

CONCEPT OF GREEN ACCOUNTING AND ITS PRACTICE IN BANGLADESH

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Abstract

This paper discloses about green accounting and its practice in Bangladesh. Green accounting is a recent phenomenon which is related to environmental information and environmental eco-system. It reflects the CSR (Corporate Social Responsibility), environmental cost and reporting, corporate governance side by side the natural resources and environmental sound management and administrative system in any country around the world. It focuses on improving green accounting practices and environmental quality. At present time the developed world is concerned about the state of green accounting. It is an important tool for understanding the natural environment's role in the economy and provides adequate data on contribution of natural resources on the economy. At the same time they also concern towards the effect of pollution on natural resources, degradation increases cost. In the developed countries green accounting is practiced extensively but in Least Development Countries (LDC) like Bangladesh green accounting concept is present but its practice is not significant enough. Green expenditures are not calculated here and no step is taken to introduce green GDP (Gross Domestic Product), EDP (Eco-Domestic Product) besides the traditional GDP. So contribution of the green accounting in the economy is overlooked. Green accounting practice has some limitations in Bangladesh. Green indicators like green GDP, EDP, green capital, greening product, may be introduced besides the traditional computation. For this both the government and private sectors must come forward and work together to improve the existing green accounting practice in Bangladesh.

Keywords: Green accounting, Sustainable development, Environmental cost, Green capital

Introduction

The green accounting deals with related environmental and social impacts, regulations and restrictions, safe, environmentally sound, and economically viable energy production and supply. All of these should be essential part of accounting and management issues. Green accounting is related to environmental information and environmental ecosystem. It may also monitor the governmental and private sectors activities. It can also assist enterprises in planning and utilization of the best available technology. It can contribute as review role and can add element of external quality control to the administrative system. It may be considered as one of the regulatory measures to prevent environmental harm and also a new addition to the legal jurisprudence.

This study provides data which highlight both the contribution of natural resources to economic well-being and the costs imposed by pollution or resource degradation and can create an opportunities in providing human rights as well. Its role is to tackling the social

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environmental problems and may have impacts on the attaining of the sustainable development and environment in any country in the world.

It of course, prevents corruption from our society. It also influences to the company's behaviors in confronting social and environmental responsibility issues. Sometimes, it is referred as resource accounting or integrated economic and environmental accounting. Green accounting has begun to be widely applied both in developed and developing countries. The concept and some idea on the green accounting were found in 1980s in the business education systems and administration in the world. It is an essential component of the Business strategies and promoting the equitable society. It may also ensure the corporate governance and integrity. Norway was the pioneer on the green accounting. The Netherlands was also a leader in the development and implementation of green accounting; France was a third early adopter of environmental accounting.

The subject matter of green accounting assumes greater importance for the practicing accountants. Green investments include pollution abatement technologies, re-engineering of plants, products and processes so as to recycle waste products; and green management systems, including an expanded environmental auditing capability published by the National Public Accountant.

Joy E. Hecht (1999) in his study entitled '*Environmental Accounting' Where We Are Now, Where We are?*', stated the current trends on the global green accounting education in the global education systems. The author discussed some questions pertaining to why change, which indicators are useful, who is doing this, how to account etc.

Tsuzuki, and Yoshiaki (2004) wrote an article entitled 'Proposal of environmental accounting Housekeeping (each) books of domestic waste water based on water pollutant roads per capita: a case study of sanbanzetidal coastal zone, Tokyo bay' has discussed the Tokyo context on the particular issue such as: This paper proposes a measure of dissemination and green education in the field of water pollution, which makes relations between water pollution problems of an enclosed coastal zone, Sanbanzetidal coastal zone, Tokyo Bay, and municipal lives.

