internal audits are conducted by the accounts department of respective line ministries, the Office of the Comptroller and Auditor General (OCAG) is responsible for external audits, while third-party independent audits are conducted by institutions that are not part of the government.

Historically, both internal and external audit mechanisms have not been sufficiently strong to hold public officials accountable in the country. The latest assessment in 2016, revealed some improvements in external auditing achieved through the implementation of the PFM Reform Strategy 2007-12; however, internal audit mechanisms, quality of the annual audited financial statements, and follow-up to audit observations remained weak (Ministry of Finance, GoB, 2016).

The 2016 Public Expenditure and Financial Accountability (PEFA) assessment conducted by the World Bank noted that internal audit committees were set up, but they were not holding any regular meetings. In the PFM Reform Strategy 2007-12, strengthening the financial and performance management capacity within line ministries with the view of establishing better accountability was determined to be a crucial objective. In order to achieve that goal, internal audit strategy and guidelines were developed; however they were never implemented (Ministry of Finance, GoB, 2016).

The PFM Reform Strategy 2007-12 also aimed to achieve international standards in external auditing practices. Towards fulfilment of that objective, audits to establish compliance with the International Standards of Supreme Audit Institutions (ISSAI) were conducted in selected cases. Additionally, a Memorandum of Understanding (MoU) was signed between The Financial Management Academy (FIMA) and Chartered Institute of Public Finance and Accountancy (CIPFA) for the training of OCAG officials, and a twining arrangement was set up with the OCAG of India. However, during the formulation of the 2016-2021 PFM Reform Strategy, it was noted progress on this front too has been very limited.

The PFM Reform Strategy 2016-2021 also highlighted the following critical objectives: reinstating and modernising internal audit, enhancing the profile on external audits through improvements in timeliness, improving capacity to conduct ISSAI-compliant audits, restructuring the OCAG and enhancing its capacity to support Public Accounts Committee (PAC) of the Parliament. These reforms are intended to address challenges that have been previously highlighted, including: insufficient manpower and lack of technical skills[5], supply of mostly compliance audit against the growing demand for performance audits[6], routine delay by two or more years of the annual audit of public accounts, non or slow response to OCAG audit observations by line ministries, and lack of public awareness of the audit findings.

Against this backdrop of constrained institutional capacity, the challenges towards introducing green auditing become obvious. The auditing mechanisms are yet not able to deliver satisfactorily on regular auditing requirements, and as such expecting them to deliver on the novel requirements of green auditing may appear ambitious. Still, the key messages we intend to highlight from the above discussion are:

(a) If green auditing is to be introduced in Bangladesh, it has to be conducted as external audits conducted by OCAG as internal audits conducted by accounts department of different wings of the government are void of credibility. And,

(b) OCAG does not have sufficient capacity to fulfil the growing demand for performance audits, so it would be more convenient to introduce green audits as part of financial and compliance audits. However, regardless of the issue of limitation of OCAG's capacity to fulfil the demand for performance audits, the time period over which environmental impacts usually make themselves visible often renders the prospect of conducting meaningful performance audits on environmental fronts untenable.

In the section that follows we first define what is meant by green auditing, and then discuss how OCAG can perform green audits as part of its financial and compliance audit mandate.

5.2.2 What is Green Auditing and How Can It Be Implemented in Bangladesh?

Green public auditing is a tool for identifying full range of environmental impacts of public sector operations, and for evaluating whether such operations are in compliance with relevant environmental laws and rules. Government of Bangladesh can use green auditing to align environmental performance

[5] *"OCAG has a workforce of approximately 5,000 and it can field roughly 1,200 teams of 3 auditors, which is insufficient to cover the large network of over 22,000 auditable units. Majority of auditors do not have sufficient exposure to modern audit technique and methodology. Audit coverage is less than 30 percent of central GoB entities due to resource limitations."* - Public Financial Management (PFM) Reform Strategy (2016-2021).

[6] *"OCAG's audit approach follows compliance auditing. Other auditing (risk and performance) is on a demand basis given the limited resources the organization has. The demand for Performance audit has been growing. In several reports, PAC laid emphasis on conducting performance audit to evaluate the outcome of public expenditure rather than focusing on individual transactions. During recent times though OCAG has taken up several performance audits, they are not sufficient to meet the growing demand of such audits focusing on results."*- Public Financial Management (PFM) Reform Strategy (2016-2021).

of its many ministries, divisions, agencies, and projects with the environmental goals stated in national policy documents, and to identify opportunities for better management of natural capitals and other environmental resources.

Below we highlight how OCAG can embed the principles of green auditing within financial and compliance audit practices according to the Environmental Audit and Regularity Auditing (2004) guideline prepared by International Organisation of Supreme Audit Institutions (INTOSAI).

- **Green Auditing as Part of Financial Auditing Practices:**

Financial audits are performed to evaluate financial statements. Financial audits facilitate auditors to assess if the financial statements are produced, *"in all material respects"* (INTOSAI, 2004), according to the financial reporting framework established by the law of the land. The material respects of a financial statement can cover environmental expenditures[7], liabilities[8], outcomes[9], and impacts[10] (INTOSAI, 2004). While performing financial audits, OCAG may look for environmental issues like- what measures were taken to avert, abate or correct damage to the environment; what measures were taken to efficiently use renewable and non-renewable natural resources; and what were the impacts of breaching Environmental Conservation Act 1995 and Environmental Conservation Rules 1997.

- **Green Auditing as Part of Compliance Auditing Practices:**

Green auditing can be conducted as a part of compliance auditing in assessing whether the government is following its own rules, i.e. whether operations of the public sector are in compliance with Environmental Conservation Act 1995, Environmental Conservation Rules 1997, and other national environmental policies, and also international environmental treaties (INTOSAI, 2004). Green auditing in the form of compliance auditing can help encourage observance of environmental regulations or supply assurance about existing observance, and lessen the risks and costs that may generate due to non-compliance with environmental regulations (INTOSAI, 2004). This is not to say that auditors working for the OCAG are expected to be expert in environmental issues like DoE officials, but the auditors can nevertheless be tasked to use their training to identify possible cases of non-compliance and seek expert advice from DoE when necessary.

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[7] *"Some annual operating costs are environmental in nature. For example, energy costs can be considered an environmental cost as the use of fossil fuels is a source of carbon dioxide and air pollution."*- (INTOSAI, 2004)

[8] *"Some entities may need to recognize environmental obligations as liabilities in the financial statements. For example, obligations associated with solid waste landfill closure, and aftercare and restoration obligations associated with mining operations."* - (INTOSAI, 2004)

[9] *"A failure to comply with legal requirements concerning environmental matters, such as emissions or waste disposal, may require accrual of remediation works, compensation, or legal costs. For example, a failure to comply with pollution control laws may lead to fines and penalties for an entity."* - (INTOSAI, 2004)

[10] In Bangladesh financial statements are prepared using cash basis of accounting. This limits the scope of recognition of environmental impacts in financial statements because cash basis accounting recognises environmental impacts that occurred only during the fiscal year in question. Reality, however, is that environmental impacts are seldom contained in specific periods of time and often for practical reasons is expected to be projected.

Country Case Study 5.3: Canada's Experience with Green Auditing

By law, the Auditor General of Canada is required to report to the House of Commons any cases in which public money has been spent without due regard to the environmental impact of the expenditure against the backdrop of sustainable development (INTOSAI, 2016).

