

## THE TIME IS RIPE FOR GREEN ACCOUNTING

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### **Abstract**

*Double-digit GDP fixation is threatening India's biodiversity and its long-term growth and security. Green accounting methods have estimated the loss of ecological wealth in India. GDP measures the value of output produced within a country over a certain time period. However, any depreciation measurements used, will account only for manmade capital and not the negative impact of growth on valuable natural capital, such as water, land, forests, biodiversity and the resulting negative effects on human health and welfare. Accounts under the Green Accounting for Indian States Project, according to their results, the loss of forest ecological services (i.e. soil erosion prevention, flood control and ground water augmentation) due to declining dense forests was estimated at an astounding contribution to GDP. A new system of sustainable accounting, known as Green Accounting, has emerged. "It permits the computation of income for a nation by taking into account the economic damage and depletion in the natural resource base of an economy."*

*It is a measure of sustainable income level that can be secured without decreasing the stock of natural assets. This requires adjustment of the System of National Accounts (SNA) in terms of stock of natural assets. In SNA, allowance is made for capital consumption or man-made capital while calculating Net Domestic Product (NDP). Net Domestic Product (NDP) =GDP-depreciation.*

*Green Accounting (also known as Environmental Accounting / Resource Accounting / Integrated Economic and Environmental Accounting / Sustainability Accounting) is an attempt to identify and bring into light the resources utilized and costs imposed on the eco-system by the activities of corporate houses. It is a system of accounting designed to record the benefits and costs rendered by the environment to a business corporation and costs and benefits tended to the environment by the same business corporation.*

**Key Words:** *Green Accounting Management, Green Auditing, Environmental Management.*

### **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. In "green accounting" approach national accounts are adjusted to include the value of nature's goods and services. Mr. Jairam Ramesh, the former environment minister, advocated greening India's national accounts by 2015 and encouraged policy makers to recognise the trade-off between pursuing high growth economic policies against the extensive impact they could have on India's natural capital.

As environmental awareness continues to grow, so too have careers that account for the health and well-being of the planet. Environmental or "green" accounting is an expanding field focused on factors like resource management and environmental impact, in addition to a company's revenue and expenses.



“Green accounting demonstrates organizations’ commitment to the most important aspects of the ‘triple bottom line’: people, planet and profitability,” says Tim Gearty, national director and editor-in-chief, Becker professional Education CPA Exam Review. Although the U.S. Bureau of Labor Statistics doesn’t forecast the growth of environmental accountancy specifically, the agency predicts employment of accountants and auditors will grow 13% from 2012 to 2022. Here’s a handy guide to the world of green accounting:

**A long decade ago economic growth was the reigning fashion of political economy. ... [Since then] the climate of opinion has changed dramatically. Disillusioned critics indict both economic science and economic policy for blind obeisance to aggregate material "progress", and for neglect of its costly side effects.**

Nordhaus, W.D. and Tobin, J., 'Is growth obsolete?', 1972. The Institute of Chartered Accountants of India has also prepared environmental accounting standards to help companies to prepare sustainability reporting to prevent wasteful use of natural resources as well as to ensure scientific treatment of industrial waste. While preparing the financial statements, utilization of direct materials, direct labour, manufacturing overheads, administrative, sales and distribution expenses as well as research and development expenses are factored in but not environmental costs. Environmental liabilities though constituted as part of production and administration expenses are not separately debited to the specific accounts; but are shown in the accounts as general expenses. Currently more than 170 Indian companies have pledged commitment to UN Global compact including 47 are public sector undertakings. Of these, only 23 PSUs are complying with the requirements. Some of the private sector companies such as ITC, Larsen and Toubro, and the Tata group are meticulous in preparing environment, society and governance (ESG) reporting. It is expected that more companies will be preparing Triple Bottom Line reports by 2015 in standard format.

### **What's Wrong With GDP?**

In the last sixty years, GDP has come to be seen as the primary indicator of the state of national economies and social wellbeing and a key guide to policymakers and investors. Unfortunately, it wasn't designed for that purpose so doesn't perform the role particularly well. Although a variety of criticisms can be leveled against GDP, from a sustainability perspective the key concern is that it measures what an economy produces, not the state of capital stocks that underpin that output. Such stocks include manmade capital but also other resources — natural, social and human — which together determine how much a society can produce. At the micro level, of course, accounting practice does acknowledge the importance of capital (at least of the manmade variety). Business accounts have always included an element of depreciation to reflect the decreasing value of a firm’s productive capital over time. The rationale is obvious: sustained output is only possible if a firm invests in maintaining its capital stock. Oddly, governments and international institutions pay less attention to the underlying robustness of the economy when calculating national accounts. In GDP, 'G' stands for 'gross', which means 'before subtracting capital depreciation'.

