1st VOLUME

# *Socio-Environmental Indicators*

JOSÉ ELI DA VEIGA

CEBRI

Konrad Adenauer Stiftung

caminhos para o futuro que queremos

CEBRI is a Think Tank that aims at developing knowledge and promoting debate on topics concerning international relations, offering subsidies to the definition of public policies. It also seeks to foster dialogue among different players, both in the public and private sectors, aiming at a better understating of the international agenda, as well as Brazil's role in the global scenario.

Located in Rio de Janeiro, the Center was created by a group of diplomats, business leaders and scholars, as an independent, multidisciplinary and nonpartisan institution.

The Center develops projects that result in studies, policy papers and reports, besides a number of periodical publications and multimedia content that are regularly produced. CEBRI also organizes lectures, workshops, conferences, round tables, task forces and study groups.

2013 - 1st VOLUME

# *Socio-Environmental Indicators*

JOSÉ ELI DA VEIGA

CEBRI

Konrad Adenauer Stiftung

# *About the author*


## *José Eli da Veiga*

Professor of the graduate programs of the Institute of International Relations of the University of São Paulo (IRI/USP) and the Institute for Ecological Research (IPÊ). He has published 20 books and is a permanent collaborator of the opinion columns of the newspaper Valor and the Página22 magazine.
http://www.zeeli.pro.br


---


**Suggested citation:** VEIGA, José Eli da; CEBRI. Socio-environmental Indicators. Rio de Janeiro: CEBRI, 2013.

**Key-words:** Economics; Socio-Environmental Indicators; Sustainable Development Goals.

# *Presentation*

Convinced of the importance of discussing issues related to sustainable development and seeking to contribute to the implementation of the decisions agreed by countries in environmental multilateral meetings, the Brazilian Center for International Relations (CEBRI), with the important support of the Konrad Adenauer Foundation (KAS), developed, in 2013, the project Pathways to 'The future we want'.

Through this initiative, CEBRI intends to promote knowledge and give visibility to three important multilateral processes boosted by the Rio+20 Conference (2012); namely:

*(i)* The search for indicators that complement the Gross Domestic Product (GDP), including measures of social welfare and sustainability

*(ii)* The analysis of the global mechanisms for financing mitigation and adaptation to climate change

*(iii)* The creation of the Sustainable Development Goals

In the present article, José Eli da Veiga critically examines the socioeconomic measures already established, like the GDP and the Human Development Index (HDI). The author contextualizes the creation of such measures and points out the limits of those, which can measure the economic performance of a given society, but are not intended to measure welfare and sustainability.

With a keen eye, Eli da Veiga addresses the major issues related to the development and adoption of new indicators, selecting four emerging indicators to be examined in detail. These indexes – all created by renowned international institutions – seek to overcome the notion of wealth based on the production of commodities and on physical capital and propose a narrative of progress that is more compatible with the 21st century, focusing on people's quality of life and on environmental sustainability.

For many years, countries have discussed the need to adopt measures that complement the GDP. We hope that this work can contribute to the understanding of the key issues of this debate and strengthen Brazil's undertaking to promote more appropriate indicators to measure socio-environmental development.

**Roberto Fendt**
*Executive Director of CEBRI*

**Renata Hessmann Dalaqua**
*Project Coordinator*

# *Socio-Environmental Indicators*

José Eli da Veiga

**1 Introduction**

The ideals of progress and/or prosperity were the ones that prevailed and became dominant in the seven or eight current civilizations, even though several cultures continue to see in the history of mankind a trajectory of decay (NISBET, 1980; PONTING, 1991; HUNTINGTON, 1996; RIST, 1996; JACKSON, 2009). It was only in 1662 that the quantification of this process began to take shape, with the estimate of Sir William Petty (1623–1687) of what could be the "national income" (ULLMER, 2011). And more than three centuries were necessary for an effective system of social accounting to appear, under the triple influence of the Great Depression, Keynes' General Theory and the Second World War. Thus, came into existence, starting from 1945, the prerequisite to calculating the economic performance of nations through estimates of product. The one that had greater acceptance was the GDP: Gross Domestic Product (FOURQUET, 1980; PIRIOU, 1987; VANOLI, 2002).

However, soon after, in the 1950s, the intense economic growth of several countries of late industrialization (measured by the GDP) did not translate in greater access of the poor to material and cultural goods, as it had occurred in the countries considered as developed. This is how the intense international debate about the difference between growth and development emerged. This is a controversy that is still far from over, but suffered an obvious enlightening blow since the United Nations (UN) started to disclose the annual index of development that is not limited to income per capita.

Since the United Nations Development Program (UNDP) launched the Human Development Index (HDI) to avoid the exclusive use of economic opulence as a criterion for evaluation, it became very odd to treat development and growth as if they were synonyms. The publication of the first Human Development Report in 1990 had the clear objective of ending an ambiguity that dragged on since the end of the Second World War, when the promotion of development came to be, along with the pursuit of peace, the very reason of existence of the United Nations (MÉDA, 1999; VIVERET, 2003; GADREY, 2006 and 2010).