Plus, Canadian Parliament has created a post for a senior officer to be called Commissioner for Environment and Sustainable Development within the Office of the Auditor General. The Commissioner reports directly to the Auditor General and is responsible for reporting to the Parliament annually on behalf of the Auditor General on issues pertaining to environmental conservation and sustainable development. The Commissioner is supported by a special team within the Office of the Auditor General (INTOSAI, 2016).

Among other things, the commissioner is responsible for monitoring and reporting progress on implementation of Canada's Federal Sustainable Development Strategy. The Commissioner is tasked with overseeing issues involving:

> *"(a) the integration of the environment and the economy; (b) protecting the health of Canadians; (c) protecting ecosystems; (d) meeting international obligations; (e) promoting equity; (f) an integrated approach to planning and making decisions that takes into account the environmental and natural resource costs of different economic options and the economic costs of different environmental and natural resource options; (g) preventing pollution; and (h) respect for nature and the needs of future generations."* (Section 21.1 of the Auditor General Act 1985 of Canada)

5.3 Summary of Pointers for Greening Accounting and Oversight

Based on the discussion presented in this chapter, key pointers for greening accounting and oversight in the PFM system of Bangladesh are summarised below:

- **Government of Bangladesh has already developed a plan for developing its environmental statistics capabilities according to SEEA.**

If the plan is successfully implemented into action, by 2030 the country will have necessary environmental statistical capacities to support green accounting.

- **The most suitable route for introducing green auditing for the public institutions and projects in Bangladesh would be to introduce it as part of regulatory audits (financial and compliance) conducted as external audits by OCAG.**

Internal audit operations of different public projects and institutions are weak to say the least, and OCAG does not have necessary capacity to deliver on the growing demands for performance audits. Further, the time period over which environmental impacts usually make themselves visible often renders the prospect of conducting meaningful performance audits on environmental fronts untenable. As such, introducing green auditing as part of financial and compliance audits as per the guideline in this regard produced by INTOSAI would be the most practical route to initiate greening of auditing practices in Bangladesh.

- **Performing green audits as part of financial audits would require checking for the impacts of environmental expenditures, liabilities, outcomes, and impacts on financial statements.**

OCAG should be expected to look for environmental issues like- what measures were taken to avert, abate or correct damage to the environment; what measures were taken to efficiently use renewable and non-renewable natural resources; and what were the impacts of breaching Environmental Conservation Act 1995 and Environmental Conservation Rules 1997. However, an important concern to be noted here is that in Bangladesh financial statements are prepared using cash basis of accounting which limits the scope of recognition of environmental impacts in financial statements. Cash basis accounting recognises environmental impacts that occurred only during the fiscal year in question but in reality environmental impacts are seldom contained in specific periods of time and often for practical reasons are expected to be projected.

- **Performing green audits as part of compliance audits would require whether operations of the public sector are in compliance with Environmental Conservation Act 1995, Environmental Conservation Rules 1997, and other national environmental policies.**

Even though auditors working for OCAG may not be experts in experts in environmental issues they can be expected to apply their auditing training to identify possible cases of non-compliance and seek expert advice from DoE when necessary.

6 Way Ahead

Greening Bangladesh's path of economic growth would necessitate embedding environmental concerns in all elements of PFM system. In chapters 2 to 5, we have identified the scope for incorporating decision making rules, and actions for sustainable management of environment and natural resources in all phases of the PFM cycle. The fact that recommendations are easier to make than implement, however, are not lost on us. We conclude the paper with the following sections in which we group the recommendations made in this paper based on their potential to be put into action in short (1-2 years), medium (3-5 years), and long-term (5-10 years). Where relevant, we also identify strengths of Bangladesh's PFM system that can be capitalised on for implementing the recommendations, the weaknesses that have to be overcome, and also possible strategies for overcoming the weaknesses. It is our hope that the analysis and recommendations put forth in this paper will contribute towards initiating the thought process required for greening Bangladesh's PFM system.

6.1 High-level Roadmap for Greening Planning and Policy Development

In the short-term,

- Non-market based policy instruments like prohibiting environmentally harmful products or practices and promoting voluntary agreements that aim to sway public opinion in the market through appealing to people's moral sense; and market-based policy instruments like taxing proxies for pollution could be deployed.

- The challenge to successfully prohibit environmentally harmful products or practices would be to develop sufficient incentives for proper monitoring on the ground. Introducing the proposed KPI of number of mobile courts conducted for violation of environmental rules and laws in the MBF of Ministry of Public Administration (see Annex-1) could help concentrate efforts in this regard.

- The responsibility of promoting voluntary agreements would have to be delegated to Ministry of Information which is responsible for building mass awareness about issues of public concern (Ministry of Finance, GoB, 2017) (see Annex-1). Even though effects of such schemes are reported to be difficult to assess, Bangladesh has experience of designing and implementing tremendously successful public awareness campaigns on promoting female education, birth control, hygiene practices, and can capitalise on the lessons learnt from those examples in raising mass awareness about environmental conservation and green growth.

- As stated in PFM Reform Strategy 2016-21, broadening tax base to increase government revenue is already a stated priority for the Government of Bangladesh (Government of Bangladesh, 2016) : introducing taxes for proxies for pollution could be adopted as a part of that. Introducing the proposed KPI of percentage reduction in the import of environmentally harmful products or raw materials in the MBF of Ministry of Commerce which is responsible for *"fixing tariff rates by analyzing commodities to protect the interest of domestic industries"* (Ministry of Finance, GoB, 2017), and the proposed KPIs of (1) share of proxies for pollution tax as a percentage of total tax revenue, and (2) cost of collecting proxies for pollution tax as a percentage of total proxies for pollution tax revenue in the MBF of

Internal Resource Division which is responsible for *"widening the base and share of direct taxes"* (Ministry of Finance, GoB, 2017) could be helpful in this regard (see Annex-1).

- In chapter 2, we recommended that potential impact of proposed or existing policies in any domain (national or sectoral) on environment and natural capital reserves should be methodically evaluated before any policy is adopted or reformed, and listed a series of questions that ought to be answered for that. In the short-term, capacity development drives to use evidence coming from environmental preservation or natural capital related research in policy making should be taken.

In the medium-term,

- Promotion of voluntary agreements should be continued to maintain momentum and build lasting public awareness about environmental conservation and green growth issues. Additionally, new categories of proxies for pollution could be identified to be taxed.

- Government of Bangladesh already uses several technological standards to control pollution. The number of product categories covered under such pollution abetting technological standards could be increased in medium-term. Accompanied with initiatives to create technical basis for evaluating green procurement this non-market based policy instrument of setting technological standard could be particularly potent if designed well.

- Success of this measure could be enhanced by adoption of initiatives to provide fiscal incentives for promotion green technology. Finance Division could help in this regard by removing barriers to green technology adoption by offering tax reductions or tax rebates, capital allowances, faster depreciation of green assets, and subsidised loans to industrial green technology users.

- Plus, a market-based policy instrument that could be rolled out in the medium-term is deposit-refund systems. Instead of directly managing such a system itself, Government of Bangladesh could consider mandating private sector manufacturers of tires, lead-acid batteries, beverages, plastic products, and consumer electronics to set up such systems for diverting environmental pollution caused by their products after they have been used by consumers. Since most types of consumer electronics marketed in Bangladesh are imported from abroad, government could consider offering trade license with preferential tax treatments to entrepreneurs who are willing to set up post-consumer electronics recycling/ safe dumping facility.

- The drive to enhance capacity to use research based evidence in assessing potential impact of proposed or existing policies in any domain (national or sectoral) should be continued in the medium-term, but until the environmental statistics support base as suggested in BESF is developed mostly qualitative assessment might only be possible.