Even when calculating net domestic product (an aggregate far less popular than GDP) the depreciation only reflects changes in manmade capital, not those public goods that are not produced but play a vital role in determining economic output — above all nature. By focusing only on flows of outputs, GDP provides misleading signals to policymakers. Activities that maximise production in the short term need not preserve the capital stocks that are central to long-term prosperity. Indeed, focusing just on GDP actually creates incentives to deplete capital stocks because the returns are treated as income. Ultimately, not recording the cost of reinvestments to sustain healthy ecosystems creates and conceals ecological liabilities. This distorts our perception of the future when restoring ecosystem services will demand that we repay the debts.

### **The Shape of things to come**

Decision-makers need the right indicators to ensure that policies and investments maximize wellbeing for current and future generations. Equally, citizens need access to such information to hold their governments to account:

robust and transparent information is a prerequisite for public empowerment and engagement. In practical terms this means that we must develop systems of national accounting that fully incorporate the capital stocks that determine our earnings. Clearly, this poses conceptual and practical difficulties. From the environmental perspective, the key challenge lies in defining, quantifying and valuing natural capital. Whereas economic activity is quantified in monetary terms and recorded in business accounts, we have far fewer systems to measure the scale and cost of our impact on the environment.

To address this need, the European Environment Agency and its partners have been developing techniques consistent with national accounts methods to record the contribution of ecosystems to society's welfare. The methods, collectively known as ecosystem accounts, comprise both physical and monetary accounts of stocks, material and energy flows and services. The EEA's basic approach entails quantifying the level of investments needed to ensure that ecosystems continue to provide the same level of services. This takes account of a variety of 'indicators of ecological potential', accounting for the state of the landscape, ecosystem production, biodiversity, water, absorption of external inputs and the capacity to support healthy populations. In fact, the United Nations System of National Accounts (SNA), which sets out the standard methodology for national accounting, provides a useful example. First published in 1953, the SNA manual totalled just 56 pages and provided a much less comprehensive approach than the 750 page version produced in 2008. The message is clear: start simple.

The crux of the problem today lies in the in evitable correlation between economic growth, consumption of energy resources and the consequential emission. The challenge today obviously lies in finding a new low carbon intensity growth path. Under the circumstances, it makes sense to explore emerging technology areas that can usher in transformational changes in the carbon intensity of growth rather than looking at incremental changes within traditional technology frameworks. Both environment protection and economic development are matter of great concern now days. Therefore, proper balance is required between the two. For this purpose, careful assessment of benefits and costs of environmental pollution is necessary in order to find the limits of environmental degradation and the required level of development.

### **Green Accounting in India**

In Disclosure requirement is voluntary in nature, but will come into effect from the end of the current fiscal year.

### **Natural Resource Accounting**

At national level, the existing method of calculating Gross National Product (GNP) and its variants Gross Domestic Product (GDP) and Net National Product (NNP) does not take into account the depletion and degradation of environmental capital. Natural Resources Accounting (NRA) is an attempt to measure the sustainability of development by factoring in consumption, depletion and degradation of environmental capital in the process of economic development. NRA can help in policy formulation relating to sustainable development. India is expected to provide alternative GDP estimates which account for consumption of natural resources by 2015. The Cost Benefit Analysis (CBA) may not be able to capture many of the natural resources in monetary terms though it is used for economic sustainability of an activity.

### **Need for Environmental Accounting at Corporate Level**

The environmental accounting at the corporate level helps the management to know whether corporate has been discharging its responsibilities towards sustainable development while meeting business objectives. Environmental accounting addresses the following,

1. Meeting regulatory requirements,
2. Operate its factory in a way that environmental damages do not occur.
3. Promote a culture and attitude of environmentally safe working amongst its employees.
4. Disclosure to shareholders the amount and nature of the preventative measures taken by the management.
5. Ensures safe handling and disposal of hazardous waste;

### **Scope of Environmental Accounting**

The scope of Environmental Accounting (EA) is extensive and includes corporate, national & international level.