Mehenna Yakhou, Vernon P. Dorweiler (2004) in their study entitled *Environmental accounting: an essential component of business* discussed that the green accounting is on an expansion path. It deals and measures the environmental performance. It works also the integration of environmental policy with business policy is the focus of this research. The business firm's strategy includes responding to capital and operating costs of pollution control equipment. This is caused by increasing public concerns over environmental issues, and by a recent government-led trend to incentive-based regulation. This paper describes the green component of the business strategy, producing the required performance reports and recognizing the multiple skills required to measure, compile and analyze the requisite data. Special emphasis of the research is on generation of reports and their standards, for the range of business and regulatory purposes.

Clementina Ferreira (2004) in an article entitled *Environmental accounting: the Portuguese case*, Management of Environmental Quality argued that the quality of the green depends on the behaviors of us that mean that it output of the people. We need to preserve the nature conservation by enacting the laws. In companies, it is the administration's duty to make decisions and it is accounting's duty to present relevant information about patrimonial realities that help in the decision-making process of every user.

Lintott (1999) argued that the green accounting evaluates a general measure of welfare or progress, for policy to aim to maximize. Problems of monetary valuation are likely to lead to huge underestimation of green costs. Issues of inequality and poverty, essential to a more robust view of sustainability, are ignored. An alternative approach, more appropriate if sustainable development in the stronger sense is to be achieved, is the construction and use of a set of social and environmental indicators.

Mark de Haan (2011) in his study entitled *The International harmonization of environmental accounting* has explained the modes of the international harmonization of environmental accounting: comparing the National Accounting Matrix including Environmental Accounts of Sweden, Germany, the UK, Japan and the Netherlands. These countries have presented their results in a National Accounting Matrix including Environmental Accounts (NAMEA). The second section presents a preliminary comparison of the results which shows that comparable accounts will not automatically lead to comparable results.

United Nations (2000) *Handbook of National Accounting*, Studies in Methods Series F, No. 78 *Integrated Environmental and Economic Accounting: An Operational Manual*, United Nations discussed growing pressures on the environment and increasing green awareness that have been generated the need to account for the manifold interactions between all sectors of the economy and the environment. The conventional national accounts focus on the measurement of economic performance and growth as reflected in market activity. It also deals with the sustainability of growth and development, the scope and coverage of economic accounting that needs to be broadened to include the use of non-marketed natural assets and losses in income generation resulting from the depletion and degradation of natural capital. The conventional accounts do not apply the commonly used depreciation adjustment for human-made assets to natural assets. Since sustainable development includes economic and environmental dimensions, it is essential that national accounts reflect the use of natural assets in addition to produced capital consumption.

Objectives of the Study

The broad objective of the study is to know the concept and uses of green accounting in Bangladesh. However, the specific objectives are given below.

1. To know about green accounting.
2. To evaluate the extent of green accounting practices in Bangladesh.
3. To explore the comparative position of Bangladesh in green accounting practice.
4. To make some recommendations about green accounting practices in Bangladesh context.

Methodology

The study is exploratory in nature. Mainly secondary data is collected and used for this analysis. The reason is that in our country the use of green accounting is rare and most of the cases, the concept is vague. To make this paper more revealing different published textbooks, related articles, journals, published research papers and newspapers have been analyzed. Literatures were generally collected from the said sources and the internet. As a result, a through review of literatures enabled us to make a consistent presentation of the theme of the study.

Green Accounting and Its Practice in Bangladesh

For Bangladesh, 'Green Protection' and 'Economic Development' both are the matters of great importance and some sort of tradeoff is required between these two. For this reason, Green Accounting is required to measure the environmental impact of corporate sector's economic activities. A standard system of this type of accounting is still evolving in Bangladesh. This article provides an insight into the concept in the Bangladesh perspective.

Every business has a prime responsibility to make the fullest possible use of its resources both human and material. An enterprise is a corporate person or citizen. Like a citizen it is esteemed and judged by its actions in relation to the community of which it is a member as well as by its economic performance. As far as Bangladesh corporate sector is concerned it is sad, but true that it has not been performing as a good citizen that's why there are so many laws that have been laid down and further amended from time to time and when required to bound the corporate sector to fulfill their social responsibility for better development of Bangladesh Economy.