In the long-term,

- As environmental statistics support base is developed as planned in BESF, quantitative assessment of potential impact of proposed or existing policies in any domain (national or sectoral) should be made mandatory. Planning Commission could consider setting up institutional arrangements to assess environmental sustainability of policies before any policy is sent to Cabinet Division for approval.

- Further, only after BESF is fully developed reporting requirements as a non-market based policy instrument should be deployed. Bangladesh Bank has pioneered the concept in the country by requiring banks and financial institutions to report their green banking activities. Government of Bangladesh can enhance the scope of such reporting further by requiring all businesses and incorporated ventures to use Global Reporting Initiative (GRI) standards for producing financial statements submitted to NBR. Strong collaboration with Institute of Cost & Management Accountants of Bangladesh (ICMAB) will be needed in this regard so that Bangladesh Financial Reporting Standards (BFRS) can be updated to accommodate environmental reporting principles suggested by GRI.

- Further, depending on the state of the economy in the long-term, a process to eventually phase out environmentally harmful subsidies on fossil fuels, chemical fertilizers etc., and gradually imposing pollution taxes could be started. Although a distant outcome, the ground-work for such options should be initiated now. Policymakers should have access to a suite of options with cost-benefit estimations that they can consider as required.

6.2 High-level Roadmap for Greening Budget Formulation

In the short-term,

- Budget Management Committees (BMCs), Budget Working Groups (BWGs) and Budget Management Branches (BMBs) would need to be sensitised on the issue of greening MBF.

- From the list provided in Annex-1, the easier to measure environmental performance related KPIs implementation of which would not require substantial capacity development could be incorporated in the following ministry and divisions budgets:

Table 6.1: Environmental Performance Related KPIs That Can Be Incorporated in Select Ministry/Divisions' MBF in the Short-Term

Ministry/Divisions	KPIs That Can Be Incorporated in Its MBF in the Short-Term	Capacity Development Requirement in the Immediate Short-Term Prior to Incorporation of the KPI
Ministry of Public Administration	Number of mobile courts conducted for violation of environmental rules and laws	
Internal Resource Division	Share of proxies for pollution tax as a percentage of total tax revenue	Identifying proxies for pollution to be taxed Modifying existing tax codes to levy the new proxies for pollution tax
Ministry of Commerce	Percentage reduction in the import of environmentally harmful products or raw materials	Preparing list of imported products that harm the environment Doing cost-benefit analysis of

Ministry/Divisions	KPIs That Can Be Incorporated in Its MBF in the Short-Term	Capacity Development Requirement in the Immediate Short-Term Prior to Incorporation of the KPI
		reducing their import on domestic economy
Law and Justice Division	Number of training sessions organized for judges, officers and support-staffs of environmental courts about emerging environmental issues	Developing training materials with the help of consultants Recruiting trainers
Ministry of Women and Children Affairs	Number of training programmes organised for elected female representatives on environmental issues	Developing training materials with the help of consultants Recruiting trainers
Ministry of Fisheries and Livestock	Number of field visits to prevent illegal, unregulated, and underreported (IUU) fishing	

In the medium-term,

- Linkage of resource allocation to government's environmental goals must be strengthened. Poor linkage of resource allocation to ministries/divisions with government priorities as reflected in national documents is identified as a weakness in PFM Reform Strategy 2016-21 and Government of Bangladesh is already adopting measures to address that. A promising news is that the Medium-Term Strategy and Business Plan (MTSBP) guideline that has been prepared to strengthen linkage of budgetary allocations to national priorities already mentions the issue of addressing environmental cost-benefit analysis. Importance of undertaking significant capacity development initiatives to ensure actual performance of such environmental cost-benefit analysis in preparing the MTSBP cannot be overstated.

- In the medium-term each ministry/division should be expected to start pronouncing relevance of their strategic objectives to environmental conservation and sustainable management of natural capital in Section 2 of their MBFs (possible options as provided in Annex-1) and specifying what activities they are adopting in this regard. Towards truly greening Bangladesh's national budgets this will be a critical step as this will formalise embedment of environmental concerns in development and non-development budgets.

- Effective implementation of some of the KPIs mentioned in Annex-1 would only be possible in the medium-term after some capacity development programmes have been undertaken in the short-term. A second set of environmental performance related KPIs that could be incorporated in MBF of the ministry and divisions in the medium-term appear in Table 6.2.

Table 6.2: Environmental Performance Related KPIs That Can Be Incorporated in Select Ministry/Divisions' MBF in the Medium-Term

Ministry/Divisions	KPIs That Can Be Incorporated in Its MBF in the Medium-Term	Capacity Development Requirement in the Short-Term Prior to Incorporation of the KPI in the Medium-Term
Banking and Financial Institutions Division	Percentage increase in inclusion in banking sector of those associated with small-scale recycling business	Conducting a scoping study to indentify the market size and growth potentials of informal recycling industry
Economic Relations Division	Amount of funding attracted for environmental conservation or natural resource management related projects Percentage of total foreign assistance that can be categorised as green finance	Agreeing on distinct definitions of climate finance and green finance at ministry level
Implementation, Monitoring and Evaluation Division	Environmental impact evaluation of completed projects, counted in numbers	Training IMED staff to evaluate environmental impacts of completed projects
Law and Justice Division	Percentage of disposal of cases filed in environmental courts	Removing the bottlenecks towards cases being filed at environmental courts identified in (Khan, 2017)
Ministry of Primary and Mass Education	Number of village primary schools powered by solar panels	Conducting feasibility study for such a solar panel installation project
Secondary and Higher Education Division	Number educational institutions located in off-grid areas powered by solar energy	Conducting feasibility study for such a solar panel installation project
Ministry of Youth & Sports	Employment created for youths in green businesses	Formalising the definition of green business and identifying sectors to be promoted as such
Local Government Division	Sustainable waste management system coverage Percentage of organic waste recycled Percentage of inorganic waste recycled Reduction is water pollution caused by disposal of untreated wastewater	Developing recycling plans and capabilities Establishing base levels of water pollution for improvements to be evaluated against

Ministry/Divisions	KPIs That Can Be Incorporated in Its MBF in the Medium-Term	Capacity Development Requirement in the Short-Term Prior to Incorporation of the KPI in the Medium-Term
Ministry of Industries	Construction of CETPs in industrial zones Enforcement environmental performance technology standards for commonly used industrial equipments Production of organic fertilisers as a substitute of chemical fertilisers	Developing concrete plans to make an economic case of using organic fertilisers in place of chemical fertilisers so that use of organic fertilisers need not be subsidised
Ministry of Agriculture	Percentage increase in supply of organic fertilisers to farmers Percentage increase in supply of green manure to farmers Percentage increase in supply of microbial fertilisers to farmers Increase in waster use efficiency for agriculture Increase in electricity use efficiency in agriculture Reduction in post-harvest losses Green procurement of irrigation and other agricultural machineries	Capacity development for organic and green farming practices Establishing baselines to compare improvement in performance in the identified criteria against

In the long-term,

- A final set of environmental performance related KPIs that should be incorporated in MBF of the ministry and divisions only in the long-term after substantial capacity development initiatives have been taken in the short to medium-terms appear in Table 6.3.

