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Natural Resources Accounting and Sustainable Development: The Challenge to Economics and Accounting Profession

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Abstract

This paper is aimed at examining the role of natural resources accounting in sustainable development. The approach used in achieving this objective is by identifying the present position, limitations and the challenges for the economics and accounting professions. It was found out that the main weakness of GDP as a measure of development is that it does not account for environmental resource damages. Natural resources accounting takes care of this weakness. Also developments achieved in some counties like Nigeria so far cannot be described as sustainable because the various developmental processes have misused or over exploited the natural resources and in the process affected the environment negatively. The accounting and economics professions have the challenge of ensuring interdisciplinary collaboration, development of framework to particularly include the environment, development of credible valuation procedures for the environment and inclusion of various ethical positions advanced by various groups on the value of the environment. The study practically implies that major challenges still lies ahead in further improving these approaches so as to achieve the goal of sustainable development.

Introduction

The concept of sustainable development which lays emphasis on the maintenance of natural resources, requiring mandatory inclusion of natural resources values in financial report has increased the responsibility of those involved in accounting for the natural environment. Actually natural resources were not given enough consideration in the early years of economic development despite their unique contribution to development. The fifth European Commission's Action programme on the Environment entitled "Towards Sustainability" calls for enterprises to:

- disclose in their annual reports details of their environmental policy and activities and the effect thereof.
- detail in their accounts the expenses on environmental programmes and a clear definition of such expenses, and
- make provision in their accounts (European Commission 1992).

The programme also suggests that product pricing be based on a full cost approach including the use and consumption of environmental resources.

The United Nations Statistical Office published a system of national account which reflects opening and closing stocks and sources of increase and decrease. Only assets that are exchanged in the market place such as forestry, agricultural, land and subsoil minerals are included.

There is a growing interest in the development of resource and environmental accounting in Nigeria. The development of national resource accounting has focused on placing monetary value on known physical quantities of the resource in order to obtain a wealth value for natural capital (Oladoye 1998). The natural resources stock account is usually recorded both in physical and monetary terms.

Accounting for sustainability incorporates the equity aspect of the paradigm of eco-justice. This approach firmly introduces the triple minimum requirements of profit, people, and environment into the accounting functions. In order to contribute to environmentally sustainable development, a company will have to satisfy all the three conditions. The incorporation of profit-people – environment into accounting introduces environmental externalities into an incentive based economic model (Nilsson et al, 1998).

The development of national accounts to form the basis of any approach to ecologically sustainable development in most countries in the short to medium term is not bright (Commonwealth Government Discussion Paper 1990)

The major objective of this study is to examine the role of natural resources accounting in economic growth and development. Others include:

- to briefly examine the nature of sustainable development
- to explore Nigerian experience of environmental accounting
- to assess some important issues restricting the development of environmental accounting.
- to identify the new challenges for the economics and accounting professions.

Sustainable development

The concept of sustainable development (SD) came into prominence in the 1980s and was embraced by most countries as an appropriate form of development. SD recognizes that present patterns of consumption of natural resources are not sustainable, and that more harmless forms of development are needed.SD became very prominent with the publication of the Brundtland Report where it was defined as development that meets the needs of the present without compromising the ability of the future generation to meet their own needs (UNCWED 1987).

In Agenda 21, sustainable development was defined as “development that does not destroy or undermine the ecological, economic or social basis on which continued development depends.”

There are two important types of sustainability, weak and strong sustainability. Under weak sustainability loss of ecosystems is not a major concern as long as society’s total savings rate is high enough to compensate for reduction of natural capital and thereby produce sustainable welfare paths. Strong sustainability on the other hand asserts that future generations should be endowed with the same amount of natural capital as the present generation. Two factors that support strong sustainability are uncertainty and irreversibility. The existence of uncertainty means that we are unsure of how the natural resources functions; hence substitution of man- made capital for natural resources is not realistic. Further environmental resources are characterized by irreversibility; if mistakes are made it is not possible to correct them. These two features should make human beings to be more cautious about giving up natural capital (Pearce and Turner 1990).