One of the most crucial areas of social responsibility has become responsibility towards green. Recent years have witnessed rising concern for green degradation, which is taking place mainly in the form of pollution of various types, viz. air, water, sound, soil erosion, deforestation, etc. It is a worldwide phenomenon. It reduces economic productivity, spoils human health and leads to loss of amenities.

Developing countries like Bangladesh are facing the dual problem of protecting the green and promoting economic development simultaneously. A tradeoff between green protection and development is required. A careful assessment of the benefits and costs of green damages is necessary to find the safe limits of green degradation and the required level of development.

Bangladesh is experiencing a fast degradation of environment. Some examples of this degradation are Dhaka's terrible air pollution, the 'clinically dead' river Buriganga and widespread arsenic pollution in the underground water.

The Government of Bangladesh started paying attention to the environmental management of Bangladesh since the 1990s and in order to improve the environmental condition, the Bangladesh Environmental Protection Act, 1995 was passed. Still, corporate environmental reporting is not mandatory in Bangladesh. But under the Bangladesh Environmental Protection Act, 1995, companies may be asked to disclose environmental information as and when required (Belal, 2000).

Shil and Iqbal (2005) surveyed 121 manufacturing companies listed on the Dhaka Stock Exchange (DSE). They reported that only 13 companies (11percent of 121 companies) disclosed environmental information in their annual reports. All companies disclosed qualitative information in the Directors' Report.

Rahman and Muttakin (2005) surveyed 125 manufacturing companies listed on the Chittagong Stock Exchange (CSE) as on May 7, 2005. They analyzed the annual reports of these 125 companies for the year 2003/2004. The researchers found that only 5 companies (4 percent of 125 companies) disclosed environmental information in their annual reports.

An approach to sustainable development

The concept that every nation might acknowledge the economic role of the environment in its income accounts is neither a hasty shift nor a quick practice; it has been under discussion globally since the 1960s. In Bangladesh, unfortunately the contribution of the green goods and services in the national economy has been ignored for a long time. In the changing circumstances of global climate it is high time that we wake up and recognize the contribution of the environment to sustain our economy. For a long time, conventional economic indicators like Gross Domestic Product (GDP), Gross National Product (GNP) and Net Domestic Product (NDP) were used around the world to construct national accounts and as a measure of the economic progress of a country and standard of living. However, these traditional measures of economic activity failed to be responsive because of the fact that economy cannot operate without the support of the natural environment. National accounts allow depreciation allowance for manufactured assets, while the contributions of green assets to economy are not valued and hence no depreciation allowance is made for these assets. Thus, in Bangladesh, omission of the degradation and depletion of the country's natural capital will lead to over estimation of the national income figures.

Green Accounting Practice in Other Countries

Researchers, bureaucrats and other protagonists of some twenty-five countries have commenced and been doing green accounting activities over the past few decades. Norway is one of the first countries to build green accounts, which began collecting data on energy sources, fisheries, forests, and minerals in the 1970s to address resource scarcity. They use these data as an input into a macro-economic model with which they explore the environmental and economic feasibility of different growth strategies. The Netherlands routinely constructs the "National Accounting Matrix Including Environmental Accounts (NAMEA)", an extended form of the national accounts input-output matrix, which tracks pollution emissions by economic sector. More recently, a number of resource-dependent developing countries have become interested in measuring depreciation of their natural assets and adjusting their GDPs environmentally. Indonesia was the first country for which forest depletion was calculated and integrated into a "green GDP." Chile's Central Bank undertook a project to develop green accounts focusing on the forest and minerals sectors. Costa Rica undertook a forest depletion exercise similar to that of Indonesia. Namibia began work on resource accounts in 1994, addressing such questions as whether the government has been able to capture rents from the minerals and fisheries sectors, how to allocate scarce water supplies, and how rangeland degradation affects the value of livestock. Since 1993, the Philippines has been working on green accounts. Their work applies a method, which treats the green as a productive sector in the economy, and integrates the valuation of pollution impacts, non-marketed goods and services, and other economic aspects of the green into the conventional accounts. It is widely accepted that Bangladesh will be the hardest hit of the global warming induced natural resource depletion, but still our policy makers are not aware and active to construct a true natural resource.