Table 6.3: Environmental Performance Related KPIs That Can Be Incorporated in Select Ministry/Divisions' MBF in the Long-Term

Ministry/Divisions	KPIs That Can Be Incorporated in Its MBF in the Long-Term	Capacity Development Requirement in the Short and Medium-Terms Prior to Incorporation of the KPI in the Long-Term
Finance Division	Green GDP Growth Rate	Attempts to calculate Green GDP should only be made after theoretical underpinning for calculation of such measures is developed and accepted internationally
Internal Resources Division	Share of pollution tax as a percentage of total tax revenue Cost of pollution tax collection as a percentage of total pollution tax revenue	Attempts to levy direct pollution taxes should only be made after the capacity of administering and monitoring them have been developed
Implementation, Monitoring and Evaluation Division	Green procurement as a percentage of total public procurement	Only after a sizeable domestic market for green products and services have been developed this KPI should be introduced
Ministry of Youth & Sports	Return on loans disbursed to youths from commercial banks and non-bank financial institutions' direct green finance budget	In the medium-term, after the Ministry of Youth & Sports have taken initiatives to promote green entrepreneurship the return on loans disbursed to such green ventures should be introduced as a KPI to evaluate the effectiveness of the ministry's initiatives

6.3 High-level Roadmap for Greening Budget Execution

In the short-term,

For greening public investment management:

- The proforma used to submit project implementation related information to IMED should be updated to include environmental issues as suggested in Chapter 4. Bangladesh's PFM system already has a moderately satisfactory investment project implementation monitoring mechanism in place that earned a B grade in 2016 PEFA assessment. Physical and financial monitoring results of all projects included in ADP is also published annually and made accessible to public online (PEFA, 2016). Updating the proforma used by IMED to collect project related information that is used for producing

the annual monitoring results report to include environmental issues like waste management, pollution control, and EMP execution would motivate implementing agencies to pay due attention to environmental protection when investment projects are implemented.

For greening public procurement:

- To initiate the process of greening public procurement a plan or policy paper should be developed. As the review of international experiences show, policy or legislative support is critical to give a coherent signal about central government's commitment to greening public procurement.

- Plus, on the onset, clear definitions of what constitutes green procurement, green technical requirements, and priority sectors for green procurement would have to be established. Given the abundance of successful green procurement programs implemented in many countries around the world, this task would require mostly some thorough desk research. Definition of green procurement is already clarified in Chapter 4 of the paper and a list of priority sectors for green procurement in some Asian countries appear in Annex-2. What Central Procurement Technical Unit would need to do more is identify a country appropriate list of priority categories for green public procurement in Bangladesh, and learn about the green technical requirements established for those categories by governments of different countries in the world.

- Additionally, also in the short-term, Government of Bangladesh would also have to decide who will be authority for accrediting products/works/services as green. In most countries around the world establishment of an eco-labeling scheme has preceded launching of green procurement programmes (United Nations Environment Programme, 2017). In the short-term, Government of Bangladesh may consider conducting a scoping study for introducing a national eco-labeling scheme, and based on its recommendations the scheme can then be put into operation.

- To sensitise procurement staff on the issue of green procurement some workshops would need to be conducted before green procurement is launched even on a voluntary basis.

- Overall, implementation schedule of green public procurement would have to be planned factoring in the time that will be required to develop capacity for evaluating green products and also to develop a domestic market for green goods/works/services.

In the medium-term,

For greening public investment management:

- An independent institute of environmental economists should be created to perform financial and economic analysis of environmental costs and benefits, and climate change related benefits generated by development projects.

- To strengthen the efficacy of EIA process for environmentally risky projects, legally binding code of conduct for EIA consultants should be developed, accreditation system for EIA consultants should be introduced, and an electronic database of EIA reports submitted to DoE should be created.

- Relevant provisions of ECR 1997 must be amended so that ECCs with more practical validity period can be issued to infrastructural development projects, reissuance of ECC is mandated for major

project expansions, and the provision of starting land development work simply after obtaining site clearance is eliminated.

For greening public procurement:

- A national eco-labeling framework could potentially be developed in conjunction or collaboration with other countries in the region. Until such an eco-labeling scheme is in place, Government of Bangladesh may rely on ISO 14001 (or equivalent systems) to evaluate compliance with environment management measures by suppliers in making public procurement decisions.

- To incentivise adoption of green procurement practices, agencies with promising green public procurement performance and suppliers that provide green products or services could be rewarded.

- In the initial stages, any requirement to adhere to green procurement practices should be completely voluntary and used for selective projects that are heavily reliant on international procurement.

- In the medium-term, Government of Bangladesh may consider taking additional measures to ease access to green finance for potential suppliers of green products and provide them guarantee of buying the green products they will produce fulfilling the government's green technical requirements. This would essentially mean non-competitive methods to award green procurement contracts with the approval of head of agency may be required at initial stages of promoting green procurement.

- Training of procurement staff and suppliers would need to be continued. Review of international experiences show that even countries with well-functioning, long-established green procurement system arrange training session for their procurement staff on a regular basis to keep them up-to-date with latest knowledge in the field.

- Additionally, monitoring mechanisms would need to set up to ensure effectiveness of the green procurement system. Given that PFM system of Bangladesh already has a reasonably satisfactory procurement monitoring mechanism rated B in PEFA assessment in place (PEFA, 2016), this should not be too tough.

In the long-term,

For greening public investment management:

- A decision matrix would help control political influence in project approval process. Creation of the matrix and justifying its utility to policy makers would require environmental statistics support which should be available in the long-term after implementation of the BESF is complete.

For greening public procurement:

- Over short to medium-terms after green public procurement has been promoted on voluntary basis and institutional capacity for procuring green products and a domestic market for green goods has been developed, green procurement should be made mandatory for public agencies in the long-term. At this phase, necessary amendments in PPA 2006 and PPR 2008 to solidify legislative support for green public procurement would be needed.

- Periodic training sessions for procurement staff on green procurement issues should be established as common practice.

6.4 High-level Roadmap for Greening Scrutiny and Oversight Process

In the short-term,

For greening accounting practices:

- In the short to medium-terms, while the implementation of BESF is in process, Government of Bangladesh may consider adopting a donor funded Technical Assistance Project to conduct research on how to best implement green accounting practices in Bangladesh in consultation with International Federation of Accountants (IFAC) and enlist itself as a partner in the World Bank led Wealth Accounting and the Valuation of Ecosystem Services (WAVES) consortium.

For greening auditing practices:

- Following the Canadian example, position for a Commissioner for Environment and Sustainable Development within the Office of the Auditor General can be created. As in Canada, the Commissioner could be made responsible to report directly to the Auditor General and be assigned the task of reporting to the Parliament on behalf of the Auditor General on issues pertaining to environmental conservation and sustainable development. The Commissioner would have to be supported by a team of environmental compliance and financial auditors within the Office of the Auditor General.

In the medium-term,

For greening accounting practices:

- Collaboration with IFAC and WAVES for greening public accounting in Bangladesh should be continued.

For greening auditing practices:

- Since compliance audits are comparatively easier to conduct than financial audits, green auditing should be introduced in the PFM system of Bangladesh as part of it. Green auditing as part of compliance audits would require auditing for compliance with Environmental Conservation Act 1995, Environmental Conservation Rules 1997, and other national environmental policies by public offices. Even though auditors working for OCAG may not be experts in environmental issues they can be expected to apply their auditing training to identify possible cases of non-compliance and seek expert advice from DoE when necessary.

In the long-term,

For greening accounting practices:

- Calculation of Green GDP along with its traditional counterpart may be considered. While SEEA goes to the extent of enabling calculation of natural capital depletion adjusted aggregates of economic performance, Green GDP goes beyond that to include estimates of environmental damages caused in a fiscal year (Hass, 2015). However, theoretical underpinning for calculation of such measures is

still under development and Government of Bangladesh should attempt to calculate Green GDP only after a tried and tested method of calculating the measure has been promulgated.