However, the very notion of development was already being questioned, as the international community, in 1972, affirmed that development had as a sine qua non condition the conservation of its biogeophysical fundaments, stated in the historic decision of the United Nations Conference on the Human Environment, in Stockholm.

Twenty years later, with the Rio Declaration and the adoption of Agenda 21 at the United Nations Conference on Environment and Development, the demand for metrics that would ensure effective monitoring of what came to be called "sustainable development" began to increase exponentially, thus overcoming the shortcomings of GDP and HDI (IISD, 2000; van BELLEN, 2005).

Although the subsequent proliferation of "indicators" of sustainable development was quite confusing and elusive — as fully demonstrated in the excellent collection organized by the ecological economist Philip LAWN (2006) – the fog began to dissipate three years later, with the publication of the STIGLITZ-SEN-FITOUSSI report (2009, 2010).

In order to understand the crucial importance of that report to the search for appropriate

indicators to the Sustainable Development Objectives (SDO) that will be adopted in 2015 – the main aim of this text –, it is necessary to examine previous developments. Not only the two unequivocally established measures – GDP and HDI – will be addressed, but also measures here referred to as "emerging", which are already perceived with some level of legitimacy.

**2 Two established measures: GDP and HDI**

The alert that the GDP, a measure restricted to economic performance, would come to be wrongly used as a measure of welfare was made in 1934 by one of its two main architects, Simon Kuznets, in a statement to the U.S. Congress. [1] This problem did not fail to generate serious controversy, even among conventional economists.

### 2.1 What is the GDP

GDP is a sum of values added by goods and services which are sold and bought, without any distinction between those that are beneficial to the society or not. Expenses with accidents, pollution, toxic contamination, crime, or wars are considered as relevant as investments in housing, education, health, or public transportation.

It does not take into account domestic work which is not conducted by remunerated staff, as it does not involve monetary transactions. It also does not include depreciation of natural resources caused by extraction or pollution. In sum, as it makes no distinctions between what is productive or destructive, or between expenses that raise or lower the human condition, the GDP can only pass by as a measure of progress and/or prosperity for those who are not familiar with it.

Of course, in its defense it can always be said that it wasn't invented to measure welfare or quality of life, but to measure the growth of the economic system, a means without which is not possible to achieve those goals. But the trap is not undone, for the idea of wealth that gave birth to the GDP was overly influenced by the atmosphere of the Second World War. This concept has become obsolete, as it exclusively gives importance to the production of goods and to physical capital. On that account; the GDP per capita is no more than an extremely precarious proxy for social productivity. It only continues to reign due to strong institutional inertia.

This obsolescence gave way to innovative proposals, whose common denominator is the desire to prevent that wealth from being measured by petty sums of market products. However, even though they have circumvented technical difficulties inherent to the conceptual ruptures undertaken, none of these alternatives has proved sufficiently convincing or persuasive. Hence the crucial importance for economists of comprehending the main stages of this debate.

### 2.2 GDP versus "economic welfare"

In a pioneering work, William D. NORDHAUS and James TOBIN (1972) made adjustments in the calculation of the product of the United States (national, GNP, or just internal, GDP) to build a Measurable Economic Welfare (MEW). On the one hand, they withdrew components that do not contribute to welfare, and, on the other, added some that do but are often absent from the conventional calculation as they do not belong to the market sphere.

The first step of these complicated corrections, which figure in the 35 pages of the first appendix, was to change the focus to the liquid product, rather than the gross one, considering the absolute need to include depreciation. Soon after, it was introduced the idea of a per capita consumption level that does not exceed the trend of increasing labor productivity, which the authors called "sustainable". For them, if the per capita consumption exceeds this "sustainable" level, it means that it is advancing on part of the fruits of future progress. [2]

In the conclusion, they compared the results obtained for this measure of economic welfare (MEW) with the data on the liquid product (Net National Product, NNP), instead of comparing them with the GNP (Gross National Product), what would have been a lot more consistent with the purpose of the work. If they had avoided such subterfuge, they wouldn't have concluded that product and welfare are correlated. Moreover, today it's hard to believe that the duo didn't include any estimates of environmental damage in the calculations of what they called MEW-S: "Measure of Sustainable Economic Welfare".

Even so, nothing prevents this concept from being considered the remotest ancestor of all the

*Note 01*
cf. Beyond GDP <http://www.beyond-gdp.eu/key_quotes.html>: "The welfare of a nation can scarcely be inferred from a measurement of national income". In the same line, it is preferred to say today that the GDP may be a hopelessly misleading index of human well-being (DASGUPTA, 2005, p. 98).

*Note 02*
In another sense, the adjective "sustainable" began to be used to qualify the development in the UN in 1979. The term was widely disseminated after 1987, with the publication of the Brundtland Commission's report "Our Common Future", and consecrated in the famous Rio Conference, in 1992.

exercises to correct or adjust the product so as to achieve some aggregated measure of welfare.

