Sustainable Development Strategy – the Key of Environmental and Organizational Management

GABRIELA POPA
Department of Management
Valahia University from Targoviste
Bd. Carol I, nr. 2, Târgovişte
ROMANIA

ION STEGAROIU
Department of Management
Valahia University from Targoviste
Bd. Carol I, nr. 2, Târgovişte
ROMANIA

VALENTINA-OFELIA ROBESCU
Department of Environmental Engineering
Valahia University from Targoviste
Bd. Carol I, nr. 2, Târgovişte
ROMANIA

IONUT BARBU
Department of Management
Valahia University from Targoviste
Bd. Carol I, nr. 2, Târgovişte
ROMANIA

VALENTIN ILIE
Department of Management
Valahia University from Targoviste
Bd. Carol I, nr. 2, Târgovişte
ROMANIA

gabriela_valahia@yahoo.com, stegaroiuion@yahoo.com, robescuo@yahoo.com, barbuionut88@yahoo.com, ilvaimpex@yahoo.com

Abstract: The overall aim of the EU Sustainable Development Strategy is to identify and develop actions to enable the EU to achieve a continuous long-term improvement of quality of life through the creation of sustainable communities able to manage and use resources efficiently, able to tap the ecological and social innovation potential of the economy and in the end able to ensure prosperity, environmental protection and social cohesion. The strategy sets overall objectives and concrete actions for seven key priority challenges for the coming period until 2010, many of which are predominantly environmental: climate change and clean energy, sustainable transport, sustainable consumption & production, conservation and management of natural resources, public health, social inclusion, demography and migration, global poverty and sustainable development challenges. A new strategic significance to the term "sustainabilit."is no longer confined to the economic realm; sustainability now embraces a broad spectrum of company characteristics related to social and environmental responsibility. This shift in thinking is due to growing recognition among business executives that profitability alone is inadequate as a measure of success, and that many of the nonfinancial concerns associated with sustainability are fundamental drivers of long-term shareholder value. For example, mounting concerns over the ability to curb industrial emissions of CO2 and other global warming gases are only the tip of this proverbial iceberg. Voluntary initiatives are certainly preferable to resistance or indifference, which would invite an increasingly onerous regulatory regime that limits industrial growth through economic or technological constraints. Responding to the challenges of sustainability requires insight into the characteristics of a sustainable system, and a fundamental rethinking of how all industrial products and processes are designed, built, operated, and evaluated. A technical challenge, but it is common to assert that resource utilization should not deplete existing capital, resources should not be used at a rate faster than the rate of replenishment, and that waste generation should not exceed the carrying capacity of the surrounding ecosystem.

Key-Words: - sustainable development strategy, climate change, sustainable transport, consumption & production, management

1 Introduction

Ecologists and economists are increasingly in agreement that ecological and economic systems are linked and that these systems ought to be viewed as one system. Perhaps because this recognition has been rather recent, neither ecologists nor economists have analyzed the transient behavior of jointly determined ecological-economic systems that are subject to perturbations arising from natural events and the continuance of economic activities. Consequently, the objective of this paper is to construct a metric that can be used to quantify the short term response of ecological-economic systems to perturbations. This metric is a non-asymptotic measure of an ecological-economic system's resilience.

The Action Impact Matrix (AIM) is a multi-stakeholder consultative approach that facilitates the integration of the social, economic and environmental dimensions of development, identifies and prioritizes key interactions among them, and determines policies and projects that make development more sustainable. The method has been widely used since the early 1990s, and was originally presented as part of the sustainomics framework, at the 1992 Rio Earth Summit. Initially, it was used to integrate a range of environmental and social concerns into development planning, and subsequently, adapted to address broader issues like climate change.

Typically, the AIM is used as a strategic tool to better understand inter-linkages among critical elements, at the country-specific level:

1. major national development policies and goals.
2. key sustainable development vulnerabilities and issues – e.g., relating to economic sectors, ecological systems, and social factors.

2 Sustainable Development Assessment (SDA)

Sustainable development assessment (SDA) is an overarching methodology (with many components), which is used in evaluating investment projects (as well as programs and policies), to ensure balanced analysis of both development and sustainability concerns. The ‘economic’ component of SDA is based on conventional economic and financial analysis (including cost benefit analysis). The other two key components are environmental and social assessment (EA and SA). However, many other more specialized types of assessments may be included within an integrated SDA.