Environmental Performance Index (EPI)

The Environmental Performance Index (EPI) is a method of quantifying and numerically benchmarking the environmental performance of a country's policies. This index was developed from the Pilot Environmental Performance Index, first published in 2002, and

designed to supplement the environmental targets set forth in the U.N. Millennium Development Goals.

The EPI was preceded by the Environmental Sustainability Index (ESI), published between 1999 and 2005. Both indexes were developed by Yale University (Yale Center for Environmental Law and Policy) and Columbia University (Center for International Earth Science Information Network) in collaboration with the World Economic Forum and the Joint Research Centre of the European Commission. The ESI was developed to evaluate environmental sustainability relative to the paths of other countries. Due to a shift in focus by the teams developing the ESI, the EPI uses outcome-oriented indicators, then working as a benchmark index that can be more easily used by policy makers, environmental scientists, advocates and the general public.

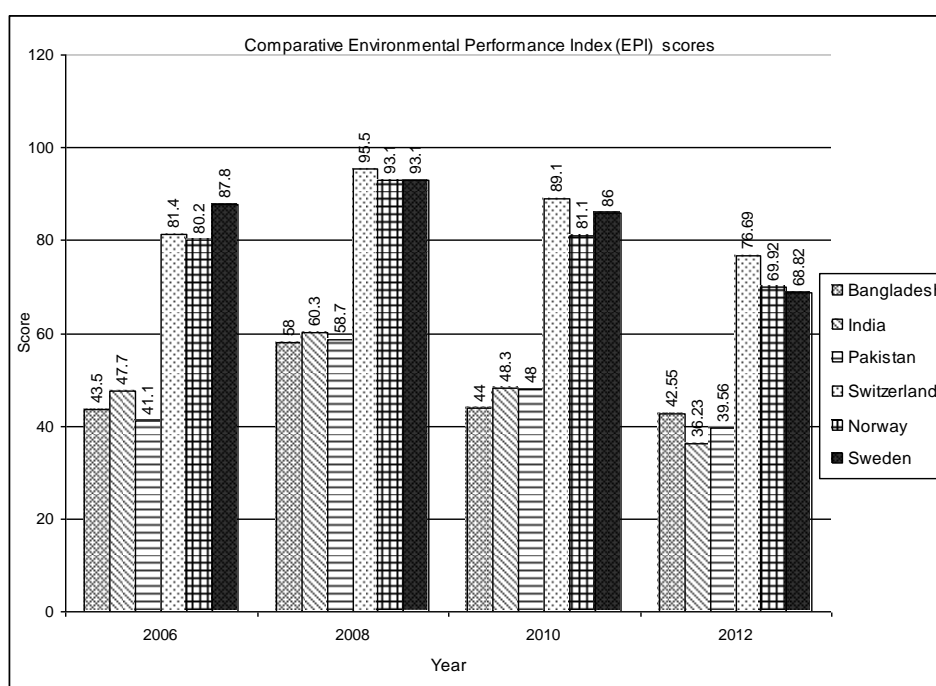


Fig. 1. Bar Diagram (Comparative Position of Bangladesh in the Environmental Performance Index).

Source: Environmental Performance Index Report (2006, 2008, 2010 & 2012).

Process of adopting green accounting practices in Bangladesh

A number of ways has been developed, for green accounting, which diverges from one another in different aspects, remarkably depending upon the magnitude of the speculation required, the impartiality of the data, the aptitude to associate different kinds of green impacts, and the brands of policy drives to which they may be realistic. Here are some of the methods currently in use:

Natural resource accounts: We can expand the conventional economic accounts with physical statistics about the natural environment and its status. These basically embrace data on stocks of natural resources and changes in them caused by either natural routes or human use. Such accounts may characteristically cover physical statistics of agricultural

land, fisheries, forests, minerals and petroleum, and water. For example the relevant ministry can provide portfolio on physical indicators for forests like the area under dense forests, open forests, volume of stock of timber, area disturbed by fire etc. Such type of information can also be arranged in conventional input-output type of matrices, like the Netherlands has used.