### 2.3 GDP versus "genuine progress"

Inspired by the pioneering approach of NORDHAUS and TOBIN (1972), seventeen years later came the Index of Sustainable Economic Welfare (ISEW) (COBB and DALY, 1989).[3]

The ISEW had a great practical impact, it was calculated in at least 11 other countries.[4] And in 2004 it became a genuine progress index, although called an "indicator" (Genuine Progress Indicator, GPI) by the U.S. non-governmental organization that promotes it, the Redefining Progress.[5]

The biggest problem of this kind of approach is that, as much as conventional economists and some ecologists work hard at perfecting its methods of valuation, the pricing of environmental damage, leisure and housework or voluntary gains, for example, continues to be highly arbitrary.

It will always be a controversial exercise to assign monetary values to losses or gains that don't have their prices determined by markets. In the absence of an alternative, it's clear that a judge will prefer to have the value of an indemnity calculated by any of these methods. But something very different is wanting the same to be accepted by society when it comes to assign monetary values to damage caused by pollution, to the work of mothers and fathers on raising their children, or to the care a family provides to their elderly.[6]

GDP corrections can lead to a reasonable index that calls attention to the divergent evolution between the performance of a national economy and the welfare or quality of life that it was able to generate, but this has almost nothing to do with the idea of sustainability, which necessarily refers to the future. Showing that the rate of increase in welfare is lower than the GDP growth rate says nothing about the possibility of these two being sustainable or not.

In this regard, it was great that in 2004 the qualification of the index created in 1989 by DALY and COBB changed. It can certainly allow a reasonable valuation of the "genuine progress" achieved by a nation, even if such progress cannot be understood as a "sustainable" growth of welfare.

This is exactly why it is important to pay attention to the estimate that shows that, on a global level, the two measures – per capita GDP and GPI – were highly correlated until 1978, when the global GDP per capita reached US$ 7,000 (US$ of 2005). After this peak, they began to diverge, with successive falls of GPI per capita, despite incessant increases in GDP per capita. This assessment is based on data from 17 countries that account for 53% of the population and 59% of the global GDP (KUBISZEWSKI et al., 2013).

Nevertheless, none of these approaches intended to "correct" or "adjust" the GDP prevailed in the debate about the difference between growth and development. On the contrary, around the same time DALY and COBB (1989) put forward their proposal, UNDP launched the only measure that obtained recognition after the GDP: the Human Development Index (HDI).

### 2.4 GDP versus development: the HDI

The HDI is the result of the arithmetic average between the GDP per capita of a collective (without any significant adjustment), and evaluations on its population's access to health and education. Therefore, deficits in these other dimensions – health and education – are easily "compensated" by high levels of GDP per capita. Hence, the absurdity of assigning the same degree of development to such contrasting countries, like Chile and the United Arab Emirates, where the poor educational performance is motivated by horrendous discrimination against women.

Even if the absence of other dimensions of development for which there is still no convenient metric available is accepted – like the political, civic or cultural – it is doubtful that this arithmetical average between GDP per capita, longevity and education is the one that best reveals the degree of development attained. On the contrary, it is more reasonable to assume that the key question lies precisely in the possible discrepancy between the level of income obtained and the social standard attained, even if this is only indicated by

*Note 03*

The ISEW, one of the most important creations of the successful ecological economist Herman E. DALY, is included in the book that resulted from collaboration with theologian John B. COBB, Jr.: For the Common Good, of 1989.

*Note 04*

Canada, Germany, United Kingdom, Scotland, Austria, Netherlands, Sweden, Chile, Italy, Australia and Thailand.

*Note 05*

Relative declines in what came to be called "sustainable well-being" per inhabitant in the United States and the United Kingdom, between 1974 and 1990, are reflected in three graphics of the GADREY and JANY-CATRICE (2006) book. In the case of the U.S., calculations for a period of forty years (1950-1990) were added in the second edition of the book For the Common Good, revised and updated in 1994. The ISEW per capita, which in 1950 was 71% of the GNP per capita, decreased to 42% in 1990. In other words, while the per capita GNP had increased 121%, the ISEW had risen 30% (DALY and COBB, 1994, p. 463).

*Note 06*

This is a broader problem, which makes extremely precarious the insertion exercises in the National Accounting System of the so-called "Environmental Accounts" (see YOUNG, 2010), and it tends to make more preferable the use of biogeophysics indicators to measure environmental sustainability.

schooling and longevity.

The arithmetic average used in the HDI ends up mixing two essential facts: the frequency of wealthy collectivities that drag precarious social conditions, and the existence of others with decent social conditions without high levels of income. As the HDI of the first type of collectivities tends to be higher, it reinforces the same illusion that its creators wanted to undo: that it all boils down to the issue of income per capita. Or that rich collectivities, although little solidary, can be regarded as more developed than others that can promote broad access to health and education despite being only "remedied".

For that reason the user of the HDI must be emphatically advised not to stick to the arithmetic average of its three ingredients, and to check what is the disparity between the measures of the three dimensions that compose it.[7] It is important, at least, to know what the relative distances between the income and the other two dimensions are.

Many other criticisms have been made to the design of the HDI and these tend to multiply as the methodology moves away from the original simplicity, as was recently emphasized by COMIM (2013). The most serious issue, however, is that such an important index was launched in 1990, precisely at the same time that the notion of "sustainable development" first established itself as a leading value, in the ethic and civilizing sense, for the coming twenty-first century that approached.