For greening auditing practices:

- At this stage, performing green audits as part of financial audits could be initiated. OCAG should be expected to look for environmental issues like- what measures were taken to avert, abate or correct damage to the environment; what measures were taken to efficiently use renewable and non-renewable natural resources; and what were the impacts of breaching Environmental Conservation Act 1995 and Environmental Conservation Rules 1997.

Annex-1: Greening the Ministry Budget Frameworks

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
Cabinet Division	Poor coordination among different wings of the government is a key obstacle towards greening Bangladesh's growth (Khan 2017). The first stated strategic objective of the Cabinet Division is ***"strengthening coordination of activities of ministries/ divisions"*** (Ministry of Finance, GoB, 2017) and, as such, this division will have to spearhead cross-ministerial collaboration for realising Bangladesh's green growth vision.	Implementation of environmental conservation or natural capital management related decision taken at cabinet meeting, measured as a percentage of total environment related decision taken	Development budgetary allocations for funding special cross-ministerial projects Non-development budgetary allocations for delivering on its role as a coordinator of cross-ministerial collaboration
Ministry of Public Administration	One of the stated strategic objectives of Ministry of Public Administration is ***"effective implementation of government policies/ programmes at the field level"*** (Ministry of Finance, GoB, 2017)**.** Thus, once policies/programmes conducive to greening Bangladesh's growth have been conceived, Ministry of		Non-development budgetary allocations for conducting mobile courts against environmental laws and rules violation Development budgetary allocation for providing special assistance to other ministries for implementing environmental programmes, as the case may be

[11] While every ministry/division has a number of strategic objectives, here we mention only those that are relevant to achieving environmentally sustainable development for Bangladesh.

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	Public Administration will be responsible to provide assistance for their implementation. Ministry of Public Administration is also **responsible for conducting mobile courts** (Ministry of Finance, GoB, 2017) and thus has the authority of delivering justice to environmental offenders on the ground.	Number of mobile courts conducted for violation of environmental rules and laws	
Finance Division	The first strategic objective of the Finance Division is ensuring **macro-economic stability** (Ministry of Finance, GoB, 2017) in the nation. Towards that end, this division prepares revenue and expenditure plans to keep fiscal deficit at sustainable levels (Ministry of Finance, GoB, 2017). It is ultimately the responsibility of Finance Division to evaluate fiscal suitability of the different market-based policy instruments discussed in Chapter 2-specially pollution taxes and environmental subsidies. Further, Once Bangladesh has developed green accounting capabilities (a topic we discuss in Chapter 5) this division could be expected to integrated economic value of natural resources and environmental	Green GDP Growth Rate (we define what is Green GDP in Chapter 5)	Development budgetary allocations for programmes aimed at developing capacity to support greening of PFM system Non-development budgetary allocations for evaluating the suitability of different market-based policy instruments for safeguarding environment and natural capitals

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	services in its decision making exercises for maintaining fiscal balance. This division is also responsible for ***"ensuring fiscal sustainability and attaining efficiency in resource allocation for pro-poor growth"*** (strategic objective-2) (Ministry of Finance, GoB, 2017)**.** Along with financial resources, Finance Division can also be expected to ensure natural resources are being invested to their most economically profitable and long-term sustainable use. The fourth strategic objective of Finance Division is **managing non-tax revenues (NRTs)** (Ministry of Finance, GoB, 2017)**.** Thus, projecting and monitoring the NRTs from the sale or lease of the country's natural resources is part of this division's responsibilities. Finance Division must regularly review and fix appropriate rate for the sale or lease of Bangladesh's natural resources. Finally the fifth strategic objective of Finance Division is **overseeing and implementing required reforms in public financial management** (Ministry of Finance, GoB, 2017)**.** PFM system		

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	cannot be greened without the involvement of Finance Division at every stage of the process.		
Finance Division-Comptroller and Auditor General	The first strategic objective of the Office of Comptroller and Auditor General is **establishing *"good governance, transparency and accountability in the government financial management"*** (Ministry of Finance, GoB, 2017) and its second strategic objective is **ensuring *"value for money in the use of public resources"*** (Ministry of Finance, GoB, 2017)**.** This office is expected to be responsible for green auditing, i.e. ensuring natural resources of the government is being used in the most prudent way. We discuss the concept of green auditing in depth in Chapter 5.		In the short to medium-terms, development budgetary allocations for developing capacity to perform green audits In the long-term, non-development budgetary allocations for performing green audits as part of its core responsibilities
Internal Resources Division	The third strategic objective of Internal Resource Division is ***"widening the base and share of direct taxes"*** (Ministry of Finance, GoB, 2017)**.** Thus, if the decision of using pollution tax as a market-based policy instrument is made, this division will be responsible for administering that.	Share of proxies for pollution tax as a percentage of total tax revenue Cost of proxies for pollution tax collection as a percentage of total pollution tax revenue Share of pollution tax as a percentage of total tax revenue	In the short to medium-terms, development budgetary allocations for developing capacity to implement and administer pollution tax In the long-term, non-development budgetary allocations for administering pollution tax as part of its core responsibilities

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
		Cost of pollution tax collection as a percentage of total pollution tax revenue	
Banking and Financial Institutions Division	Part of the first strategic objective of this division is **strengthening financial inclusion in the bank and non-bank financial institutions** (Ministry of Finance, GoB, 2017)**.** Towards fulfillment of this objective, this division supervises loan disbursements to small and medium size enterprises. The Banking and Financial Institutions Division may consider forming regulations requiring banks and non-bank financial institutions to provide financial services to the largely informal and small scale recyclers and waste-pickers in Bangladesh to promote recycling in the nation.	Percentage increase in inclusion in banking sector of those associated with small-scale recycling business	Non-development budgetary allocations for factoring in environmental conservation in its regular decision making processes
Economic Relations Division	The first and most important strategic objective of Economic Relations Division is ***"mobilising external resources and support from bilateral and multilateral partners and international institutions and countries"*** (Ministry of Finance, GoB, 2017) to Bangladesh. The relevance	Amount of funding attracted for environmental conservation or natural resource management related projects Percentage of total foreign assistance that can be	Primarily, non-development budgetary allocations as mobilising funds from abroad is this division's core function Development budgetary allocations should be made, to the extent possible, to train division officials in preparing stronger

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	of this division's activities to attracting green finance for promoting green growth in Bangladesh cannot be overemphasized.	categorised as green finance	proposals for seeking international funding on environmental grounds
Planning Commission	Planning Commission has the central responsibility of preparing development policies and plans including Five Year Plans, Perspective Plan, Annual Development Programme. The relevance of their strategic objective to sustainable management of natural resources and environment does not need much further elaboration.		Development budgetary allocations for developing capacity to design implementation of green PFM system Non-development budgetary allocations for performing its regular activities meant to ensure environmental conservation
Implementation, Monitoring and Evaluation Division	The first core strategic objective of the division is **monitoring and evaluating effectiveness of implemented projects** (Ministry of Finance, GoB, 2017). Under the purview of this responsibility, this office can be expected to monitor that on-going projects are implemented without harming the environment, and to assess the environmental impact of selected projects that have already been completed. This division is also responsible for bringing in reforms in public procurement system, and thus the principles of green	Environmental impact evaluation of completed projects, counted in numbers Green procurement as a percentage of total public procurement	Non-development budgetary allocations for embedding environmental impact assessment in its regular monitoring and evaluation functions Development budgetary allocations for developing capacity to implement and administer a green public procurement system