### **The following aspects are included in environmental accounting**

1. The direct investments made by a corporate for minimization of losses to environment. It includes investment made into the equipment/devices that help in reducing potential losses to the environment. This can be easily monetized.
2. Indirect losses due to business operation.

It mainly includes Degradation and destruction such as loss of biodiversity, air and water pollution, hazardous waste including bio medical waste, coastal marine pollution etc. Depletion of non-renewable natural resources Deforestation and land uses (measuring and monetizing them can be complex)

### **Why does Green Accounting Matter?**

Climate change will affect the quality of life on earth as well as economic factors. According to the Climate Vulnerability Monitor report, the U.S. could lose 2% of its gross domestic product as a result of droughts and water shortages by 2030. Investors are increasingly interested in corporate disclosures of greenhouse gas emissions, water and energy consumption, waste creation and recycling, and renewable energy use.

### **How does Environmental Accounting Work?**

In the private sector, green accountants may advise clients on the sustainability and environmental impact of their decisions. As resources wane, environmental factors play an increasingly larger role in the bottom line. The Sustainability Accounting Standards Board, a U.S. nonprofit organization incorporated in 2011, is currently developing industry-specific accounting standards for sustainability that can be used in annual reports. One example is a Form 10-K, a detailed summary of a company's business, risks and results that most publicly traded companies must file with the U.S. Securities and Exchange Commission (SEC). "Without standards, the investment community cannot make meaningful 'apples-to-apples' comparisons of performance among companies and over time," the SASB reports. Green accountants are needed to make sure such standards are implemented and reported.

### **What does the Future Hold?**

In 2013, the World Bank reported on the progress of five nations—Botswana, Colombia, Costa Rica, Madagascar and the Philippines—implementing its Wealth Accounting and Valuation of Ecosystem Services (WAVES) project. The goal of WAVES is to promote sustainable development by making sure the value of natural resources is taken into account in the measure of, and plans for, economic growth. Although sustainability reporting is voluntary under SEC guidelines, that could change. "If history is any indicator, what is voluntary today may very well become mandated in the not-too-distant future," Gearty writes.

### **Objectives of Green Accounting**

#### **Green Accounting: Need, Objectives, Problems and Other Details!**

#### **SNA has three main Defects**

- (1) It neglects the depletion of natural capital such as farmland, forests, fishing stock, minerals, etc.
- (2) Environmental degradation mainly from pollution, and
- (3) Defensive expenditures which the society incurs in facing the external effects of environmental degradation.

**To overcome these drawbacks of SNA, the Statistical Division of UN has developed the System of Environmental Economic Accounting (SEEA).**

#### **The SEEA focuses on**

- (i) Accounting for the depletion of scarce natural resources, and

(ii) Measuring the costs of environmental degradation and its prevention.

Thus the computation of Green NDP (or EDP) has been replaced by a measure of national product which includes the economic cost of degrading natural resources which are required to produce goods and services directly and indirectly.

#### **SNA defines Net Domestic Product as**

$NDP = \text{Net exports } (X - M) + \text{Final consumption } (C) + \text{Net capital accumulation } (I).$

To arrive at Green NDP (Or EDP), if net capital accumulation (I) is replaced by net capital accumulation of produced and non-produced economic assets minus net accumulation of non-produced natural assets, the identity becomes

$EDP = (X-M) + \text{Nap.ec} + (\text{NAnp.ec} - \text{NAnp.n})$

Where

EDP = Environmental domestic product.

(X-M) = Exports-imports

= Capital accumulation

Nap.ec = Net accumulation of produced economic assets.

NAnp.ec = Net accumulation of non-produced economic assets

NAnp.n = Net accumulation of non-produced natural assets.

### **1. Segregation and Elaboration of all Environment related Flows and Stocks of Traditional Accounts**

The segregation of all flows and stocks of assets related to environment permits the estimation of the total expenditure for the protection of the environment. A further objective of this segregation is to identify that part of the gross domestic product that reflects the costs necessary to compensate for the negative impacts of economic growth, that is, the defensive expenditures.

### **2. Linkage of Physical Resource Accounts with Monetary Environmental Accounts**

Physical resource accounts cover the total stock or reserves of natural resources and changes therein, even if those resources are not affected by the economic system. Thus natural resource accounts provide the physical counterpart of the monetary stock and flow accounts.