Thus, in addition to the precariousness imposed by the use of the GDP per capita, the HDI was already born with a high risk of obsolescence as it did not even consider the socio-environmental problem that brought out sustainability as a core value of our time. It can be said that it was a frustrating outcome for the noble ambition of Pakistani diplomat and economist Mahbub ul Haq (1934-1998), leader of the UNDP who mobilized the best minds of economic development for the creation of an index that could gradually become an alternative to the GDP per capita.

## 3 Emerging indexes

Until today only the indexes published by three major international organizations have acquired fair global visibility – they are:

- Genuine Savings Indicator (GSI), from the World Bank;
- Environmental Sustainability Index (ESI) and the Environmental Performance Index (EPI), from the Davos Forum (World Economic Forum, WEF);
- The Ecological Footprint, from the WWF (World Wide Fund for Nature, formerly World Wildlife Fund).[8]

### 3.1 The Genuine Savings Indicator (GSI), from the World Bank

The Genuine Savings Indicator (GSI) was the monetary index that gained more prominence in recent years, breaking radically with the previous idea of "correction" or "adjustment" of GDP. [9] The main reason for that being the assertion that economic growth should be seen as growth in per capita wealth, and not as growth of per capita product, since the GNP does not include the depreciation of many assets, such as the degradation of ecosystems. The per capita GDP can grow while the per capita wealth decreases.

According to this perspective, which has been strongly encouraged by the World Bank, the objective is to calculate the "genuine savings", soon renamed "adjusted net savings".

This is calculated by subtracting the consumption of fixed capital from the gross domestic savings. Then investments in education are added. Finally, the main manifestations of decrease in natural capital (reduction of energy, mineral and forest resources, and damage caused by emissions of carbon dioxide) are subtracted (WORLD BANK, 2006).

The problem lies in the great disparity in the calculations made by the World Bank between environmental goods to which is easier to assign monetary values and those to which this is very difficult, if not impossible.

The data regarding depreciation of resources such as oil, natural gas, minerals, the logging of forests, or the use of the atmosphere to dump carbon dioxide seems very consistent. However, there are many types of natural capital whose depreciation does not appear in the statistics published in the report "Where is the Wealth

*Note 07*

A problem that applies to any index, which results from the combination of various indicators. It's redundant, in fact, to call them "synthetics", "compounds" or "aggregated". It's better to think of them as a kind of pyramid that has as its base the universe of information (primary data), just above are the statistics, then the subset of indicators, and at the top the indexes themselves, explain MIBIELLI DE CARVALHO e BARCELLOS (2010. pp. 102-3).

*Note 08*

Gender indexes proliferate, as demonstrated in the "Compendium for Sustainability" <http://www.compendiosustentabilidade.com.br/>. However, indexes created by some individuals - whether they are university professors, researchers, or consultants - cannot be equated to those undertaken by international organizations of great prestige on socio-environmental matters. In addition, the so-called "dashboards" (CGSDI, 2002) do not guarantee effective communication. Thus, a good solution for what came to be called "the classic dilemma of index versus system of indicators" was proposed by SCANDAR NETO (2006) when presenting the information in a pyramid-shaped figure whose top is occupied by the index and the lower levels by indicators. However, it does not seem that there has been an emulation of this pioneering initiative.

**Box 3.1 The Genuine Savings Indicator (GSI) of the World Bank**

The World Bank is fond of changing the monetary calculus of the national wealth, mainly through the deduction of the value of depreciations arising from the consumption of the stocks of natural resources and pollution, counterbalanced by the addition of the value of investments in human capital (public expenditure on education). Presented as a percentage of the gross national income, the lower the index, the less environmentally sustainable the country's economic growth is. In that light, 23 countries are on unsustainable trails, as their GSI is negative. Under the spotlight are the United States and Russia, with identical red light: -0.8%. At the opposite end are 51 countries for which the index is higher than 10%. Among them, China is the champion, with 39.7%, followed by India with 24.1 % and South Korea with 20%. Brazil´s 4.6% puts the country far below median, represented by New Zealand's 8%.[10]

of Nations?" (2006). Among them are: potable water, soil, oceanic fishing areas, forests and mangroves as providers of ecosystem services, as well as the atmosphere as a destination of particulates, nitrogen and sulfur oxides. And all the prices estimated by the World Bank are based on premises that ignore the limited capacity of natural systems to recover from disturbances (that is, resilience).

However, the main reason for the uneasiness with this monetary approach is not a technical one. Even if it is possible to predict a sharp increase in its persuasive power, should these obvious empiric limitations be overcome, the bottom line is that this methodology is based on the assumption that there is a possibility of complete replacement among the three factors: labor, capital and natural resources. That is, between human capital, man-made capital and natural capital, in the language they prefer. In such a design it would be even possible – on one extreme – to extinguish all natural capital, as long as duly compensated by significant increases in the other two factors.[11]

### 3.2 The Sustainability (ESI) and the Performance (EPI) of the WEF

Since 2002, studies supported by the WEF provide a couple of indexes: the Environmental Sustainability Index (ESI), and the Environmental Performance Index (EPI). Both are calculated for the WEF by the Yale Center for Environmental Law and Policy and by the Center for International Earth Science Information Network, of the Columbia University – two of the most important academic institutions in the area.

