

SUSTAINABLE DEVELOPMENT MACRO INDICATORS

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ABSTRACT

Few concepts appear to have captured the public and political imagination more than that of 'sustainable development'. The concept is intended to embrace the idea of ensuring that future generations inherit an Earth which will support their livelihoods in such a way that they are no worse off than generations today. GDP shortcomings, as an index for measuring socio-economic progress, feature again prominently in the public debate, following years of benign neglect. Such criticisms are almost as old as the concept itself and national accountants have repeatedly warned about limitations of GDP as a welfare indicator. The list of alternative indicators is long; the focus of the article is on six widely known measures. The main dimensions of these measures are different (economic, social and environmental), but only a measure that is balanced in the three dimension can satisfy the requirements about an ideal index. Even, the famous Stiglitz-commission could not solve the problem, but to conceive 12 recommendations that may transform thinking.

Keywords: Stiglitz-report, measures, SDI, HDI, ESI

INTRODUCTION

GDP shortcomings, as an index for measuring socio-economic progress, feature again prominently in the public debate, following years of benign neglect. Such criticisms are almost as old as the concept itself and national accountants have repeatedly warned about limitations of GDP as a welfare indicator.

“Indicators of sustainable development need to be developed to provide solid bases for decision-making at all levels and to contribute to a self-regulating sustainability of integrated environment and development systems.” United Nations (1992, Agenda 21, Chapter 40.4)

Increasing concerns have been raised since a long time about the adequacy of current measures of economic performance, in particular those based on GDP figures. Moreover, there are broader concerns about the relevance of these figures as measures of societal well-being, as well as measures of economic, environmental, and social sustainability.

Reflecting these concerns, President Sarkozy has decided to create this Commission, to look at the entire range of issues. The Commission on the measurement of economic performance and social progress has been created at the beginning of 2008 on French government's initiative. Its aim was to identify the limits of GDP as an indicator of economic performance and social progress, to consider additional information required for the production of a more relevant picture, to discuss how to present this information in the most appropriate way, and to check the feasibility of measurement tools proposed by the Commission.

The Commission was chaired by Professor Joseph E. Stiglitz, Columbia University. Professor Amartya Sen, Harvard University, was Chair Adviser. Professor Jean-Paul Fitoussi, Institut d'Etudes Politiques de Paris, President of the Observatoire Français des Conjonctures Economiques (OFCE), was Coordinator of the Commission. Members of the Commission are renowned experts from universities, governmental and intergovernmental

organizations, in several countries (USA, France, United Kingdom, and India). Its final report has been made public on 14 September 2009.

THE CHARACTERISTICS OF GOOD INDICATORS

As Meadows (1998) summaries, a good indicator, measure, or index should fulfill at least 15 requirements:

Clear in value: no uncertainty about which direction is good and which is bad.

Clear in content: easily understandable, with units that make sense, expressed in imaginable, not eyeglazing, numbers.

Compelling: interesting, exciting, suggestive or effective action.

Policy relevant: for all stakeholders in the system, including the least powerful.

Feasible: measurable at reasonable cost.

Sufficient: not too much information to comprehend, not too little to give an adequate picture of the situation.

Timely: compliable without long delays.

Appropriate in scale: not over or under-aggregated.

Democratic: people should have input to indicator choice and have access to results.

Supplementary: should include what people can't measure for themselves (such as radioactive emissions, or satellite imagery).

Participatory: should make use of what people can measure for themselves (such as river water quality or local biodiversity) and compile it to provide geographic or time overviews

Hierarchical: so a user can delve down to details if desired but can also get the general message quickly.

Physical: money and prices are noisy, inflatable, slippery, and unstably exchangeable.

Since sustainable development is to a large extent concerned with physical things — food, water, pollutants, forests, houses, health — it's best wherever possible to measure it in physical units. (Tons of oil, not dollars' worth of oil; years of healthy life, not expenditures on health care.)

Leading: so they can provide information in time to act on it.

Tentative: up for discussion, learning, and change.

THE GROSS DOMESTIC PRODUCT

The Gross Domestic Product (GDP) is the sum of the gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. (United Nations, 2009) However, this measure is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

It is easy to see why GDP is inadequate as an index of sustainable development. An economy's productive base will shrink if its stock of capital assets depreciates, and its institutions are not able to improve sufficiently to compensate for that depreciation. The term GDP is an acronym for *gross* domestic product. The word "gross" means that GDP ignores the depreciation of capital assets. It is certainly possible for a country's productive base to grow while its GDP increases, which is no doubt a path of economic development we all would like to follow. However, it is also possible for a country's productive base to *shrink* during a period when GDP grows. The problem is that no one would notice the shrinking if everyone's eyes were riveted on gross domestic product. If the productive base

continues to shrink, economic growth will, sooner or later, stop and reverse sign. The standard of living will then decline, but no one would have suspected that a fall was forthcoming. Thus, growth in GDP per head can encourage us to think that all is well when in fact it is not. (Dasgupta, 2007)

England (1997) reviews the needs that have come forward from these different critiques on the GDP as a welfare measure: it is necessary ...