### **3. Assessment of Environmental Costs and Benefits**

(a) The use (depletion) of natural resources in production and final demand;

(b) The changes in environmental quality, resulting from pollution and other impacts of production, consumption and natural events, on the one hand, and environmental protection, on the other.

### **4. Accounting for the Maintenance of Tangible Wealth**

Capital formation is correspondingly changed into a broader concept of capital accumulation allowing for the use or consumption and discovery of environmental assets.

### **5. Elaboration and Measurement of Indicators of Environmentally Adjusted Product and Income**

The consideration of the costs of depletion of natural resources and changes in environmental quality permits the calculation of modified macro-economic aggregates, notably an environmentally adjusted net domestic product (EDP).

#### **Deep Ecology Principles**

- All life has value that supersedes economic utility.
- Biodiversity has aesthetic value.
- Human should never interfere with natural processes except to meet vital needs.
- Quality of life not the most toys really matters.
- Population is out of control.
- Humans have screwed up natural environment.

### Green Accounting Concept

- **Green accounting** is a management tool used for a variety of purposes, such as improving environmental performance, controlling costs, investing in "cleaner" technologies, developing "greener" processes and products, and informing decisions related to product mix, product retention, and product pricing.
- **Green Life Cycle** The life cycle of a product, process, system or facility begins with (up-front) acquisition to make it green to the (back-end) decommissioning which can include toxic removal and remediation. Life cycle is a more systematic and complete assessment of a firm long term costs.
- **Environmental Accounting** The identification, prioritization, quantification or qualification, and incorporation of environmental costs into business decisions Three types: Can be national income account (e.g. Gross Domestic Product and done by Generally Accepted Accounting Principles GAAP rules), financial accounting (e.g. reports used by lenders and investors), or managerial accounting (for management decisions). Here we look at managerial accounting tools for business decisions. Environmental or Green accounting affects the company bottom line (internal costs) and it encompasses costs to society (societal costs).
- **Green Management Accounting** uses data about environmental costs and performance for business decisions. It collects cost, production, inventory, and waste cost and performance data in the accounting system to use to plan, evaluate, and control.
- **TQEM** - Total Quality Environmental Management (TQEM) is a concept that enables companies to apply Total Quality Management practices to corporate environmental strategies. Companies that have already implemented TQM programs will find it relatively easy to expand the scope of TQM initiatives to satisfy the requirements of TQEM. Similar to TQM, TQEM supports continuous improvement of corporate environmental

### The Green Issues

- 4.5 billion years Earth sustainable -- took 350 years of EMPIRE to make to unsustain
- Before 1650 machines were low tech Industrial age from 1850 allowed 1 billion population to become 5.5 billion.
- Technology clearing rainforest a 2 football fields a second. 1 tree planted per 10 cut.
- By 2050 population will exceed 10 billion people all seeking cares, VCRs, and McDonalds.

### Green Accounting Measures of Cost

- Functionalist EA -Traditional/Conventional Methods. Functionalist EA systems do not track environmental costs and performance, and typically classify costs as:
  - A. Direct materials and labor,
  - B. Manufacturing or factory overhead (i.e., operating costs other than direct materials and labor).
  - C. sales.
  - D. General and administrative (G&A) overhead, and
  - E. Research & development (R&D).
- Green Environmental Accounting (EA) Method. Identify costs hidden, ignored, or misallocated by conventional methods.
  - A. Decreased use/waste of raw materials and supplies.
  - B. Decreased use/waste of utilities.
  - C. Reducing use of nonrenewable resources.
  - D. Reducing regulatory costs.
- Potentially Hidden Costs. Exhibit 2 collects several types of environmental costs that may be potentially hidden from managers.



GDP growth has become virtually every nation's default measure of progress. For India, its slowing GDP continues to make headlines and is the subject of much debate. Amid concerns from the Government, the business community and citizens on what impact external events such as the evolving European sovereign debt crisis may have on India's growth and jobs, it might also be the perfect time to take a moment and reflect on India's economic journey over the last decade, and ask whether the remarkable GDP growth has been a true measure of the nation's wealth and more significantly, its economic sustainability. Like all emerging and growing economies, India is facing a catch-22 situation: On the one hand, there is pressure to maintain GDP growth as this is the perceived foundation upon which the future economic security of its growing population is based, but conversely, India must also take into consideration the costs of development and not self-cannibalise its rich natural capital wealth and jeopardise the very future of the people it is trying to secure. Over-reliance on GDP as a measure of economic health can be misleading. As noted long ago by Robert F. Kennedy: "it measures everything, in short, except that which makes life worthwhile."