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	public procurement (a topic we discuss in detail in Chapter 4) have to be promulgated by them in Bangladesh's PFM system.		
Statistics and Informatics Division	Green accounting practices cannot be introduced in the PFM system of Bangladesh until the Statistics and Informatics Division has developed capacities to supply the green accounting related information needs. We elaborate on this topic in the chapter that follows.		In the short to medium-terms, development budgetary allocations for developing capacity to supply information required for implementation of green accounting system In the long-term, non-development budgetary allocations for supplying green statistical data as part of its core functions
Ministry of Commerce	Ministry of Commerce is responsible for ***"fixing tariff rates by analyzing commodities to protect the interest of domestic industries"*** (Ministry of Finance, GoB, 2017). The ministry can also be expected to do their part in protecting the domestic environment by charging high tariff on imports that poses high threat of polluting the environment.	Percentage reduction in the import of environmentally harmful products or raw materials	Non-development budgetary allocations for embedding environmental conservation in its regular decision making processes

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
Ministry of Defense	Ministry of Defense is responsible for ***"taking satellite pictures and collecting data relating to climate change"*** (Ministry of Finance, GoB, 2017)**.** To the extent it is practical, the scope of their responsibility could be enhanced to collecting data related to natural capital reserves and environmental pollution levels.		Non-development budgetary allocations for embedding environmental conservation in its regular operations
Law and Justice Division	The Law and Justice Division is responsible for **ensuring efficient and effective judicial system which is equally accessible by all** (Ministry of Finance, GoB, 2017)**.** Solving the many problems with environmental courts in Bangladesh discussed in Khan (2017) will be the responsibility of this division.	Percentage of disposal of cases filed in environmental courts Number of training sessions organized for judges, officers and support-staffs of environmental courts about emerging environmental issues	Non-development budgetary allocations for delivering on its regular duties pertaining to administering environmental courts and training associated judges and other officers on a regular basis
Public Security Division	Towards fulfilling part of its second strategic objective of ***"protecting the country's economic and commercial interest"*** (Ministry of Finance, GoB, 2017) this division conducts operations against illegal fishing and smuggling of forest resources-activities directly relevant to sustainable management of natural resources.		Non-development budgetary allocations for delivering on its environmental duties as part of its regular operations

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
Legislative and Parliamentary Affairs Division	This division is responsible for **improving legal framework by recommending amendments to existing laws or, if required, *"enacting new laws based on review of relevant provisions of the laws that act as obstacles to speedy disposals of cases"*** (Ministry of Finance, GoB, 2017)**.** Amending the weaknesses of Environment Court Act 2010 discussed in Khan (2017) will be the responsibility of this division.		Non-development budgetary allocations for delivering on its environmental law revision related duties as part of its regular operations
Ministry of Primary and Mass Education	This ministry is responsible for **establishing new primary schools in the villages without school** (Ministry of Finance, GoB, 2017)**.**	Number of village primary schools powered by solar panels	Development budgetary allocation for building green school infrastructure
Secondary and Higher Education Division	This ministry is also responsible for **constructing and maintaining educational institutions' infrastructures** (Ministry of Finance, GoB, 2017)**.**	Number educational institutions located in off-grid areas powered by solar energy	Development budgetary allocation for building green school infrastructure
Ministry of Science and Technology	The fourth strategic objective of Ministry of Science and Technology **is innovating *"environment friendly and sustainable technology for socioeconomic development"*** (Ministry of Finance, GoB,		Non-development budgetary allocations for performing activities that stand to potentially benefit the environment as part of its regular duties

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	2017) . Towards fulfillment of this objective the ministry conducts research on renewable energy and production of eco-friendly microbial enzymes for textile and leather processing industries (Ministry of Finance, GoB, 2017)-activities that are directly related to protecting environment.		
Health Services Division	Health Services Divisions is responsible for ***"controlling communicable, non-communicable diseases, and new diseases arising out of climate change"*** (Ministry of Finance, GoB, 2017)**.** The division could be expected to produce annual reports on different forms of pollution induced diseases, so that the public health cost of environmentally harmful practices can be effectively communicated with masses.		Non-development budgetary allocations for delivering on its environmental law revision related duties as part of its regular operations
Ministry of Women and Children Affairs	The third strategic objective of this ministry is ensuring **"social and political empowerment of women"** (Ministry of Finance, GoB, 2017). Towards fulfillment of this objective the ministry arranges different kinds of training programmes for elected female representatives. Research findings reported in Engelman (2016) suggests that, *"countries with higher proportions of women in their national*	Number of training programmes organised for elected female representatives on environmental issues	Development budgetary allocations in the short to medium-terms for designing a training program specifically aimed at training elected female representatives on issues pertaining to environmental governance Non-development budgetary allocations in the long-term for conducting the specially designed training programme and

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	legislative bodies are more likely to approve environmental agreements" (Norgaard and York, 2005) and that there is *"strong support for the idea that increasing women's political status in particular through representation in national government has a positive effect on state environmental protection efforts"* (Nugent and Shandra, 2009). Thus, the Ministry of Women and Children Affairs can be expected to arrange training programmes for elected female representatives to sensitize them on environmental issues as research suggests that female representatives are better wardens of environment than their male counterparts.		evaluating its effectiveness as part of the ministry's core functions
Ministry of Housing and Public Works	Having the core responsibility of **planning urbanisation** (Ministry of Finance, GoB, 2017), Ministry of Housing and Public Works is the wing of the government that formulates plans at different levels (detailed area plan, master plan, structural plan) for urban development in Bangladesh. As such, this is the ministry that is directly responsible for ensuring Bangladesh's cities grow in a green way. From sustainable land development to greening construction of infrastructures-all		Non-development budgetary allocations for embedding green considerations in performing its regular duties

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	such activities fall in the domain of this ministry's functions.		
Ministry of Information	A core responsibility of Ministry of Information is **building mass awareness about issues of public concern** (Ministry of Finance, GoB, 2017). Thus, if voluntary agreements (discussed in Chapter 2) are to be used as a non-market-based policy instrument to promote environmental conservation in Bangladesh, this ministry will have to administer it.		Development budgetary allocations for designing and implementing a programme aimed at increasing environmental awareness among private sector and general citizens
Ministry of Youth & Sports	The first strategic objective of Ministry of Youth and Sports is **"building skilled and productive youth community"** (Ministry of Finance, GoB, 2017)**.** Towards fulfillment this goal the ministry conducts training courses for youth and provides micro-credit to trained unemployed youth to promote entrepreneurship (Ministry of Finance, GoB, 2017). It was noted in Khan et. al. (2017) that green finance is struggling to take flight in Bangladesh due to low entrepreneurial interest in green projects. The ministry should specially adopt programs to train youths to design and implement of green businesses, and arrange loans from them from the direct green finance disbursement budgets of	Employment created for youths in green businesses Return on loans disbursed to youths from commercial banks and non-bank financial institutions' direct green finance budget	Development budgetary allocations in the short to medium-terms for designing a training program specifically aimed at training youths in the concept of green business Non-development budgetary allocations in the long-term for conducting the specially designed training programme and evaluating its effectiveness as part of the ministry's core functions