Sustainability is not without criticism, the most virulent criticism of SD is seen in Willers (1994) who says “Sustainable development is one of the most insidious and manipulable ideas to appear in decades and because the multifaceted, global offensive to sell it is essentially unopposed, it is perceived as something of an axiom by the people which has grossly exceeded the bonds of reasonableness and which is ancestral to hosts of environment and social ills, long ago become the enemy of the natural world”.

The Nigerian experience

Nigeria has undergone rapid socio-economic and physical development since independence. The country therefore faces numerous challenges to achieve development that is economically and environmentally sustainable. Development achieved so far cannot be described as sustainable because the various development processes have misused or over exploited the natural resources and in the process, affected the environment negatively as well. The ecosystem of the country has been disturbed as a result of rapid population growth with great pressure on the natural resources (Federal Office of Statistics1999). Apart from the issue of natural and manmade disaster, global environmental matters constitute enormous threat. Meanwhile attempts are now being made in designing a statistical system that will describe the inter-relationships between the natural environment and the economy.

The natural resource stock account is one of the major satellite accounts being currently developed in the environmental and economic account at the Federal Office of Statistics. The issue of valuation is also being properly considered. The system of Integrated Environmental and Economic Accounting (SEEA) developed by the United Nations Statistical Division, applies three categories of valuation in different version. There are, maintenance costing of natural asset, depletion and (environmental quality) degradation, and contingent and related valuations of welfare efforts of environmental degradation. However, for reasons of data availability and compatibility with conventional accounting rules, Nigeria has adopted the market valuation approach.

It is observed that the issue of environment in Nigeria are basically on human population, land use and soil conservation, water resources management, toxic and hazardous substances, agricultural production, air pollution, noise pollution, working environment and settlements (Nigerian Federal Office of

Statistics). Current efforts are also targeted towards the measurement of deforestation, soil degradation, loss of biological diversity and wildlife and coastal degradation.

Deforestation for instance, is one of the top priority environmental problems in Nigeria.

The present effort in developing resource and environmental accounting will definitely improve economic performance measures and the measure of sustainable income and growth.

Accounting for natural resources

Natural resources such as water, soil, air, forest and woodland etc are very important to mankind and needed to be explicitly considered both at the macro and micro planning levels.

For effective planning at the macroeconomic level, consideration of the natural environment is important. Also the inclusion of the natural environment in national accounts provides information on the use of natural resources in economic activities. Natural resources accounting corrects the national income accounts by giving the balance sheet of natural resources which records the quality and value. Policymakers and resource managers will benefit from this information. It is relevant in determining the rate of depletion of natural resources in an economy. It will also provide policy prescriptions to minimize resource degradation. If monetary values of these resources are included in national income, it will provide a reliable guide to the performance of the economy. Formation of sound macroeconomic policies will be improved when such explicit information is available.

From a microeconomic perspective, it is noted that business entities currently provide limited information, often devoid of environmental asset use, to restricted stakeholder groups. However, modern versions of legitimacy require that information be provided to the wider society. To achieve these wider objectives, business firms should go further to incorporate activities and the impact on the company and on its endeavours to protect its amenities and the environment, In other words, business related externalities should be internalized by the firm. Comprehensive reporting of all aspects of the business, will improve resource allocation.

Looking at natural resource accounting from macroeconomics point of view

Traditionally, gross national product (GNP) or gross domestic product (GDP) is used as the main indicator for measuring economic development. The three main weaknesses in GNP for SD are that:

1. It does not take into account environmental degradation;
2. The natural resources are valued at zero; and
3. Repair and remedial expenditure such as pollution abatement measures, healthcare, etc. are counted as positive contributions to GNP.

Natural resources are not entirely free, although there is no investment cost.

Only market activities are included in GDP, but non market activities should be given equal standing and hence added to GDP. For instance, the proceeds of wood cut from forest are added to GDP but no deduction is made for the loss of forest and other non market benefits. The same applies to other activities such as mining, agriculture, industrial production- all of which cause pollution and loss of natural capital. Man made capital is depreciated in all accounting procedures but natural capital is not.