The ESI is understood as something deeper and structural, while the EPI is more focused on the country's efforts to improve its environmental performance. Since the EPI is more operational, one could conclude that the ESI would be a victim of growing disinterest. However, against such prognosis, its authors consider the EPI as a transitional resource, built with the sole purpose of attending the specific demand for something more expeditious and convenient that could serve the Millennium Development Goals (MDGs).

Through the EPI approach, 43 countries fail, including India and China. At the other end, 24 countries have excellent environmental performance, with grades higher than 70 in a scale from 1 to 100. Mostly, these are Scandinavian and Western European countries, followed by New Zealand and Japan. Brazil exceeds the median, ahead of Russia and very close to the United States - all three with grades barely above 60.

### 3.3 The ecological footprint, adopted and published by the WWF

Since 1998 the biennial reports of the WWF compare the Ecological Footprint (EF) of each country to the average biocapacity of the planet, in global hectares (gha) and in global hectares per capita (gha/pc). It aims to measure the pressure exerted by the consumption of populations on natural resources and to

*Note 09*

There's a big wall between the metrics that face up to the challenge (or reject the need) of imputing monetary values to environmental goods and services for which there is no market. The option for monetary or physical unities derives, ultimately, from different theoretical conceptions of sustainability (environmental or developmental). These two approaches have been experiencing parallel evolutions, with very different institutional supports, what makes it impossible to predict, at the moment, any kind of "victory" of one of them in terms of legitimacv.

*Note 10*

See "Adjusted Net Saving", The World Bank <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTEEI/0,,contentMDK:20502388~menuPK:1187778~pagePK:148956~piPK:216618~theSitePK:408050,00.html>

*Note 11*

For a long time this issue has been highlighted by the pioneers of "Ecological Economics", and even on the part of supporters of "Environmental Economics". It is, in short, a conception which is only really accepted by orthodox followers of the neoclassical theory of welfare, and of its resultant "weak sustainability". Systematic exemplifications of this cleavage can be found in AMAZONAS (2002), ROMEIRO (2003), MUELLER (2007) and MAY (2010).

**Box 3.2.1 The Environmental Sustainability Index (ESI) of the WEF**
The Environmental Sustainability Index (ESI) involves five dimensions: 1. environmental systems, 2. stresses 3. human vulnerability, 4. social and institutional capacity, and 5. global responsibility. The first one considers four environmental systems: air, water, soil and ecosystems. The second considers as stress any highly critical kind of pollution or exorbitant level of exploitation of natural resources. In the third, the nutritional situation and environment-related diseases are understood as human vulnerabilities. The fourth dimension refers to the existence of socio-institutional capacity to deal with environmental problems and challenges. And the fifth comprises the efforts and international cooperation schemes as global responsibility.[12]

**Box 3.2.2 The ecological footprint, adopted and published by the WWF**
The Environmental Performance Index (EPI) is a very simplified version of the ESI (see Box 3.2.1) that resulted mostly from the need to easily monitor the seventh MDG, related to environmental sustainability. It is centered on two broad objectives of protection: (a) reducing environmental stresses on human health, and (b) promoting ecosystem vitality and consistent management of natural resources. In 2012 the EPI classified 132 countries using performance indicators in ten policy categories: 1) water (effects on human health); 2) air pollution (effects on human health); 3) air pollution (ecosystem effects); 4) water resources (ecosystem effects); 5) biodiversity and habitat; 6) forests; 7) fishing; 8) agriculture; 9) climate change and 10) environmental consequences of diseases. These 10 categories track performance and progress in two broad objectives: environmental health and ecosystem vitality. Each indicator is associated with two goals: one of environmental public health and other of ecosystem sustainability. [13]

compare it to the regeneration capacity of the biosphere called "biocapacity", rather than correct the monetary evaluation of a nation's wealth or estimate the ecosystem vitality and environmental health.

This approach shows that there are dozens of societies that still have some kind of ecological credit for having footprints below the quota corresponding to the average global biocapacity: 1.8 gha/pc in the last evaluation, in 2008. And it also reveals national deficits that reach the triple of that quota.

There are 60 countries with credit, among them stand out India and Indonesia. At the other end, there are 20 whose deficits are twice as high as the global standard. Starting with petro-monarchies, like the Emirates and Qatar, comprising the more advanced countries, like the United States, Canada, Australia and several Europeans – including Scandinavians, as Denmark, Finland, Sweden and Norway. With a 2.9 footprint, Brazil is already 60% above the global quota, but not far from the median, which is occupied by South Africa's 2.3 footprint.

In global terms, the footprint rose from 2.5 to 2.7 gha/pc between 1961 and 2008, while the biocapacity fell from 3 to 1.8 3 gha/pc. In other words, in less than fifty years we went from an ecological surplus of 20% to a 50% deficit.