Table.1. Green Accounting Measures

Costs and Items	Green Accounting Issues and Scope
Pollution Prevention Costs	Cost incurred to prevent air and water pollution along with water treatment facilities and other activities etc.
Green Protection Costs	Cost of energy saving measures as well as costs of global warming reduction measures
Costs of Resource Recycling	Costs incurred for waste reduction and disposal as well as for water conservation, rainwater usage and other measures aimed at efficient resources usage
Green Restoration Costs	Cost of green restoration operations (eliminating soil and ground water contamination, green compensation, etc.)
Management Costs	Management-related environmental protection costs including personal expenses for environmental promotion activities and costs associated with acquiring and maintaining ISO 14001 certification, measuring the environmental burden, greenification programs, environmental reporting and environmental publicity etc.
Social Promotion Activities Costs	Environmental protection costs stemming from participation in social activities such as participation in organizations concerning with environmental preservation etc.
Research and Development Costs	Environmental protection costs for research and Development activities and costs of environmental solutions business activities (Green product/environmental technology design and development costs, environmental solutions business costs, others) etc.
Rules and Regulations	Implementation of ISO 14001
Guidelines	Adoption of sustainability reporting guidelines
Exco Compensation	Executive compensation is linked to environmental performance
Reporting Guidelines	Adoption of sustainability reporting guidelines
Public Disclosure	Stakeholder involvement in the environmental disclosure process
Awarding Systems	External environmental performance awards and or inclusion in sustainability index
Verification	Independent verification or assurance about the environmental information
Natural resources	Energy, water, green house, land, air, environmental impact assessment etc.
Social duty	Social accountability and responsibility
Ethics in Society	Social Ethical Investment
Social Audit	Social auditing issues and responsibilities
Sustainability Issues	Sustainability Development

Source: International Journal of Social and Human Sciences, Vol. 6, (2012).

Value of non-marketed green goods and services: Non-marketed green goods and services, such as the benefits of an unpolluted lake or a scenic panorama, are ignored in the traditional SNA, so they can be incorporated. The value of these items is crucial to assess trade offs between economic and environmental goals.

Desegregation of conventional national accounts: Sometime data in the conventional accounts are taken apart to detect expenditures specifically related to the green, such as those acquired to prevent or mitigate harm, to buy and install protection equipment, or to pay for charges and subsidies. Over time, revelation of these data makes it conceivable to observe links between changes in green policy and costs of green protection.

Emissions accounting: This system may identify pollutants emitted from different economic sector of Bangladesh. Euro stat, the statistical arm of the European Union, is ministering EU members to put on this approach as part of its green accounting program. In case of Bangladesh, data can also be separated by type of emitted pollutants to understand the impact on domestic, trans-border, or global environments. If pollutant emissions are valued in monetary terms, these values can be also be used to determine the economic cost of avoiding green degradation, as well as to compare costs and benefits of green protection.

Green GDP: We can go for a green GDP or some other economic index to replace the conventional GDP or NDP. This green GDP can be accomplished by subtracting pollution expenditures from the conventional GDP or adding the factors like negative costs of urbanization etc. We can also provide depletion for natural assets like forests, mineral stocks, fish stocks and soils in order to ensure equal treatment of natural capital in the computation of net income.

Green GDP (or sometimes called Green NDP, or Eco-Domestic Product) is the most popular adjusted macroeconomic aggregate under green accounting framework. It is actually conventional GDP minus all form of capital depreciations (man-made, natural, or human capital). Under a standard UN SEEA (System of Environmental and Economic Accounting) framework (United Nations, 1993)).