A more appropriate measure for SD that includes inter- generational well-being and sustainable resource use is net national product (NNP). NNP is the sum of the social value of an economy's consumption and the social value of the real changes in its stock of capital assets, including manufactured capital and natural resource stocks. Since only man-made assets are valued as productive capital whose drop in value is depreciated, a consumption level attained by reducing the stock of capital exceeds the sustainable level of income. Natural resources are not valued and losses are not debited against current income that may reduce future income earning possibilities. Depreciation of natural capital should be deducted to obtain the green GDP.

For resource based economies like Nigeria, estimates of macroeconomic relationship that fails to account for natural resources depreciation distort the macroeconomic relationship.

Incorporating of natural capital in GDP

Despite the difficulties, many countries have reported the losses in natural resources computed for various sectors. Chisholm (1992) estimated the losses due to land degradation in Australia to be around $4,800 per farm. For

Australia as a whole, the losses due to land degradation are estimated to be around $600m per year (Common wealth of Australia 1989).Young (1992) estimated the losses of environmental resources in agriculture, land use and natural habitats. Losses in agriculture amounted to around 5 percent of GDP in 1987/1989.The losses due to salinity, water logging, and habitat and land degradation were between 0.6 and 1.6 percent of GDP in1980/1989 (Table1). Though the table shows estimates of losses made only for certain sectors of the countries and hence not comprehensive yet appear significant.

In Nigeria, the Federal office of statistics (1998) listed the causes of environmental degradation as human population, soil erosion, over fishing, toxic and hazardous substance, air pollution, noise pollution and deforestation but no numerical estimate was given.

Table 1: Environmental depreciation allowances of selected countries.

Authors	Country	Years	Sector	Environmental depreciation (percent)
Young (1992)	Australia	1980/1989	Salinity, water logging, habitat loss	0.6-1.6
Ahmed and Mallick (1997)	Bangladesh	1993	Energy, soil erosion and deforestation	14 of GDP
Repetto et al (1989)	Costa Rica	1989	Deforestation, soil erosion, over fishing	9.0 of GDP
Repetto et al (1989)	Indonesia	1984	Forest	3.6 of GDP
McGrath and Arens (1989)	Indonesia	1984	Soil erosion	0.4 of GDP
Cruz and Repetto (1992)	Philippines	1970/1987	Forestry, soil erosion coastal fishing	4.0 of GDP
Ahmed and Mallick (1997)	Pakistan	1993	Energy, soil erosion, deforestation	18.0 of GDP
Peskin (1989)	Tanzania	1980	Deforestation	5.0 of GDP
Adger (1993)	Zimbabwe	1987	Deforestation, soil erosion	9.0 of GDP

Source: Ahmed (2000)

Microeconomic perspective of environmental accounting

a. *Common reporting procedures*

Accounting reports have been the most significant formal means of communication of an entity, which are prepared for the benefit of shareholders, potential investors, government and the public at large. It forms the basis for decision making

The external users will evaluate the use of the scarce resources and internal users can use them for formulation of major plans and policies. Traditional accounting approaches provide partial information by excluding non-priced transactions and important natural resources which are critically important to the assessment of human welfare .Traditional accounting deals with resources that have clearly defined property rights and market prices. Including environmental effects will provide a more complete reporting system for the management of the firm.

Environmental accounting focuses on the monetary implications of the environmental impact and aspects of an organization, including implications for cash outlays and revenue, etc.It translates environmental impact and concern into monetary values. A company wishing to embrace sustainable development needs to devise an equitable means of valuing its uses of the environment irrespective of whether it relates to the degradation or to the depletion of resources and that this valuation be disclosed in the company accounts.

b. *Current status of corporate environmental reporting*

The success of environmental accounting depends on the vision and philosophy of the company. Companies with a well defined vision of SD will want to embark on full- cost environmental accounting. Those companies without an environmentally sustainable development vision may only prefer to use private environmental accounting, with a misguided view that ignoring environmental concerns may maintain high profits. This may be true in the short-run but not in the long-run.

Proper green accounting will reveal the problems associated with certain technologies and may compel them to adopt environmentally friendly approaches to production.

The way some business entities report economic activity in cash terms but not in environmental magnitudes in physical units such as the number of carbon dioxide emitted, is still pointing at the need to develop a proper accounting standard for environmental reporting, which will help to change the old perception of economic growth by government and others.