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	commercial banks and non-bank financial institutions.		
Local Government Division	This division already recognises achieveing ***"environment friendly planned urbanisation"*** (Ministry of Finance, GoB, 2017) as its sixth strategic objective. Plus, its first strategic objective is ensuring ***"good governance at the local level"*** (Ministry of Finance, GoB, 2017), towards fulfillment of which it imparts training to elected public officials and other concerned officers and staffs. It was suggested in Khan (2017) that local government representatives should be trained by National Institute of Local Government (NILG) to adopt sustainable waste disposal and recycling practices in their localities, and to prepare Master Plan for their vicinity factoring in environmental issues. It was also suggested that, the responsibility of regularly inspecting ETP operations by toxic wastewater producing factories could be entrusted with local government institutions. If these suggestions are accepted, Local Government Division would be responsible for implementing and	Four out of the seven KPIs currently used for this division is already helpful for evaluating its environmental performance (safe water supply coverage, exposure to arsenic risks, sanitation coverage, infrastructure development for water conservation). Some new useful KPIs could be: Sustainable waste management system coverage Percentage of organic waste recycled Percentage of inorganic waste recycled Reduction is water pollution caused by disposal of untreated wastewater	Development budgetary allocations for designing a training program for elected public officials and other concerned officers and staffs to sensitise them on environmental issues Non-development budgetary allocations for conducting the specially designed training programme and evaluating its effectiveness as part of the division's core functions Non-development budgetary allocations for overseeing regular operations of ETPs

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	administering these.		
Ministry of Industries	The Ministry of Industries has several strategic objectives fulfillment of which have a direct bearing on natural capital management and environmental conservation. The ministry is responsible for achieving ***"rapid industrial growth and development"*** (Ministry of Finance, GoB, 2017) for Bangladesh which it has to ensure does not come at the cost of environment. Luckily, it already recognises **ensuring environment-friendly industrial development** (Ministry of Finance, GoB, 2017) as its third strategic objective and is responsible for setting up Common Effluent Treatment Plants (CETPs), registering and certifying boilers in this regard. Further, it is responsible for ***"developing the quality of products to international standards"*** (Ministry of Finance, GoB, 2017) and thus if technological standards as discussed in Chapter 2 are used as a non-market-based environmental policy instrument this ministry will have a role to play in such standard controls.	Construction of CETPs in industrial zones Setting environmental performance technology standards for commonly used industrial equipments	Both development and non-development budgetary allocations for fulfilling relevant responsibilities

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	Another one of this ministry's strategic objective is **ensuring "industrial growth in high priority sectors"** (Ministry of Finance, GoB, 2017)**.** Among others, the ministry recognises fertiliser production and import, cement production, and ship building as high priority sectors-all three of which pose the threat of seriously damaging environment unless managed carefully.	Production of organic fertilisers as a substitute of chemical fertilisers	
Ministry of Textiles & Jute	The Ministry of Textiles and Jute is entrusted with **ensuring the overall expansion of textiles and jute industries** (Ministry of Finance, GoB, 2017). While jute, throughout its life cycle, is a very environment friendly product, the same cannot be said for textiles. The environmental pollution caused by the textiles industries is well documented and well known. The ministry should thus have the responsibility of ensuring growth of the textiles sector does not come at the cost of environment. The KPI mentioned in the next column could be useful for evaluating this ministry's environmental performance in this regard.	Number of textiles factories earning ISO14000 certification	Non-development budgetary allocations for ensuring green growth of the textiles sector as part of its regular operations

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
Energy and Mineral Resources Division	Along with **ensuring energy security** for the country, the Energy and Mineral Resources Division is responsible for **ensuring efficient use of energy** (Ministry of Finance, GoB, 2017) in the nation. Given the deficient supply of energy against demand, while it would not be appropriate to expect this division to take substantial measures to reduce Bangladesh's reliance on carbon-intensive sources of energy in foreseeable future, it can still be expected to increase supply of greener sources of fuel, and take definite measures to increase fuel efficiency-especially of gas. The division has issued Rules Regarding Bio-ethanol Plant Construction and Operations in December 2017, which is a commendable stride in this regard. Introducing new KPIs to evaluate the division's environmental performance would be helpful to motivate it to take measures for increasing supply of cleaner sources of energy and efficiency across different fuel types.	Percentage of system loss of gas during transmission Production of bio-ethanol	Development budgetary allocations for adopting programmes to promote usage of clean fuels Non-development budgetary allocations for taking measures to increase energy efficiency as part of core operations
Ministry of Agriculture	Most strategic objectives and activities of this ministry has a direct or indirect	Percentage increase in supply of organic fertisers to farmers	Both development and non-development budgetary allocations for performing

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	bearing on environment and natural capital management and as such further elaboration of how its operations are relevant to our present discussion is redundant. We only propose some new KPIs that can be used to evaluate its environmental performance.	Percentage increase in supply of green manure to farmers Percentage increase in supply of microbial fertisers to farmers Increase in waster use efficiency for agriculture Increase in electricity use efficiency in agriculture Reduction in post-harvest losses Green procurement of irrigation and other agricultural machineries (we discuss green procurement in the chapter that follows)	different activities
Ministry of Fisheries and Livestock	All strategic objectives and most activities of this ministry are directly relevant to different types natural capital management, so again, further elaboration of its relevance to the present discussion is redundant. We only propose some new KPIs that can be used to evaluate its environmental performance.	Percentage reduction of wastage in fish-catch Number of field visits to prevent illegal, unregulated, and underreported (IUU) fishing	Both development and non-development budgetary allocations for performing different activities

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
Ministry of Environment and Forest	Essentially, every taka of budgetary allocation made this ministry is meant to promote environmental conservation so any further elaboration of how its operations are relevant to our present discussion is redundant. There is, however of course, rooms for further strengthening this ministry and the departments and agencies under it, for which more budgetary allocations should be made to the extent practical.		All development and non-development budgetary allocations made to this ministry is meant to protect environment
Ministry of Land	Towards fulfilling its first strategic objective of **modernising of land management** (Ministry of Finance, GoB, 2017) this ministry is carrying out classified land zoning of Bangladesh-an activity that is directly relevant to sustainable management of natural capitals and environmental protection.	The ministry already uses Cumulative Percentage of Land Zoning as a KPI	Development and non-development budgetary allocations for modernising different aspects of land management
Ministry of Water Resources	Ministry of Water Resources is a critical partner in ensuring sustainable management of one of Bangladesh's most valuable natural resources. Much of what the ministry does is directly relevant to sustainable management of water resources so further elaboration of its		All development and non-development budgetary allocations made to this ministry is meant to protect a key natural capital

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	relevance to the present discussion is redundant.		
Roads Transport and Highways Division	Among many other things, this division is responsible for **issuing Vehicle Fitness Certificates** (Ministry of Finance, GoB, 2017), an activity that is directly related to air pollution control.	Already has a KPI related to issuing Vehicle Fitness Certificates	Non-development budgetary allocations for ensuring unfit vehicles don't run on roads as part of its regular operations
Ministry of Shipping	The Ministry of Shipping has the overall responsibility of **developing and managing sea ports, shipping systems, and inland waterways and water transport systems** (Ministry of Finance, GoB, 2017) in Bangladesh. A National Marine Pollution Contingency Plan has already been formulated by the Department of Shipping (an agency under the ministry), which primarily focuses only on combating pollution in case of oil spillage. The department has also issued a notice detailing environmental factors to be considered while registering bunker suppliers, and a detailed set of regulations aimed to prevent air pollution from ships. More initiatives needs to be taken to prevent pollution from unregistered vehicles, sand blasting, painting works,		Non-development budgetary allocations for embedding actions against shipping induced environmental pollution in its core operations