To measure Green Accounting, protecting and preserving the environment, some costs are incurred. These costs are categorized in different items relating to different issues of green accounting and their scope. Pollution Prevention Costs are related to preventing air and water pollution. Green Protection Costs are incurred to minimize global warming and energy wastage. Reduction of waste and disposal as well as for water conservation, usage of rainwater and other measures aimed at efficient resources usage. These costs are related to Resource Recycling cost. Green Restoration Costs indicate the cost of restoring the operation of green by eliminating soil and ground water contamination, green compensation etc. Management Costs is that category of green accounting costs that transmit to Management-related environmental protection costs. Social Promotion Activities Costs are those cost of Environmental Accounting protection costs stemming from participation in social activities Environmental protection costs for research and development activities and costs of environmental solutions business activities are treated as Research and Development Costs. Besides these, the above various costs and items indicate some specific scope to clarify the Green Accounting.

Findings of the study

The green accounting can uphold the green image of the manufacturing companies. They can provide more information regarding green accounting or environmental accounting. The study reveals the following:

Green accounting practice is present in Bangladesh but this practice is not sufficient and more elaborate like the developed countries. This practice has some deficiencies because only some Multi-National Corporation (MNC's), few public limited companies and Banking Companies, practice green accounting. Most of the companies operating in Bangladesh are not aware of it and its application.

The country has taken different steps for introducing green accounting practice-like. Government of Bangladesh has mentioned in the Company's act 1994 and Securities and Exchange Commission (SEC) rules 1987. Corporate Social Responsibility (CRS), environmental reporting, reducing pollution, preserving forestry resources, conserving the environment.

LDC countries like Bangladesh are facing the dual problems of protecting the green and promoting economic development. In one side they have to protect the environment at the same time they have to promote economic development for the protection of environment. This becomes a dilemma. Contribution of green goods and services in the national economy is ignored. The contribution to the environment to sustain the country's economy is not recognized.

National accounts allow depreciation allowances for manufactured assets. The contribution of green assets is not valued. So the contribution that green assets make in the economy are neither valued nor taken into account. The omission of the degradation and depletion of the country's natural capital will lead to overestimation of national income figure.

No economic data system familiar as system of national accounts to calculate macro-economic indicator is practiced or present. As a result, contribution of macro-economic indicator by green accounting is ignored.

Green expenditures related with green accounting practice is not calculated or taken into account. Most of the companies do not disclose these costs in their financial statement. Only qualitative information is presented in director's report. No attempt is made to disclose quantitative information in the financial statements.

The traditional measure of Statement of National Accounts (SNA) focuses mainly on goods and services that are bought and sold in the market and ignore non-marketed services provided by nature. This ignorance leads to loss and degradation of natural resources and dreadful condition of the environment. The present green accounting data system is outdated. The present outdated system of accounting infers that the green assets like air, water and soil may be devalued due to economic activity and degrade.

In Bangladesh no attempt is made to collect data on forests, minerals, energy sources, fisheries and use these data as an input into a macroeconomic model to explore environmental, economic feasibility and growth strategy. At present the law relating to green protection and preservation exists but its enforcement is not made properly. Because of this, green protection and preservation become vulnerable.

Environmental accounting practice related guideline is not as effective as in the developed countries. Absence of proper monitoring system is another barrier to develop the application of green accounting properly. Companies do not feel the need to practice it since there is absence of proper monitoring. This causes different environmental degradation.

In environmental performance index (EPI) Bangladesh's score increased from 2006 to 2008 but again declined in 2012 (figure.1). This indicates that the country is not conscious about maintaining and increasing its position in EPI.

Green Accounting practice involves cost. This cost is borne by companies towards the environment. Study reveals that companies that are financially solvent, corporate businesses comes forward in practicing green accounting in the form of CRS, providing fund for protecting and preservation of environment. In developed countries companies that practice green accounting get different types of benefit, tax exemption from the government. This practice is under process in Bangladesh according to Bangladesh Bank's Green Banking guidelines.

Recommendations

Following recommendations are put forward for improving Green accounting practices in Bangladesh.