According to the WWF, "progress towards sustainable development" could be assessed comparing the HDI, as an index of welfare, and the Ecological Footprint as a measure of human demand on the biosphere. Nevertheless, it is important to reiterate that it is not the balance between the footprint and biocapacity of each country that the WWF compares with the HDI, it

*Note 12*
See "Environmental Sustainability Index (ESI)", Socioeconomic Data and Applications Center, <http://sedac.ciesin.columbia.edu/es/esi/>.

*Note 13*
See "Environmental Performance Index (EPI)", Yale University, <www.epi.yale.edu>.

**Box 3.3.1 The ecological footprint, adopted and published by the WWF**
The ecological footprint measures the pressure that mankind exerts on the biosphere, represented by the biologically productive area (both terrestrial and marine) that would be required to provide the spent natural resources and to assimilate the residues (consumption of fresh water is treated separately because it is impossible to express it in global hectares). Once this "footprint" is obtained for a given territorial unit (town, region, country, etc.), it can be compared to the "biological capacity" (be it the average of the planet or of the specific territorial unit), also presented in global hectares (WACKERNAGEL et al., 2005). [14]

**Box 3.3.2 Problems of the Ecological Footprint**
The absolute necessity that the environmental sustainability aspects are properly accompanied by the use of specific physical and well-chosen indicators could be interpreted as an adherence to the Ecological Footprint approach. However, the STIGLITZ-SEN-FITOUSSI report remarkably summarizes the criticisms that have been made to the footprint methodology, highlighting five problems: those that refer to the land used for farming, the land destined for construction, fishing and forestry resources, and the way to calculate the carbon footprint, which constitutes more than 50% of the Ecological Footprint. Of all these criticisms, the most relevant is the first one, on how to evaluate the biocapacity of the areas occupied by farming. The Ecological Footprint's reference of productive potential is not based on what would be a sustainable productivity of soils. On the contrary, its reference is the proven productive capacity. This approach can only exaggerate the biocapacity of countries with ultra-intensive production systems (such as the Netherlands or Japan), and underestimate the biocapacity of countries with ultra-extensive systems (such as the Scandinavians, for example). This problem is not that serious in assessing the global biocapacity, because one can accept that such exaggerations may balance themselves out. But it creates a serious embarrassment to certain statements about national or regional deficits and credits. Therefore, it is not reasonable to compare ecological footprints with local biocapacities. The right thing to do is to compare them to the global biocapacity. In this sense, the footprint is not an index of sustainability of a country or region, but of its contribution to global unsustainability.

is the "average biocapacity available per person on the planet, which could denote sustainability at the global level" (WWF, 2006, p. 19).

### 3.4 Comparisons

From the perspective of the World Bank (GSI) and of the WEF (ESI and EPI), the most important level of environmental sustainability is not the global one, although that could be achieved if all nations increased their own savings and also retained their own ecosystems. The focus of the Footprint is the opposite: the populations which exert the most pressure on the global biocapacity are the ones who should be the pioneers of the evolution of modes of consumption, an issue which is not even remotely grasped by the other two types of indexes. At the end, the Footprint measures the different contributions to global unsustainability made by regions, countries, subnational entities, and even individuals.

The WEF two indexes (ESI and EPI) tend to produce better evaluations of the richer and more developed countries, whereas the opposite occurs with the Ecological Footprint. While the latter is essentially "objective" because it compares anthropogenic pressures

*Note 14*
See Global Footprint Network <http://www.footprintnetwork.org/>.

("footprints") to biocapacities, the two other indexes tend to dilute this type of evaluation as they aggregate dimensions of "subjective" type. For example, the "socio-institutional capacity", in which there are four variables to capture the "ability to debate", eight for the "environmental governance", and five for the "responsiveness of the private sector". From this point of view, countries that are at the forefront of institutional developments tend to be necessarily more favorably assessed in terms of environmental sustainability.

Moreover, the differences between the methodologies of these indexes have consequences that go far beyond mere empirical assessment discrepancies. For the results to be so contrasting, it is clear that there is a substantial difference. A problem of conceptual nature, about the meanings attributed by these two groups of experts, who prepared the WEF and WWF indexes, to notions of environmental sustainability, environmental performance, and sustainable development.

**4 How to advance?**

In 2015, the MDGs (Millennium Development Goals) should give way to the SDGs (Sustainable Development Goals). However, as a result of a really complicated preparatory process that already involves – besides the "Open Working Group" of 30 members, mandated by the Rio+20 Conference – no less than six other subsidiaries instances called "Work Streams" (see box 4.1 on the Post-2015 Process).

The four monthly sessions held between March and June 2013 by the "Open Working Group" showed that the group still is in the preliminary "conceptual" phase of approach regarding what could be the substitutes for the MDGs. Thus, it is too soon to speculate about the most likely paths that should lead to the creation of the SDGs. This fact also advises against conjectures about which indicators may be selected to monitor these goals. These decisions may or may not highlight the need for "broader measures of progress that complement the GDP", another crucial determination of the Rio+20 Conference.[15]

However, the main ideas that aroused in this early stage send several clues about the context in which the more decisive guidelines should be adopted. That is, those that the "Open Working Group" should submit to the 68th session of the General Assembly (September 2013 to September 2014).