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	careless dumping of wastage by local and international vehicles in Bangladeshi ports and water etc. (Hassan, 2010). Plus, the Inland Water Transportation system must also be protected from pollution. Inland tankers transport around 80% of petroleum products in Bangladesh during the course of which they cause substantial amount of marine pollution by directly throwing of bilges, solid waste, oily water and ballast water in the inland water systems (Zakaria, et al., 2017). Budgetary allocations must be made to prevent ill environmental effects of shipping.		
Ministry of Civil Aviation and Tourism	The Ministry of Civil Aviation and Tourism is responsible for **expanding tourism in Bangladesh** (third strategic objective) (Ministry of Finance, GoB, 2017). This ministry should be expected to play an active role in minimising environmental pollution caused solid wastes dumped by tourists in tourists spots of Bangladesh, especially in Sundarbans and Cox's Bazar.		Development budgetary allocations for installing effective waste management systems in tourists spots Non-development budgetary allocations for embedding actions for preventing tourism induced environmental pollution in its core operations

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
Ministry of Chittagong Hill Tracts Affairs	The Chittagong Hill Tracts are one of the most environmentally endangered regions of Bangladesh, and yet the strategic objectives or priority spending areas of the Ministry of Chittagong Hill Tracts Affairs, as they appear in its MBF of 2017-18 fiscal year, do not reflect any initiatives taken by the ministry to protect the environment or natural capital of the region. The scope of strengthening this ministry's role as a custodian of environment of this region must be explored, and new KPIs should be introduced to ensure the ministry has definitive roles to play to the protect the region's natural capital.	Reduction in the area of land used for shifting cultivation and rehabilitation of the farmers engaged in shifting cultivation in other profession or other environmentally safe form of cultivation Reduction in the area of land used for tobacco cultivation	Development budgetary allocations in short to medium-terms to adopt projects to deliver on specific environmental responsibilities in specific time, and initial capacity building in this regard Non-development budgetary allocations in the long-term to perform environmental duties as part of core operations
Power Division	The Power Division already pursues ***"increasing use of renewable energy and energy saving technology"*** and ***"ensuring transparency, accountability and efficiency in power sector"*** as its second and third strategic objectives respectively.	Already has identified "power production using renewable energy as percentage of total electricity generation" (Ministry of Finance, GoB, 2017) as a KPI	Sustainable and Renewable Energy Development Authority (SREDA) has very modest amount funding made available to itself compared to other departments/agencies under this division. For example, for the 2017-18 fiscal year budgetary allocations for Coal Power General Company of Bangladesh Ltd. (another agency under this department) has been estimated to be BDT 2321,30,00,000 (approx. USD 279 million) whereas budgetary allocations for SREDA

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
			is only BDT 8,57,00,000 (approx. USD 1.03 million) (Ministry of Finance, GoB, 2017). Scopes for increasing development budgetary allocations for SREDA should be investigated.
Anti Corruption Commission	The Anti Corruption Commission is responsible for **building a corruption-free society** (Ministry of Finance, GoB, 2017) in Bangladesh and conducting required enquiries, investigations, and filing and prosecuting cases in this regard. The relationship between corruption and environmental degradation, and natural capital exploitation is well established in literature (see Fredriksson, et al., 2003; Fredriksson, et al., 2004; Cole, 2007; Cole, et al., 2006; Leitao, 2016 etc.). In Bangladesh, for example, the landslides in 2017 monsoon season that claimed over 160 lives is attributed to corruption induced deforestation. Gossman (2017) reports, *"Although clearing forest cover without government approval is banned under the Bangladesh Environment Conservation Act, Bangladeshi authorities rarely take action against those engaged in illegal logging, forest conversion into commercial crop plantations or construction."* Anti Corruption Commission	Investigation against complaint regarding environmental corruption FIR against investigation related to environmental corruption Charged Sheet (CS) against FIR related to environmental corruption	Non-development budgetary allocations for embedding actions against environment related corruption in its core operations

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
	must make it part of their core actions to prevent corruption induced environmental hazard.		
Bridge Division	The Bride Division is responsible for **construction and maintenance of large bridges, elevated expressways, and tunnels** (Ministry of Finance, GoB, 2017). Construction of such heavy infrastructures, specially of bridges, has serious environmental impacts. Bangladeshi law already mandates carrying out Environmental Impact Assessment before any such construction project is undertaken. The division could be expected to identify in its MBF exactly what steps it is taking to minimise environmental harms resulting from such large scale construction projects and what is its budgetary allocations for such environmental conservatory activities. Plus, budgetary allocations for environmental impact management in the post-construction phase should also be identified.		Development budgetary allocations for minimising negative environmental impacts of large scale construction projects Non-development budgetary allocations for environmental impact management as part of their core operations in the post-construction phase
Medical Education and Family Welfare	A core objective of this division is **expansion of population control through promotion of family planning**		Non-development budgetary allocation for controlling population as part of their core operations

Ministry or Division of the Government	Relevance of Strategic Objectives to Sustainable Usage of Natural Capital and Environmental Conservation[11]	Proposed KPI(s) to Measure Performance Against Sustainable Usage of Natural Capital and Environmental Conservation Goals	Possible Type of Budgetary Allocation for Fulfilling Environmental Responsibilities
Division	(Ministry of Finance, GoB, 2017). Although there are many reasons that cause environmental degradation and burden the limited supply of environmental resources, the key challenge for Bangladesh towards ensuring sustainable management of its natural resources and environment is high population growth rate. A number of initiatives taken by the Government of Bangladesh have yielded success in reducing the country's population growth rate over the years, but a more detailed planning for balancing the growth in the country's population with its limited supply of natural capital, specially land, is essential.		

Annex-2: Priority Sectors for Green Procurement in Asian Countries

Categories	Goods/Works/Services	Countries Considering the Goods/Works/Services as Priority Sector for Green Public Procurement
Construction, maintenance, and renovation of public buildings	Water	China
	Building materials	China, Japan, South Korea, The Philippines
	Cooling and heating systems	Japan, South Korea, The Philippines
	Energy	South Korea
	Public office buildings should attain Green Mark Platinum Rating	Singapore
Office products with energy efficiency	Printers	China, Japan, South Korea, The Philippines, Singapore, Thailand
	Photocopiers	China, Japan, South Korea, The Philippines, Singapore, Thailand
	Monitors and Screens	China, South Korea, The Philippines, Singapore
	Light bulbs/light tubs	China, Japan, South Korea, The Philippines, Thailand
	PCs and laptops	China, Japan, South Korea, The Philippines, Singapore
	Fridges	China, Japan, South Korea, Singapore
	Water heaters/coolers/dispensers	China, Japan, South Korea, Singapore
	Projectors	China, Japan, South Korea, Singapore
Office supplies	Ink and Tone cartridges	China, Japan, South Korea, The Philippines, Thailand

Categories	Goods/Works/Services	Countries Considering the Goods/Works/Services as Priority Sector for Green Public Procurement
	Standard batteries	China, Japan, South Korea, The Philippines, Thailand
	Pencils and pens	Japan, South Korea
	Toilet papers	South Korea
	Document envelope	South Korea
Office paper	Paper	China, Japan, South Korea, The Philippines, Thailand
Office furniture	Desks/ bookcases	China, Japan, South Korea, The Philippines, Thailand
	Chairs	China, Japan, South Korea
Office cleaning	Office cleaning services	Japan, The Philippines, Thailand
Transport	Official vehicles (light weight cars <2,5Tn)	China, Japan
	Medium weight cars	China, Japan
Events Organisation	Hotels	Thailand[12]

[12] This table is based on a broader discussion that was pursued in (APEC Committee on Trade and Investment, 2013)

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