### **Environmental Loss**

GDP measures the value of output produced within a country over a certain time period. However, any depreciation measurements used, will account only for manmade capital and not the negative impact of growth on valuable natural capital, such as water, land, forests, biodiversity and the resulting negative effects on human health and welfare. For India, there is much to lose if action is not taken to preserve its natural environment. Its wide range of climate, geography and culture make it unique amongst biodiversity rich nations. Biodiversity is an incredibly valuable asset. It is the underlying foundation of the earth's ecosystems, the variety and abundance of species that inhabit them and the variability and diversity of genetic material found within them.

It provides numerous benefits, from food and fuel, to services such as freshwater, soil fertility, flood control, pollination of crops and carbon sequestration by forests that are crucial to both environmental and human well-being. To this end, biodiversity loss does not only mean the loss of species, but also the loss of ecosystem functioning. Although India's economic growth is to be encouraged, the double-digit GDP fixation is threatening India's biodiversity and ironically, its long-term growth and security. For example, despite India having set in place a remarkable Protected Areas network (4.8 per cent of the total geographical area of the country), it continues to be challenged by the loss of natural habitats. Over the course of the last fifty years, India has lost over half its forests, 40 per cent of its mangroves and a significant part of its wetlands. At least 40 species of plants and animals have become extinct with several hundred more endangered.

Livelihoods have been lost, poverty increased, food security threatened and health risks raised. Today, annual economic costs of air pollution, contaminated water, soil degradation, and deforestation are estimated to be close to 10 per cent of India's GDP.

### **Green Accounting**

Better macroeconomic and societal indicators are needed to reflect the contribution of biodiversity and ecosystem services to human well-being. One approach that is gaining momentum across the globe is "green accounting"

whereby national accounts are adjusted to include the value of nature's goods and services. Mr Jairam Ramesh, the former environment minister, advocated greening India's national accounts by 2015 and encouraged policy makers to recognise the trade-off between pursuing high growth economic policies against the extensive impact they could have on India's natural capital. One organisation that is already leading the way is the Green Indian States Trust (GIST) which, in 2003 unleashed a series of environmentally adjusted accounts under the Green Accounting for Indian States Project. According to their results, the loss of forest ecological services (i.e. soil erosion prevention, flood control and ground water augmentation) over three years (2001-03) due to declining dense forests was estimated at an astounding 1.1 per cent of GDP.

Breaking it down by States, they showed that for native forest-rich states such as Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir and Mizoram, the loss of these services was significantly high as a proportion of their net state domestic product (NSDP) — an estimated 6 per cent. For instance, if we look at Assam where forest cover decreased by 0.28 million hectares over three years, the value of effective flood control alone was at a loss of Rs. 800 million. Following up on the initial study, GIST performed another round of accounting for the period 2003-2007 and the results speak loudly. Although the FSI claims an increase in overall forest cover in India, native dense forest cover is still declining rapidly. According to GIST's latest results, the North-Eastern states continue to be most affected, particularly Arunachal Pradesh and Mizoram where the loss of forest ecological services is more than 12 per cent of their NSDP.

### **So how is India Responding?**

India is beginning to recognise that protecting biodiversity and ecosystems is a critical national priority. As a sign of its commitment, India will host the most important meeting relating to the United Nations Convention on Biological Diversity (CBD) — the 11th Conference of Parties (COP-11) — in Hyderabad, during October 8-19, 2012. The CBD framework emerged from the Rio Earth Summit of 1992 as the most comprehensive international agreement that aims to help protect and sustain biodiversity and ecosystems worldwide of which India is a signatory. As proud hosts to this important event, India has the opportunity to show the world that it can take the lead and deliver on its commitments to preserving and protecting biodiversity and the ecosystem services it supports. At least this is one step in the right direction.