Important issues in environmental accounting

1. Who *regulates the environmental effects?*

The rapid growth in industries such as breweries, refineries, tourism and other environmental activities has created serious environmental damages in many countries. There is great need for the regulation of these adverse impacts without damaging the prospects of these sectors. The main issue is the nature of the regulation, and control approaches. The subject matter is highly relevant in determining the nature of regulation. In the case of industrial pollution, strict regulation through requirements and prohibitions may be more effective than taxes or levies. However, in the social arena, eliminating the use of child labour by a remote organization in the supply chain may be more likely to result from stakeholder engagement than from requirements and prohibitions (ICAEW 2004).

2. *Valuing environmental goods*

It is difficult to assign monetary value to environmental resources. This requires the use of implicit or shadow prices which may not be helpful since they may be affected by imperfections. The non-consumptive use values such as values of wilderness have been assessed using methods such as travel cost (TC) and contingent valuation (CV) and other methods.

In assessing management for environmental resources, if non-use values are apparent, they need to be considered and measured as precisely as possible in order that public decision making be as fully informed as possible

3. *Ethical issues in valuation*

Decision makers need to think through the consequences of any outcomes and how it affects members of the society. Thus, what moral position should be adopted is controversial, Should rights be recognized first as suggested in the deontological approach, or should ends justify the means as is implied by the teleological tradition?

4. *Policy problems*

In some countries, environmental policies themselves may be at the heart of the accounting problem. For instance, taxation provisions in Australia clearly discriminate against natural resources (Herath, 2005). Government policies should support sustainability, As Michael Meacher, the former UK Environment Minister, stated in June 2003, 'it is this Government's policy to make sure that environmental concerns are on the corporate radar. We need to make the most responsible business the most competitive one...”

5. Absence of a uniform reporting framework

Inclusion of the environment in any credible manner in documents designed for information and planning purposes require acceptable reporting methods, computational techniques and indicators’. In Nigeria this is usually met by reports produced by the Federal Environmental Protection Agency in line with the Environmental Impact Assessment (EIA) Decree No 86 of 1992. Accountants fail to join up with other groups-such as environmental economists to develop appropriate environmental costing techniques. It is noticeable that many of the advances in environmental accounting at the management accounting and strategic sustainability accounting levels-are being carried out by non-accounting based organizations. These include the United States Environmental Protection agency (EPA), Forum for the Future (FoF-UK) and the World Resources Institute (WRI), (ACCA Accounting Sectoral Report 2002). Accountants should rise up to their responsibility to enhance credible reports.

Key challenges ahead

The accounting and economic professions should continue to work with the corporate sector and researchers from discipline outside their field to construct a fully fledged and robust environmental accounting methodology to ensure that environmental effects and resource depletion are accounted for. In developing accounting reports that will provide financial information to stakeholder group, accountants, management experts, environmentalists and other relevant professions should consider the following issues:

i. Collaboration among several disciplines such as economics, accounting, management, psychology and philosophy in developing environmental accounting method is very necessary because of the complexity of natural resources accounting.
ii. Development of a complete system of reporting which includes losses and gains to the environment.
iii. Development of credible valuation procedures for the environment.
iv. Recognition should be given to those organizations which report and disclose environmental, social or full sustainability information.

Conclusion

From the on-going, there is no doubt that the past developmental patterns have not been sustainable as a result of excessive use of natural resources. Despite the contribution of these resources to development, they were assigned a very low profile. The old accounting procedure makes no provision for depletion of natural resources because they are seen as a free gift with little or no value. With the emergence of the concept of sustainable development (SD), natural resources have been assigned an important place.

Though, there are some improvement in environmental reporting among developed countries, problems still abounds, the most important of them being the difficulty in measuring the values of natural resources which are often not marketed. There are ethical issues on how certain items are measured to be incorporated in environmental accounting. There is a feeling that most firms may not be comfortable with disclosing their environmental, social or full sustainability information, especially if they show excessive depletion of resources and will impact much on their profit. Nevertheless, there is still much to be done to forge ahead; embarking on a multi-disciplinary approach by related professions like accounting, economics and management, and other relevant profession like psychology and philosophy to make environmental accounting a common practice in all business enterprises.

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