

## THE IMPACT OF GREEN ACCOUNTING ON SUSTAINABLE DEVELOPMENT

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### ABSTRACT

*Growth can no longer be measured in strictly economic terms such as the monetary value of output, income or expenditure per head. Additional criteria are needed for green growth. Prosperity consists in our ability to flourish as human beings-within the ecological limits of a finite planet. The challenge for our society is to create the conditions under which this is possible. Green growth will come from applying green public procurement and green research and development. Appropriate penalties such as making the polluter pay for pollution and incentives like tax breaks for investment in green R&D are required. However, measuring green growth will need additional criteria such as sustainability, greenness, happiness or well-being. Green or environmental accounting could be the answer. At the corporate level, this requires the identification and monetary measurement of the traditional private internal costs that directly affect the bottom line of the balance sheet. These are direct costs, such as materials and labor, which are attributed to a product or department and indirect costs, or overheads, such as rent, administration, depreciation, fuel and power. Above all, externalities such as social and economic environmental costs that impact the external environment must also be taken into account. Although often ignored, their inclusion as internal items in corporate accounts could mean that scarce resources are more efficiently allocated. In this paper an effort has been made to explain the meaning and objectives of green accounting in Indian context. In this paper the role and importance of green accounting has already been explained.*

**KEYWORDS:** SNA, GDP, Green Accounting, Environmental Accounting, Indirect Costs, Green Growth.

### Introduction

Green accounting is a type of accounting that attempts to factor environmental costs into the financial results of operations. It has been argued that gross domestic product ignores the environment and therefore decision makers need a revised model that incorporates green accounting. It incorporates environmental assets and their source and sinks functions into national and corporate accounts. It is the popular term for environmental and natural resource accounting. Corporate environmental accounts have not yet found wide application; proposed concepts and methods are similar to those of national green accounting and are not further discussed here. Conventional national accounts mostly ignore new or newly observed scarcities of natural resources, which threaten to undermine the sustainability of economic performance and growth, and environmental degradation as an 'external' (social) cost of economic activity. The field of green accounting has made great strides in the past two decades, moving from a rather arcane endeavor to one tested in dozens of countries and well established in a few. But the idea that nations might integrate the economic role of the environment into their income accounts is neither a quick sell nor a quick process; it has been under discussion since the 1960s. Despite the

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difficulties and controversies described in this article, however, interest is growing in modifying national income accounting systems to promote understanding of the links between economy and environment.

### **Necessity or Role of Green Accounting**

Governments around the world develop economic data systems known as national income accounts to calculate macroeconomic indicators such as gross domestic product. Building a nation's economic use of the environment into such accounts is a response to several perceived flaws in the System of National Accounts (SNA), as defined by the United Nations and used internationally. One flaw in the SNA often cited is that the cost of environmental protection cannot be identified. Consequently, money spent, say, to put pollution control devices on smokestacks increases GDP, even though the expenditure is not economically productive, some argue. These critics call for differentiating "defensive" expenditures from others within the accounts.

Also misleading is the fact that some environmental goods are not marketed though they provide economic value. Fuel wood gathered in forests, meat and fish gathered for consumption, and medicinal plants are examples. So are drinking and irrigation water, whose sale prices reflect the cost of distribution and treatment infrastructure, but not the water itself. While some countries do include such goods in their national income accounts, no standard practices exist for doing so. When non marketed goods are included in the accounts, they still cannot be distinguished from those that are marketed. Valuing environmental services such as the watershed protection that forests afford and the crop fertilization that insects provide is difficult. Though some experts call for their inclusion in environmentally adjusted accounts, typically neither the economic value nor the degradation of these services is included. On the other hand, however, the alternate goods and services needed to replace those water treatment plants.

Still another problem is that national income accounts treat the depreciation of manufactured capital and natural capital differently. Physical capital - a building or a machine, for instance - is depreciated in accordance with conventional business accounting principles, while all consumption of natural capital is accounted for as income. Thus, the accounts of a country that harvests its forests unsustainably will show high income for a few years, but will not reflect the destruction of the productive forest asset. While opinions vary on how to depreciate natural capital, they converge on the need to do so.

### **Importance of Green Accounting**

Some proponents advocate simple "flag" indicators to alert policymakers to the broad role of the environment in the economy, for example, comparing conventional GDP with environmentally adjusted GDP, or conventional savings with so-called "genuine" savings that account for environmental factors. Both of these indicators can provide valuable warnings of the impacts of environmental degradation on an economy. However, such flags are less useful in determining the source of environmental harm or identifying a policy response. For this reason, many economists place primary importance not on the bottom line, but on the underlying data used to build environmental accounts. These data can help answer such questions as how natural catastrophes like the fires that raged in Indonesia in the summer of 1998 may affect economic growth, or how environmental protection policies such as green taxes may affect the economy.

### **The Process of Green Accounting**

How environmental accounting is being done varies in a number of respects, notably the magnitude of the investment required, the objectivity of the data, the ability to compare different kinds of environmental impacts, and the kinds of policy purposes to which they may be applied. Here are some of the methods currently in use. For this purpose following components can be used:

- **Natural Resource Accounts:** These include data on stocks of natural resources and changes in them caused by either natural processes or human use. Such accounts typically cover agricultural land, fisheries, forests, minerals and petroleum, and water. In some countries, the accounts also include monetary data on the value of such resources. But attempts at valuation raise significant technical difficulties. It is fairly easy to track the value of resource flows when the goods are sold in markets, as in the case of timber and fish. Valuing changes in the stocks, however, is more difficult because they could be the result either of a physical change in the resource or of a fluctuation in market price.