As of June 2013, there were three important reports available, composed by subsidiary "Work Streams" for the General Secretariat: a) one from the task team that gathers 59 international organizations (UN-STT, 2012); b) one from the high-level panel composed of 29 eminent persons (UN-HLPEP, 2013); and c) one from the Council of the Sustainable Development Solutions Network, formed by a large number of scientists, engineers, entrepreneurs and activists (UN-SDSN, 2013).

The report of the task team, which appeared a few days after the conclusion of Rio+20 Conference is strictly methodological and conceptual. It had a good critical review of the MDGs, which led to an emphatic proposal for a reconsideration of the so-called "global partnership for development" (the eighth and final MDG). The new partnership should respect three principles – Human Rights, Equality and Sustainability – and four main dimensions: Inclusive Social Development, Environmental Sustainability, Inclusive Economic Development, and Peace/Security. [16]

The other two important reports available were published practically at the same time (between the end of May and the beginning of June 2013). Both emphasize the need for the horizon of the SDG to be 2030 and put forward converging proposals regarding issues such as eradication of extreme poverty, education, health, nutrition, access to water and sanitation. Still, the report by the solutions network is more advanced with regards to the economy and the environment, because – unlike the report of eminent persons – it not only rejects the use of the GDP, but also emphasizes the need for planetary boundaries to be respected. That does not mean there are only proposals that lag behind in the report of the eminent persons. The opposite occurs, for example, in the emphatic requirement of a serious investment in the production of statistics, which they call "Data Revolution".

In any case, for the central purpose of this

*Note 15*
The 38th paragraph of the declaration "The Future We Want" (2012) reads: "We recognize the need for broader measures of progress to complement GDP in order to better inform policy decisions, and in this regard, we request the UN Statistical Commission in consultation with relevant UN System entities and other relevant organizations to launch a program of work in this area building on existing initiatives". However, so far the UN Statistical Commission seems to have simply ignored such demand.

*Note 16*
On the deadline for the future SDG that document hesitated between 15 and 25 years (2030 or 2040).

**Box 4.1 Post-2015 Process**

Based on the final documents of the MDG Review Summit (2010) and the Rio+20 Conference (2012), the UN intends to build a post-2015 global development agenda, focused on sustainable development. This process should be led by the Secretary-General, with the support of the Deputy Secretary General and of the Special Adviser of the Secretary-General for the Post-2015, and must be conducted by Member States with broad participation from other interested parties (civil society organizations, the private sector, academia and scientists). Seven working groups have been established (Work Streams) for the construction of the process:

1. The Open Working Group, which consists of 30 members (with each seat in the group being shared up to 4 States) and was created by the General Assembly to develop the Sustainable Development Goals (SDG), according to the final document of the Rio+20 Conference. It must submit its proposals to the 68th session of the General Assembly (September 2013 to September 2014).

2. The Secretary-General's High-Level Panel of eminent persons on the Post-2015 Development Agenda, which is chaired by the Presidents of Indonesia and Liberia and by the Prime Minister of the United Kingdom, and gathers representatives of the civil society, the private sector, academia and local and regional governments. It produced a report on their visions and recommendations for the global development agenda post-2015, released in May of 2013 (UN-HLPEP, 2013)

3.The Task Team on the post-2015 Development Agenda, whose first report was released in June 2012 ("Realizing the Future We Want for All"), which gathers more than 60 UN agencies and international organizations, and has three main focuses of work, one of them being the creation of a Technical Support Team to assist the Open Working Group.

4. The Sustainable Development Solutions Network, a global and independent network of research centers, universities and technical institutions, led by Jeffrey Sachs, who, among other activities, assists the Open Working Group.

5. National, Global and Thematic consultations designed to facilitate an inclusive global debate, taking place in more than 60 developed and developing countries, covering 11 different topics. Citizens can participate in such consultations through the initiative My World, in which they answer a survey about priorities, whose results must be submitted to the Secretary-General's High-Level Panel.

6. Regional consultations promoted by the Regional Commissions that will culminate in a report on regional perspectives on the post-2015 development agenda.

7.UN Global Compact, which has been working to ensure that the views and contributions of businesses and the private sector feed the post-2015 process.

To ensure the consistency of the different working groups, without undermining their independence, an informal coordination group was created, comprised by four Assistant Secretaries-General.
For more information, see "Post-2015 process", United Nations Sustainable Development Knowledge Platform, <http://sustainabledevelopment.un.org/index.php?menu=1561>.

text, the most important thing is to point out that each one of the ten or twelve goals listed by the two reports corresponds to multiple targets. The report of the eminent persons proposes four to six of them for each one of its twelve goals, a total of 54. And the report of the solutions network provides three solutions for each of its ten goals, a total of 30. So, even in the very remote case that each goal would only be monitored by one indicator, it would already be accompaniment by a system of dozens of indicators.

What these two reports seem to suggest is, hence, the almost certainty that it will be practically out of question to use the HDI, to legitimize any of the four emerging indexes previously presented or any other measure that also results from a combination of indicators.

Simultaneously, none of the two reports propose a more advanced way of measuring economic performance, although it is important to call attention to the fact that the report of the eminent persons points to employment creation as a measure of economic performance far superior than the GDP.