### **India to have Green National Accounting System**

India expects to put in place in five years a system of green national accounting that would take into account the environmental costs of development and reflect the use of precious depletable natural resources in the process of generating national income. "In the last few months, I have tried to set the ball rolling so that by 2015 at least we can have a system of green national accounting," Union Minister of State for Environment and Forests Jairam Ramesh said here. He was delivering the 11th ISRO-JNCASR Satish Dhawan Memorial Lecture on "The two cultures revisited: Some reflections on the environment-development debate in India" at Jawaharlal Nehru Centre for Advanced Scientific Research. Ramesh noted that India currently does not have "green accounting". Economists estimate gross domestic product (GDP) as a broad measure of national income, while net domestic product (NDP) accounts for the use of physical capital. "But as yet, we have no generally accepted system to convert gross domestic product into green domestic product that would reflect the use up of precious depletable natural resources in the process of generating national income", he said. Economists all over the world have been at work for quite some time on developing a robust system of green national accounting but "we are not there as yet". "Ideally, if we can report both gross domestic product and green domestic product, we will get a better picture of the trade-offs involved in the process of economic growth", the Minister added.

### **World Bank Launches 'Green' National Accounts Initiative**

A new global partnership to help developing countries integrate the economics of ecosystems into national accounting systems has been launched by the World Bank. The alarming loss of biological diversity around the world is attributable to the lack of proper valuation of the ecosystems and the services they provide. The valuation and its integration into national accounts are expected to lead to better management of natural environments. According to Mr Robert B. Zoellick, President, World Bank Group, the natural wealth of nations



should be a capital asset valued in combination with its financial capital, manufactured capital and human capital. The national accounts should reflect the vital carbon storage services that forests provide and the coastal protection values that come from coral reefs and mangroves, he said at a Convention on Biological Diversity held in Nagoya, Japan. The first phase of the partnership to 'green' national accounts has been launched starting with India and Colombia, which will be in a group of six to 10 countries. A forthcoming World Bank Publication, titled '**The Changing Wealth of Nations**', states that the commercial value of farmlands, forests, minerals and energy worldwide is more than \$44 trillion, of which, the developing countries account for \$29 trillion. But, there is more value in the services provided by ecosystems such as forests, like hydrology regulation, soil retention and pollination.

### **United Nations Environment Programme**

The partnership initiative builds on 'The Economics of Ecosystems and Biodiversity' (TEEB) project of the United Nations Environment Programme (UNEP). It will include developing and developed countries, non-governmental organisations and the global organisation for legislators. During the initial five-year pilot period, the programme will focus on how countries can quantify the ecosystems and their services in terms of income and asset values; developing ways to incorporate these values into policies on wealth and economic growth; and evolve guidelines for implementation of the valuations worldwide, according to a World Bank report. The feasibility studies to identify priority ecosystems will start soon in India and Colombia, while many other countries in Africa, Asia, Latin America and Central Europe have evinced interest to become partners in the pilot programme.

### **India, Brazil Lead in Building Green Economies**

India and Brazil lead the number of countries who are willing to draw on findings from the three-year study project The Economics of Ecosystems and Biodiversity (TEEB) to make their economies more environment-friendly and effectively use the services of nature. The Brazilian and Indian governments are among those keen to use findings from The Economics of Ecosystems and Biodiversity (Teeb) project. Final results from the three-year study were unveiled here at the UN Convention on Biological Diversity meeting. Nature's services must be counted if they are to be valued, its leader said.

### **Green Trading**

It encompasses all forms of environmental financial trading, including carbon dioxide, sulfur dioxide (acid rain), nitrogen oxide (ozone), renewable energy credits, and energy efficiency (negawatts). All these emerging and established environmental financial markets have one thing in common, which is making the environment cleaner by reducing emissions, using clean technology or not using energy through the use of financial markets. Green Trading is one mechanism to accelerate change to a cleaner environment by using market-based incentives whose application is global.

Many current projects to advance green technology are recipients of funding generated through the voluntary carbon offset market in the United States. Though currently not required to do so, many companies are seeking ways to clean up their environmental impact. Bad energy practices that they cannot eliminate, they may offset; knowing that they are funding projects that are actively developing cleaner energy practices and increasing energy efficiency for the future. In November 2008, in a unique partnership initiated by Versus Carbon Neutral, 17 businesses of Atlanta's Virginia Highland came together to establish themselves as the first Carbon-Neutral Zone in the United States. Their efforts now fund the Valley Wood Carbon Sequestration Project, the first such project to be verified through the Chicago Climate Exchange

