

ECO-EFFICIENCY AND ITS OPPORTUNITY IN A WORLD IN CRISIS

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Abstract:

The paper argues for the necessity of maintaining the interest for the future of the planet in a context of crisis, when priorities tend to change. The main issue is eco-efficiency and its importance for the sustainable development of humanity. First, it is explained how ecology and economic efficiency can interfere and then the paper makes a literature review emphasizing the definition and the principles that the concept of eco-efficiency is based on. It also stresses some weak points of the concept, the importance of its integration into a larger sphere of interest and the fact that sustainable approach of the economy may prevent future crisis.

Keywords: crisis, ecology, economic efficiency, eco-efficiency

JEL Classification: Q01, Q51, Q57

Introduction

Environmental problems of our world are already old news. So old, that we succeed to live with it and take it as a fact.

Until late summer, the penchant to be green was everywhere. We saw it in the pronouncements of governments, in the investments of venture capitalists, in the product introductions of multinational companies, and especially in the media. [Lifset, R., (2009:1)] But the question is if this high level of attention can survive a global economic recession?

The truth is that although theoreticians and practitioners develop every day concepts and methods meant to reduce the environmental burden, the crisis that we face these days seems to have downturned everyone's interest towards financial issues. Our planet's air is still polluted, but we talk about real estates, the water becomes dirtier every day, but we are worried about the tax increase. It looks like present problems tend to prevail on the ones that affect the long-term evolution of humanity, but in fact, it is not clear at this moment that the enthusiasm for things green has completely disappeared.

In this context, it is high time to put the accent on concepts and principles which, put into practice, can assure our planets future. One of those concepts is eco – efficiency. The present article only tries to make a literature review regarding the concept of eco-efficiency and thus to become the basis for a deeper analysis of the concept.

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The present crisis should not hinder us from preventing deeper crisis that may occur in the future and that may endanger the very existence of human beings.

1. About ecology and economic efficiency

It is not the point here to define ecology and economic efficiency, but to show how the two are connected. However, the discussion starts from their definitions. Ecology, on one hand, can be defined as the interdisciplinary scientific study of the distribution and abundance of organisms and the interactions that determine distribution and abundance [Begon, M., et al., (2006: xi)]. On the other hand, talking about economic efficiency, we talk about using the resources in such a way as to maximize the production of goods and services.

Connecting one to another consists in showing how we can exploit the environment in order to fulfill our need without affecting its ability to reproduce and regenerate itself. Eco-efficiency is, along with other concepts³ a form of representing into practice this very idea. The main feature of the concept is that it links the business concept of creation value to the environmental concerns. The necessity of such a notion came from the present limits imposed to growth by resources, a truth that cannot be denied.

2. Eco-efficiency – the definition

The concept received several definitions, some more philosophical than others.

The most used definition is the one given by the World Business Council for Sustainable Development which states that eco-efficiency is the situation “achieved by the delivery of competitively-priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life-cycle to a level at least in line with the earth’s estimated carrying capacity”. [Schmidheiny and WBCSD, (1992)]

In this view, eco-efficiency is the concept which can help companies, individuals, governments or other organizations become more sustainable. It brings together the essential ingredients – economic and ecological progress – which are necessary for economic prosperity to increase with more efficient use of resources and lower emissions of substances that can have adverse environmental consequences. [Verfaillie, H.A. et al., (2000:7)]

In fewer words than above, eco-efficiency can be defined as “creating more value with less impact” or “doing more with less” [WBCSD, (2000:9)]. An interpretation of this is the proof that eco-efficiency is a synthesis of both economic and environmental efficiency, and the prefix *eco* stands for both economy and ecology.

OECD also gave a definition of the concept in question and said that eco-efficiency is the “efficiency with which ecological resources are used to meet human needs” and it can be expressed as a “ratio of an output (the value of products and

³Such as cleaner production, industrial ecology or eco-industrial parks.

services produced by a firm, sector or economy as a whole) divided by the input (the sum of environmental pressures generated by the firm, the sector or the economy)” [WBCSD, (2000:9)].

The European Environment Agency sustains that eco-efficiency could come from decoupling resource use and pollutant release from economic development so that we could have “more welfare from less nature”, or “increasing the productivity of natural resources” so that “more services and well-being is produced using less raw materials and energy”. [<http://www.eco-efficient.net/teh.html>] The Agency sees this concept as a part of a broader concept called sustainable production and consumption. This concept involves changes in production and consumption patterns that lead to sustainable use of natural resources. Businesses play a key role, both as consumers of raw materials and as producers of goods and services.

Other definitions present this concept as an answer to the need of sustainable development to employ quantitative tools and related respective goals compliant with policies or as the primary way in which business can contribute to the concept of sustainable development [WBCSD, (1996:4)]. The core of this last statement is that eco-efficiency can appear under forms of development or progress that meet the needs of the present without compromising the ability of future generations to meet their own needs (as directly connected to the concept of sustainable development).

The complexity and the multidisciplinary approach of the concept made some specialists see eco-efficiency as a management philosophy [WBCSD, 1996:4] and others as a “tool, primarily developed for production processes and firms, where value-added and environmental impact are reported mostly at the corporate scale” [Bohne, R.A et al., (2008:53)].

