*Commentary Article*

# General understanding of eco-efficiency.

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## Introduction

Eco-efficiency is a concept that measures the added value of a product or service relative to its environment impacts. It was conceptualized in 1992 by the World Bank's Doing Business Council. The concept was then endorsed by the private sector in the 1992 Earth Summit [1].

Eco-efficiency is a concept that measures the added value of a product or service relative to its environment impacts. It was conceptualized in 1992 by the World Bank's Doing Business Council. The concept was then endorsed by the private sector in the 1992 Earth Summit. Although eco-efficiency is a rather new method, the idea is not. In the early 1970s Paul R. Ehrlich and John Holdren developed the lettering formula I=PAT to describe the impact of human activity on the environment. Furthermore, the concept of eco-efficiency was first described by McIntyre and Thornton in 1978, but it wasn't until 1992, when the term was formally coined and widely publicized by Stephan Schmidheiny in Changing Course [2]. Schmidheiny set out "to change the perception of industry as being part of the problem of environmental degradation to the reality of its becoming part-a key part-of the solution for sustainability and global development"[3]. The main drivers within the early segment of eco-efficiency's development have been the "forward-looking managers and thinkers in 3M and Dow"[4]. It becomes their involvement that catapulted eco-performance from a great concept to a practicable idea. The outcomes of the WBCSD's paintings creating the "linkage between environmental overall performance and the bottom line become posted in 1997 in its report Environmental performance and Shareholder fee. according to the WBCSD definition, eco-efficiency is achieved through the shipping of "cost-effective goods and services that fulfil human wishes and produce great of life at the same time as progressively lowering environmental impacts of goods and aid intensity in the course of the entire existence-cycle to a degree at the least in line with the Earth's estimated wearing capacity"[2].

There are two systems used for calculating the eco-efficiency of various products and services. The first is the calculation method of BASF, while the second is the method of the Delft University of Science. Eco-efficiency is also a valuable tool because it can be used by different types of companies and can meet different national and international regulations. It can also be adapted to fit the varying needs of different firms. Numerous national and international organizations have also recognized the importance of eco-efficiency in their operations. Changing the way we think about and produce products and services can help improve the environment and lower prices for consumers. It also creates new products and services that people want to buy [3].

Due to the increasing number of industries adopting sustainability initiatives, the concept of measurement has become the primary tool for achieving continuous improvement. The various facts of sustainability are being studied to develop a proper framework, the steps are as follows [2-4]:

- **Defining the system-** A proper and definite system is defined. A proper system boundary is drawn for further analysis.
- **Elements of the system-** The whole input, output of materials, emissions, energy and other auxiliary elements are properly analysed. The working conditions, process parameters and characteristics are defined in this step.
- **Indicators selection-** The indicators is selected of which measurement has to be done. This forms the metric for this system whose analysis is done in the further steps.
- **Assessment and Measurement-** Proper assessing tools are used and tests or experiments are performed for the pre-defined indicators to give a value for the indicators measurement.
- **Analysis and reviewing the results-** Once the results have been obtained, proper analysis and interpretation is done and tools are used to improve and revise the processes present in the system.

## Conclusion

The concept of sustainability measurement is the basis for the informed management and effective use of resources related to environmental, social and economic issues. Numerous metrics are used to measure this complexity. Some of the widely used measures for assessing sustainable development are the Triple-Bottom Line Accounting, Corporate Sustainability Reports, and the World Sustainability Society. An alternative approach is called Circle of Sustainability. There are two related concepts to consider when it comes to assessing the mode of life of humans: planetary boundaries and the ecological footprint. If the planetary boundaries are not crossed, then the mode of life is considered sustainable.

## References

1. Huppes G, Mansanobu I. Quantified eco-efficiency: an introduction with applications. Springer LDN. 2007;22:369-73.
2. McIntyre R, Zeng A, Thornton, J, et al. On the environmental efficiency of economic systems. Soviet studies. 2008;30:173-192.
3. Yadong, Y. Eco-efficiency trends in china, 1978-2010:Decoupling environmental pressure from economic growth. ECOL Indicator. 2013;24:177-184.

4. Guenster, N, Bauer, R, Derwall, J, et al. The economic value of corporate eco-efficiency. Eur Fin Mgmt. 2011;17:679-704.

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