- to specify the distinction between intermediate and final output
- to distinguish between 'goods' and 'bads' in consumption expenditures
- to account for asset depreciation in a comprehensive manner, including both manufactured and natural assets
- to divide net output between consumption and capital accumulation
- to take account of non-marketed goods and services (e.g. household services)
- to take account of the welfare implications of various forms of social inequality

ALTERNATIVE INDICATORS

There is not a collective consensus of what sustainability means and of what constitutes sustainable development. The development solution to global environmental problems while described under one name 'sustainable development' is understood and defined in different ways. By Defra National Statistics (2010), sustainable development is about enabling people to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations. It combines important social, environmental and economic goals.

Nonetheless, interest in alternatives or complements to GDP resumed progressively during the 90s. Emblematic of this new trend was the creation of the United Nations « human development index » (HDI) that combines GDP with measures of health (proxied by life expectancy) and educational achievement. This very simple index only synthesizes a limited amount of information. It is also more relevant for comparisons of developing countries than for comparisons of more advanced countries but it remains one of the few indexes that are regularly compiled and widely disseminated by international organizations to allow systematic cross-country comparisons. It also played a large role in raising the profile of important non-economic dimensions of the quality of life.

The ecological footprint (EF) measures the demands humans place on nature. It provides a quantitative assessment of the biologically productive area (the amount of nature) required to produce the necessary resources (food, energy, and materials) and to absorb the wastes of a given population. If the human load exceeds the productive capacity of the biosphere then consumption patterns are clearly not sustainable given current circumstances. The human load can vary depending on population, technology, and eco-efficiency. The ecological footprint therefore, ultimately measures the sustainability of human consumption patterns. (Wilson et al, 2007)

The surplus biocapacity (SB) measure also assesses the sustainability of consumption patterns. Specifically, the SB is the difference between a country's ecological footprint and its domestic production area of ecologically productive land and water.

The environmental sustainability index (ESI) is a composite index targeting environmental, socio-economic, and institutional indicators as a means to assess sustainability. The ESI incorporates 20 indicators, each of which combines two to eight variables, for a total of 68 underlying datasets. The core components of the ESI include: environmental systems,

reducing stresses, reducing human vulnerability, social and institutional capacity, and global stewardship.

The wellbeing index (WI) is a composite index evaluating human and ecosystem wellbeing. This metric is based upon the philosophy that assessing the combination of these two elements offers insight into how close a country is to becoming sustainable. The WI is an equally weighted average of the human wellbeing index (HWI) and ecosystem wellbeing index (EWI). Both consist of five dimensions, the former comprising health and population, household and national wealth, knowledge and culture, community, and equity, while the latter consists of land, water, air, species and genes, and resource use (Prescott-Allen, 2001).

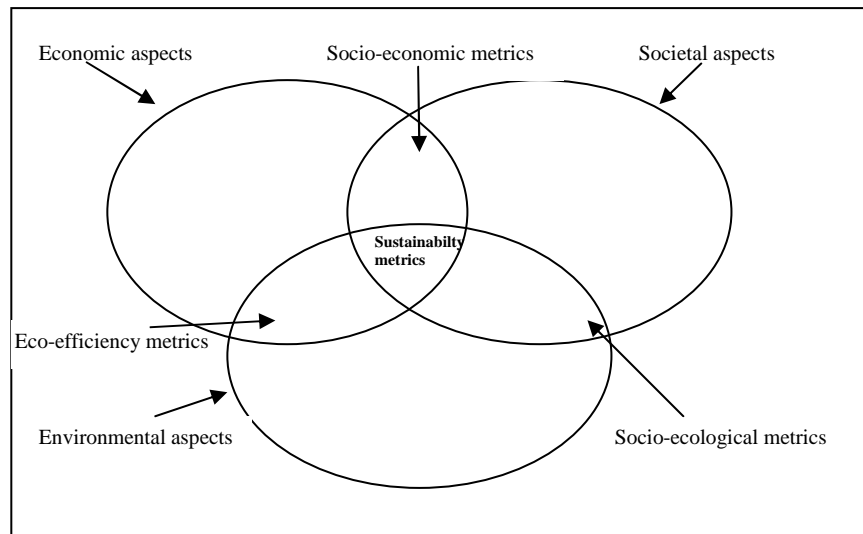


Figure 1. Sustainability metrics

Source: SIKDAR (2003)

Based on a cross sectional dataset of 132 countries, Wilson et al (2007) found that EF is negatively correlated with other metrics (except for SB), with strong negative relationship in the case of WI, HDI and GDP. The ESI, WI, HDI and GDP are pairwise positively correlated; and there is not significant correlation in other relations. These results are not so surprising, as the standard dimension of EF, SB, and WI is the environmental, of ESI, HD is the social, while of the GDP is the economic. Furthermore, a real measure of sustainable development should balance the three dimensions, as Sikdar (2003) shows (see *Figure 1*).

CONCLUSIONS

In the long run and at the macro level, happiness and subjective well-being are not correlated with income or GDP. This finding is known as the Easterlin paradox, since it has been first pointed out and updated by Easterlin (1974 and 1995). Economic welfare and well-being are static, while development and sustainability are dynamic phenomena. All indicators are based on past facts or on questionable forecasts that do not facilitate measuring the dynamic dimension.

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