3. Eco-efficiency – the principles

The question that can be asked after understanding the definition is how we can recognize an eco-efficient business or development. The WBCSD [WBCSD, (1996:6)] identified seven elements that indicate such a case:

- the reduction of material intensity of goods and services;
- the reduction of the energy intensity of goods and services;
- the reduction of toxic dispersion;
- the enhancement of material recyclability;
- the maximization of sustainable use of renewable resources;
- the extension of product durability;
- the increase of the service intensity of goods and services.

It is easy to notice that all of the above elements are qualitative (intensive) and conduct to the opinion that by promoting change towards *sustainable* growth, eco-efficiency enables a company’s business to grow in a qualitative way (by adding value), while reducing adverse environmental impact [WBCSD, (1996:5)].

The seven elements may be thought of as being concerned with three broad objectives [WBCSD, (2000:15)]:

- *Reducing the consumption of resources.* This includes minimizing the use of energy, materials, water and land, enhancing recyclability and product durability, and closing material loops.

- *Reducing the impact on nature.* This includes minimizing air emissions, water discharges, waste disposal and the dispersion of toxic substances, as well as fostering the sustainable use of renewable resources.

- *Increasing product or service value.* This means providing more benefits to customers through product functionality, flexibility and modularity, providing additional services (such as maintenance, upgrading and exchange services) and focusing on selling the functional needs that customers actually

A very good observation regarding the concept is that, however, eco-efficiency is not sufficient by itself because it integrates only two of sustainability's three elements, economy and ecology, while leaving the third, social progress, outside its embrace. On the other hand, the role of business is to satisfy human needs and simultaneously it expects to be rewarded with profits for doing so. But responsible businesses should also aim to improve quality of life and this is very much part of what it means to become more sustainable. The challenge is to do this without increasing the overall use of resources and having an adverse effect on the environment [WBCSD, (2000:13)].

One of the issues not yet entirely resolved is how to measure eco-efficiency. In general, efficiency expresses a relationship between positive and negative effects of a decision [Moller, A., Schaltegger, S., (2005:78)].

All specialists agree that the measuring principle is the ratio between the product or service value and the environmental influence of the product or service. To measure eco-efficiency, both product or service value and environmental influence must be quantified [Magerholm, A., Micleson, O., (2002:4)].

Product or service value can be measured in different terms: as quantity of produced goods, as a monetary value or as the fulfillment of a need or function. Verfaillie and Bidwell (2000) are recommending two indicators for product or service value that they claim to be applicable for all kinds of companies: *the quantity of goods or services produced or provided to customers* and *the net sales*.

Similar, they are recommending five generally applicable indicators for measuring environmental influence:

- energy consumption
- materials consumption
- water consumption
- greenhouse gas emissions
- ozone depleting substance emissions

These indicators must not be regarded as a complete list. Different companies must identify what environmental aspects that are most important for their activities and used this to develop environmental performance indicators through a bottom-up approach. In addition it is appropriate to make distinction between functional eco-

efficiency and technical eco-efficiency (in question). To make a parallel, while functional eco-efficiency gives a measure on how well a system performs in relation to a defined target, technical eco-efficiency on gives a measure on how well a specified system uses the resources put into the system.

4. Some weak points

The concept of eco-efficiency has not reached its limits. There are specialists not yet convinced about its necessity or opportunity. Some claim that a relative increase in company eco-efficiency is not enough. Instead they demand an absolute cutback in resource consumption. This misses a key point about eco-efficiency: it is not limited to achieving relative improvements in a company's use of resources and its prevention of pollution; it is much more about innovation and the need for change toward functional needs and service intensity, to contribute to de-coupling growth from resources. [WBCSD, (2000:12)]

On the other hand it is true that improving eco-efficiency does not, however, lead automatically to sustainability. Simply improving in relative terms (value per impact) may still mean an overall increase in an activity's impact and create unacceptable harm or irreversible damage.

Despite all the benefits of EE, it is now well recognized that economic efficiency improvements can result in price reductions that encourage increased consumption. In the context of environmental sustainability, the phenomenon of improved efficiency on an intensive (or per product) basis creating new demands for products that adversely impact the environment on an extensive basis [Korhonen, J., Seager, T.P., (2008: 411)]

There is still work to be done regarding the indicators that can be used in order to measure the eco-efficiency. The reason is simple: eco-efficiency information complements financial statements in order to enhance the quality of decision-making. The information is useful to a wide range of users in making economically and environmentally sound decisions and in evaluating the impact of their decisions. Such information is also necessary for the accountability of management for the use of natural resources entrusted to it. Eco-efficiency data can also be used to forecast the impact of current and upcoming environmental issues on future financial performance. Information about environmental performance versus financial performance is useful in determining the ability of an enterprise to adapt to changes in the environment in which it operates. [UNCTAD, (2004:8; 9)]

Conclusion

Maybe a more conclusive argument in behalf of eco-efficiency would be done if the concept is related to others, such as industrial ecology. As a fact, the aim of this article is to set a departure point for a theoretical integration of it into a larger sphere of interest and to clarify the extent and the main limits of eco-efficiency.

We are like blinded these days because we seem unable to see beyond the financial difficulties of the moment. We are likely to make huge mistakes, such as

redirecting investments funds from environment protection and clean technology development towards financial market difficulties or as reducing funds from research fields and using them for social protection. What better social protection can we conduct on long term than investing into a cleaner planet? Eco-efficiency, along with other concepts, should not be put aside but brought in front of politicians and economic decision makers. It is the only way to achieve the higher purpose: the long and prosperous existence of our planet.

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