Economic, environmental and social analyses need to be integrated and harmonized within SDA. Historically, Environmental Assessments (EA) and Social Assessments (SA) had developed as separate processes. However, a full appreciation of all impacts requires a thorough understanding of all biophysical and social changes invoked as a result of planned interventions. Biophysical impacts have social impacts, and social changes also affect the biophysical environment. Recent work attempts to integrate biophysical and social impacts using a conceptual framework which is consistent with sustainomics, and this has led to a better understanding of the full extent of human impacts as well as the impact pathways that result from such interventions.

Sustainomics seeks to provide a comprehensive, practical framework for making present and future development efforts more sustainable. Sustainable development has become well accepted worldwide, following the 1992 Earth Summit in Rio de Janeiro, and the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg. World decision makers are now looking at this approach to address many critical policy issues.

The World Commission on Environment and Development (WCED 1987) defined sustainable development as “development which meets the needs of the present, without compromising the ability of future generations to meet their own needs." Among many subsequent definitions, the sustainable development triangle in Figure 1 shows one widely-accepted concept proposed by Munasinghe, at the 1992 Earth Summit in Rio. It encompasses three major perspectives—economic, social, and environmental.

Historically, the development of the industrialized world focused on material production. Not surprisingly, most industrialized and developing nations have pursued the economic goal of increasing output and growth during the twentieth century. Thus, traditional development was strongly associated with economic growth, with some social aspects as well (see the discussion on poverty and equity, below). By the early 1960s the lack of 'trickle-down' benefits to the growing numbers of poor in developing countries, resulted in greater efforts to improve income distribution directly. Consequently, the development paradigm shifted towards equitable growth, where social (distributional) objectives, especially poverty alleviation, were recognized to be as important as economic efficiency. By the early 1980s, a large body of evidence had accumulated that environmental degradation was a major barrier to development, and new proactive safeguards were introduced (such as the environmental assessments). Thus, protection of the environment became the third major element of sustainable development.

Sustainomics has been described by Munasinghe (1992) as "a transdisciplinary, integrative, comprehensive, balanced, heuristic and practical framework for making development more sustainable". It draws on the following basic principles and methods.

2.1 Making development more sustainable (MDMS)

The step-by-step approach of "making development more sustainable" (MDMS) becomes the prime objective, while sustainable development is defined as a process (rather than an end point). Since the precise definition of sustainable development remains an elusive and perhaps unreachable goal, a less ambitious strategy that merely seeks to make development more sustainable does offer greater promise. Such a gradient-based method is more practical and permits us to address urgent priorities without delay, because many unsustainable activities are easier to recognize and eliminate. Although MDMS is incremental, it does not imply any limitation in scope (e.g., restricted time horizon or geographic area – see item (c) below). While pursuing the MDMS approach, we also follow a parallel track by continuing our efforts to better define the ultimate goal of sustainable development. Finally, MDMS encourages us to keep future options open and seek robust strategies which meet multiple contingencies and increase resilience.

2.2 Sustainable development triangle and balanced viewpoint

Sustainable development requires balanced and integrated analysis from three main perspectives: social, economic, and environmental (Figure 1). Each viewpoint (represented by a vertex) corresponds to a domain (and system) that has its own distinct driving forces and objectives. The economic view is geared towards improving human welfare, primarily through increases in the consumption of goods and services. The environmental domain focuses on protection of the integrity and resilience of ecological systems. The social domain emphasizes the enrichment of human relationships and achievement of individual and group aspirations. The interactions among domains (represented by the sides) are also important to ensure balanced assessment of trade-offs and synergies that might exist among the three dimensions. Issues like poverty may be placed in the center of the triangle to re-emphasize that they are linked to all three dimensions.

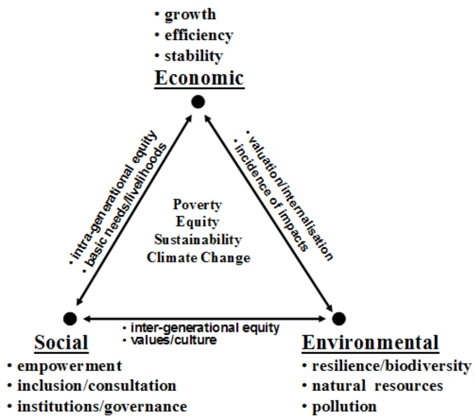

Figure 1: Sustainable development triangle – key elements and interconnections (corners, sides, center). (Source: adapted from Munasinghe 1992)