### **Green Auditing**

Environmental audits are tools that companies and other organizations use to identify or define their full range of environmental impacts and assess their operations' compliance with applicable laws and regulations, as well as with the expectations of their various stakeholders. They also serve as a means to identify opportunities to save money, enhance work quality, improve employee health and safety, reduce liabilities, and achieve other forms of

business value. Companies and organizations conduct environmental audits of their operations for a number of reasons: to ensure that their environmental performance is in compliance with applicable laws and regulations, to identify potential liabilities, to align environmental performance with their stated goals and strategy, to identify opportunities to reduce costs or increase revenue, to improve process and materials efficiency, and in response to stakeholder requests for increased disclosure. Auditing environmental performance, especially aspects of performance not required by law, is a relatively new phenomenon.

### **Green Politics**

Green politics is a political ideology that aims for the creation of an ecologically sustainable society rooted in environmentalism, social liberalism, and grassroots democracy. It began taking shape in the western world in the 1970s; since then Green parties have developed and established themselves in many countries across the globe, and have achieved some electoral success. The political term Green, a translation of the German Grün, was coined by die Grünen, a Green party formed in the late 1970s. The term political ecology is sometimes used in Europe and in academic circles, but in the latter has come to represent an interdisciplinary field of study.

### **Environmental Auditing**

The auditing standards of ISO 14000 provide general principles for environmental audits, guidelines for auditing environmental management systems (EMSs), and qualification criteria for environmental auditors. Individuals will be able to become certified auditors based on specific knowledge and experience in environmental operations, regulations, and technologies. The environmental audit is viewed as a critical component of an effective EMS and it will need to be performed on a regular basis to measure the conformance of an EMS to an organization's environmental policy.

### **Environmental Management Accounting**

EMA is the generation and analysis of both financial and non-financial information in order to support internal environmental management process. It is complementary to the conventional financial management accounting approach. With the aim to develop appropriate mechanism that assist in the identification and allocation of environment related cost (Bennett and jans 1998a). frost and wilm hurst(2000). The major areas for the application for EMA are:

- In the assessment of annual environmental costs/ expenditures.
- Product pricing
- Budgeting
- Investment appraisal
- Calculating Costs
- Savings of environmental projects, or setting quantified performance targets.

### **Green Accounting Concepts**

Green accounting is a management tool used for a variety of purposes, such as improving environmental performance, controlling costs, investing in "cleaner" technologies, developing "greener" processes and products, and informing decisions related to product mix, product retention, and product pricing (EPA 742-R-95-001).

### **Green Life Cycle**

The life cycle of a product, process, system or facility begins with (up-front) acquisition to make it green to the (back-end) decommissioning which can include toxic removal and remediation. Life cycle is a more systematic and complete assessment of a firm's long term costs. (See, for example, Paul E. Bailey, Full Cost Accounting for Life Cycle Costs -A Guide for Engineers and Financial Analysts, Environmental Finance (Spring 1991), pp.13-29).

**Environmental Accounting** - the identification, prioritization, quantification or qualification, and incorporation of environmental costs into business decisions (EPA742-R-97-003, May, 1997: 13). Three types: Can be national income account (e.g. Gross Domestic Product and done by Generally Accepted Accounting Principles GAAP

rules), financial accounting (e.g. reports used by lenders and investors), or managerial accounting (for management decisions). Here we look at managerial accounting tools for business decisions. Environmental or Green accounting affects the company's bottom line (internal costs) and it encompasses costs to society (societal costs).

Green Management Accounting uses data about environmental costs and performance for business decisions. It collects cost, production, inventory, and waste cost and performance data in the accounting system to use to plan, evaluate, and control.

**TQEM** - Total Quality Environmental Management (TQEM) is a concept that enables companies to apply Total Quality Management practices to corporate environmental strategies. Companies that have already implemented TQM programs will find it relatively easy to expand the scope of TQM initiatives to satisfy the requirements of TQEM. Similar to TQM, TQEM supports continuous improvement of corporate environmental performance. Sustainable Development: Achievable by Systems or by Management Philosophy? by Author J Oliver.

### Conclusion

To conclude, today's challenges of organization are to improve environmental performance come from many quarters. They arise from new legislation and government regulations, market pressures from the "green" consumer, interests of stakeholders such as investors and employees, and general public awareness focused by the activities of environmental groups and media reporting. It has become essential for companies to increase their responsibility regarding all aspects of the environment and to adapt existing practices to cause less environmental damage.

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