- The conventional economic account can be expanded with the physical statistics about natural environment and its status. To ensure this the government must come forward.
- Relevant ministry can provide portfolio on physical indicators for forests-like area under forest, value of timber which can also be arranged in conventional input output type matrices.
- A careful assessment of cost of green damages and benefits can be introduced to find the safe limit of green degradation and required level of development.
- Emission accounting system that identifies pollution emitted from different economic sectors of Bangladesh can be introduced and implemented.
- Conventional national accounts may be desegregated to detect expenditures specifically related to the green.
- Non-marketed green goods and services should be valued for improving green accounting practice. The valuation of green goods and services will help improving green accounting practices.
- Green GDP can be introduced side by side the traditional GDP. Green GDP can be calculated by subtracting pollution expenditures from the conventional GDP or adding factors like negative costs of urbanization and industrialization.
- Depletion of natural assets like forests, minerals, fisheries, soil, and water can also be provided to ensure equal treatment of natural capital in computing net income. Green indicators like green GDP, environment adjusted domestic products (EDP) can be introduced.
- Both the government and private sector must come forward for improving Bangladesh's performance in green accounting performance index and introducing green accounting practice in Bangladesh.

- Offering different types of benefits from the government side, financial and non-financial, tax exemption or rebate, reduction on import duties or extension of tax holiday facility etc will encourage more new companies to implement green accounting practice properly.
- Proper monitoring should be made on a regular basis in the application of green accounting. Companies who are already practicing green accounting to some extent should come forward and make more contribution in green accounting practice. They should expend more in preserving and protection of the environment.
- Both the government and private sector should play more effective role to increase Bangladesh's score in the Environmental Performance Index (EPI)
- Environmental accounting, emission, degradation, costs; resources should be presented in the financial statements according disclosure requirement in Bangladesh is the disclosure of expenditures on energy use. Under Schedule-XI, Part-II of the Companies Act 1994 and under Schedule, Part-II of the Securities and Exchange Rules, 1987

Conclusion

In developing countries like Bangladesh, greening the national accounts is necessary both for environmental and economic policy formulation. Economy of Bangladesh is based on natural resources and featured by high population growth and pressure on the natural resources. So in Bangladesh misuse and exhaustion of natural capital of the country will resulting extended valuation of national income figures. This presents a wrong picture that our economy is growing but in reality the natural wealth-future wealth is decreasing. Some green indicators like green GDP, environment adjusted domestic product (EDP) can be applied; our policies can be designed to enhance economic growth without extensive depletion of natural resources. More emphasis should be places for introducing and improving green accounting practice.

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Annex

Table1. Comparative Position of Bangladesh in the Environmental Performance Index

Performers	Countries	2006 (133)		2008 (149)		2010 (163)		2012 (132)	
		Score (100)	Rank	Score (100)	Rank	Score (100)	Rank	Score (100)	Rank
Asia	Bangladesh	43.5	125	58.0	125	44.0	139	42.55	115
	India	47.7	118	60.3	120	48.3	123	36.23	125
	Pakistan	41.1	127	58.7	124	48.0	125	39.56	120
	China	56.2	94	65.1	104	49.0	121	42.24	116
Strongest	Switzerland	81.4	16	95.5	1	89.1	2	76.69	1
	Norway	80.2	18	93.1	2	81.1	5	69.92	3
	Sweden	87.8	2	93.1	3	86.0	4	68.82	10
Weakest	Turkmenistan	52.3	104	71.3	85	38.4	157	31.75	131
	Uzbekistan	52.3	105	65.0	107	42.3	144	32.24	130
	Tajikistan	48.2	117	72.3	79	51.3	111	38.78	121
Others	South Africa	62.0	76	69.0	97	50.8	115	34.55	128
	UK	85.6	5	86.3	14	74.2	14	68.82	9
	Australia	80.1	20	79.8	46	65.7	51	56.61	48
	Brazil	77.0	34	82.7	34	63.4	62	60.90	30
	USA	78.5	28	81.0	39	63.5	61	56.59	49

Source: Environmental performance Index Report (2006, 2008, 2010 & 2012).