2.3 Transcending conventional boundaries for better integration

The analysis transcends conventional boundaries imposed by discipline, space, time, stakeholder viewpoints, and operationality. The scope is broadened and extended in all domains, to ensure a comprehensive view. Trans-disciplinary analysis must cover economics, social science and ecology, as well as many other disciplines—since sustainable development itself involves every aspect of human activity, including complex interactions among socioeconomic, ecological and physical systems. Spatial analysis must range from the global to the very local, while the time horizon may extend to decades or centuries. Participation of all stakeholders (including government, private sector and civil society) through inclusion, empowerment and consultation, is important. The analysis needs to encompass the full operational cycle from data gathering to practical policy implementation and monitoring of outcomes. Applying the principle of subsidiarity will make overall governance more effective.

2.4 Elements of Sustainable Development - Economic Aspects

Economic progress is often evaluated in terms of welfare (or utility) – measured as willingness to pay for goods and services consumed. Thus, many economic policies typically seek to enhance income, and induce more efficient production and consumption of goods and services. The stability of prices and employment are among other important objectives.

Economic efficiency helps maximize income. It is measured against the ideal of Pareto optimality, which encourages actions that will improve the welfare of at least one individual without worsening the situation of anyone else. The idealized, perfectly competitive economy is an important (Pareto optimal) benchmark, where (efficient) market prices play a key role in both allocating productive resources to maximize output, and ensuring optimal consumption choices which maximize consumer utility. If significant economic distortions are present, appropriate shadow prices may be used. The well-known cost-benefit criterion accepts all projects whose net benefits are positive (i.e., aggregate benefits exceed costs). It is based on the weaker ‘quasi’ Pareto condition, which assumes that such net benefits could be redistributed from potential gainers to losers—leaving no one worse off than before. More generally, interpersonal comparisons of welfare are fraught with difficulty – both within and across nations, and over time (e.g., the value of human life).

3 Environmental Aspects

Development in the environmental sense is a recent concern relating to the need to manage scarce natural resources in a prudent manner – because human welfare ultimately depends on ecological services. Ignoring safe ecological limits could undermine long-run prospects for development. Recent literature covers links among environment, economy, growth and sustainable development.

Environmental sustainability focuses on overall viability and normal functioning of natural systems. For ecological systems, sustainability is defined by a comprehensive, multiscale, dynamic, hierarchical measure of resilience, vigor and organization. Resilience is the ability of ecosystems to persist despite external shocks, i.e., the amount of disruption that will cause an ecosystem to switch from one system state to another. An ecosystem state is defined by its internal structure and set of mutually re-inforcing processes. Vigor is associated with the primary productivity or growth of an ecosystem. Organization depends on both complexity and structure of the system. For example, a multicellular organism like a human being is more highly organized than a single-celled amoeba. Higher states of organization imply lower levels of entropy. Thus, the second law of thermodynamics requires that sustainability of complex organisms and systems depend on the use of low-entropy energy derived from their environment, which is returned as (less useful) high-entropy energy.

4 Conclusion

Natural resource degradation, pollution and loss of biodiversity are detrimental because they reduce resilience, increase vulnerability, and undermine system health. The notions of a safe threshold and carrying capacity are important, to avoid catastrophic ecosystem collapse. Sustainability may be also linked to the normal functioning and longevity of a nested hierarchy of ecological and socioeconomic systems, ordered according to scale – e.g., a human community would consist of many individuals, who are themselves composed of a large number of discrete cells. Gunderson and Holling (2001) use the term ‘panarchy’ to denote such a hierarchy of systems and their adaptive cycles across scales. A system at a given level is able to operate in its stable (sustainable) mode, because it is protected by slower and more conservative changes in the super-system above it, while being simultaneously invigorated and energized by faster changes taking place in sub-systems below it.

References:

[1] Gunderson, L., and Holling, C.S., *Panarchy: understanding transformations in human and*

natural systems, Island Press, New York, NY, USA, 2001

[2] Hicks, J., *Value and Capital, 2nd edition*, Oxford University Press, Oxford, UK, 1964

[3] Holling, C.S*., Resilience and stability of ecological systems*, Annual Review of Ecology and Systematics, Vol. 4, 1973

[4] Munasinghe, M., *Environmental Economics and Sustainable Development*, Paper presented at the UN Earth Summit, Rio de Janeiro, and reprinted by the World Bank, Washington D.C., 1992

[5] Munasinghe, M., O. Sunkel and C. de Miguel (Eds.), *The Sustainability of Long Term Growth,* Edward Elgar Publ., London, UK, 2001