For environmental goods and services that are not sold, it is that much harder to establish the value either of the flow or of a change in stock. However, even physical data can be linked to the economy for policy purposes. For example, changes in income can sometimes be traced to changes in the resource base or to the impact of environmental catastrophes on the economy.

- **Emissions Accounting:** Developed by the Dutch, the National Accounting Matrix including Environmental Accounts (NAMEA) structures the accounts in a matrix, which identifies pollutant emissions by economic sector. Eurostat, the statistical arm of the European Union, is helping EU members apply this approach as part of its environmental accounting program. The physical data in the NAMEA system are used to assess the impact of different growth strategies on environmental quality. Data can also be separated by type of pollutant emission to understand the impact on domestic, transborder, or global environments. If emissions are valued in monetary terms, these values can be used to determine the economic cost of avoiding environmental degradation in the first place, as well as to compare costs and benefits of environmental protection.
- **Desegregation of Conventional National Accounts:** Sometimes data in the conventional accounts are taken apart to identify expenditures specifically related to the environment, such as those incurred 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 possible to observe links between changes in environmental policy and costs of environmental protection, as well as to track the evolution of the environmental protection industry. While, these data are of obvious interest, some people argue that looking at them in isolation can be misleading. For example, while end-of-pipe pollution control equipment is easily observed, new factories and vehicles increasingly are lowering their pollutant emissions through product redesign or process change rather than relying on special equipment. In such cases, no pollution control expenditures would show up in the accounts, yet environmental performance might be better than in a case where expenditures do show up.
- **Value of Non-marketed Environmental Goods and Services:** Considerable controversy exists over whether to include the imputed value of non-marketed environmental goods and services in environmental accounts, such as the benefits of an unpolluted lake or a scenic vista. On the one hand, the value of these items is crucial if the accounts are to be used to assess tradeoffs between economic and environmental goals. Otherwise, the accounts can end up reflecting the costs of protecting the environment without in any way reflecting the benefits. On the other hand, some people feel that valuation is a modeling activity that goes beyond conventional accounting and should not be directly linked to the SNA. The concern underlying their view is that it is difficult to standardize valuation methods, so the resulting accounts may not be comparable across countries or economic sectors within a country.
- **Green GDP:** Developing a gross domestic product that includes the environment is also a matter of controversy. Most people actively involved in building environmental accounts minimize its importance. Because environmental accounting methods are not standardized, a green GDP can have a different meaning in each project that calculates it, so values are not comparable across countries. Moreover, while a green GDP can draw attention to policy problems; it is not useful for figuring out how to resolve them. Nevertheless, most accounting projects that include monetary values do calculate this indicator. Great interest in it exists despite its limitations.

#### **Aggregation and Valuation of Green Accounting**

National environmental accounting requires adding up inputs, outputs and environmental impacts, and combining them into environmentally adjusted ('greened') indicators. The SEEA uses both monetary values (prices, costs) and physical weights (in particular the mass of material flows) to this end. Environmentalists criticize the use of market values for 'pricing the priceless' categories of nature. In their view, assessing environmental assets and their services in monetary terms 'commodifies' nature, whose intrinsic value should not be subjected to market preferences. They prefer measuring environmental impacts by physical indicators and aggregating material flows through the economy ('throughput') in material flow accounts. However, weighting nature by the weight of materials and pollutants assigns doubtful significance (in tonnes) to diverse environmental impacts such as the depletion of a timber tract, emission of a toxic pollutant or the extinction of a cherished species. Case studies of green accounting applied market valuation mostly to natural resource depletion. In the absence of market prices for non-produced natural assets, natural resource rents earned by selling resource outputs in markets are used for estimating the net present value and value changes (notably from depletion) of an asset. For environmental degradation, maintenance costs of avoiding or mitigating environmental impacts can be applied. A few studies used damage valuations of environmental impacts. Such welfare measurement and valuation are characteristic of cost-benefit analyses of projects and programmes; they are not compatible, however, with the market pricing and costing of the national accounts.

### Policy Users of Green Accounting

A part from score keeping, i.e. answering the question whether the economy has performed sustainably during one or more accounting periods, green accounting indicators can be employed in policy formulation and evaluation. At the macro-level the increase of productive wealth is the key determinant of the economic growth potential of an economy. Especially in resource-rich developing countries, natural resource rents, determined in natural resource accounts, could be absorbed in a development fund. Rather than using the earnings for short-term private and public consumption, these funds should be invested in long-term development projects. A particular strength of green accounting is the measurement of environmental cost caused by economic agents of households and enterprises. The well-known polluter/user pays principles hold the responsible agents accountable for their environmental impacts. Economists deem market instruments of environmental cost internalization more efficient in bringing about sustainable production and consumption patterns than top-down environmental regulation. In the absence of green accounting information, political exigencies rather than rational cost estimates appear to determine in most cases the setting of market instruments.

The SEEA accounts explicitly for actual environmental expenditures by different agencies and organizations. Sharing the burden of environmental protection with emerging groups of civil society and private corporations ('public-private partnerships') is one of the key recommendations of the 2002 Johannesburg Summit of the United Nations. Green accounting and accounting analysis can assess the economic and ecological efficiency of different environmental protection measures by governmental and non-governmental organizations.

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