On the other hand, all the goals, even those regarding environmental sustainability, will not refer to indexes, but to indicators. Therefore, with regards to environmental sustainability, the incorporation of the basic proposal of the STIGLITZ-SEN-FITOUSSI report (2009, 2010) already seems unavoidable, even if the so-called "carbon footprint", "water footprint" and "nitrogen footprint" are not adopted.[17]

Furthermore, carbon, water and nitrogen, although extremely important, are three of the ten vectors that are contributing the most to global unsustainability. Among the others, only the phosphorus load can be calculated along the lines of the recent "nitrogen footprint". Among the issues that cannot be addressed in this fashion are the ones of biodiversity, ocean acidification, stratospheric ozone, chemical and atmospheric pollution, and changes in land use.

For the erosion of biodiversity, there's the excellent Living Planet Index (WWF) that points

**Box 4.2 Proposals of the Panel of Eminent Persons (UN-HLPEP, 2013)**

**Five big "shifts"**

1) Leave no one behind; end extreme poverty.
2) Put sustainable development at the core; Act now to stop the alarming pace of climate change.
3) Transform economies for jobs and inclusive growth.
4) Build peace and effective, open and accountable institutions for all
5) Forge a new global partnership.

**Twelve objectives**

1) End of poverty
2) Gender equality
3) Quality education
4) Healthy life
5) Food security
6) Universal access to water and sanitation
7) Sustainable energy
8) Job creation/equitable growth
9) Sustainable management of natural resources
10) Good governance and effective institutions
11) Stable and peaceful societies
12) Catalyze long-term financing

*Note 17*
Calling such indicators "footprint" necessarily implies that they are sons of the older and more well-known Ecological Footprint. However, it should not be forgotten that the approach of the Ecological Footprint has always been spatial: the surface, in global hectares, which supports a certain level of consumption of renewable natural resources. This is not the case of the indicators that are being called footprints, so as to benefit from the immense popularity of the presumed mother. It would be more appropriate to call them "loads". They are weights or volumes per year that correspond to the consumption of a given collective, individual or product. So, whatever the drawbacks in the definition process of the SDG are, it is very likely that the indispensable new environmental goals will require the adoption of physical indicators without conversion in area, as in the case of water, carbon and nitrogen loads, which, for emblematic reasons, are being called footprints.

**Box 4.3 Proposals of the Solutions Network (ONU-SDSN, 2013)**

**Four dimensions**

1) Economic development (including end of extreme poverty).
2) Social inclusion.
3) Environmental sustainability.
4) Good governance (including peace and security)

**Four normative concepts**

1) The right to development.
2) Human rights and social inclusion.
3) Convergence of life standards.
4) Shared responsibility and opportunities.

**Ten priority challenges**

1) End of extreme poverty/hunger.
2) Development within the planetary boundaries.
3) Effective learning for all children and young people.
4) Gender equality, social inclusion and human rights for all.
5) Health and welfare in all ages.
6) Improve agricultural systems and rural prosperity.
7) Empower inclusive, productive and resilient cities.
8) Control anthropogenic climate change and ensure sustainable energy.
9) Ensure ecosystem/biodiversity services and ensure good water management.
10) Transform the governance of sustainable development.

a decay of 28% between 1970 and 2008, mainly in tropical zones. Likewise, the new Ocean Health index (OHI)[18] will certainly allow monitoring of the acidification. Stratospheric Ozone depletion has been well monitored by the Montreal Protocol, "the most successful international agreement of all time", according to Kofi Annan. And for the other three – the pollutions and the land use – the problem of establishing targets based on scientific consensus will be far greater than choosing the best among many available indicators.

In short, in order to advance, the main challenge will be to avoid that, in the process of elaboration of the SDG, the adoption of a wide range of indicators to monitor the goals will simply dismiss the need for "broader measures of progress that complement GDP", as stated in paragraph 38 of the document "The Future We Want ", adopted at the Rio+20 Conference.

## 5 Conclusions

From this set of considerations on socio-environmental indicators for the SDGs derive two intertwined conclusions, but with very different deadlines.

### 5.1 Directions for the multilateral process

In the medium term it will be of crucial importance to take the Open Working Group to realize the need for the economic performance to have a less misleading metric than the GDP. And that the limitations of its obsolete accounting can be overcome through the adoption of the so-called "household perspective", one of the most important - if not the most important one – of the STIGLITZ-SEN-FITOUSSI (2009, 2010) report's recommendations.

The monitoring of the economic performance needs to reveal the actual material progress of the population, and not only the productive capacity of the country one lives. Production can increase and income decrease, or vice versa, as long as are taken into account: depreciations, income flows inward and outward the country, and differences between

*Note 18*
See Ocean Health Index, <www.oceanhealthindex.org>.

the prices of production and consumption.

Commonly, the real household income increases less than the GDP. Therefore, it must be taken into account the tax payments that go to the Government, the social benefits allocated by the Government, and the interest payments that the households make to financial corporations. It is also crucial to include non-monetary services provided by the Government to families, mainly through the health and education systems, and pay more attention to the distributive structure of income, consumption and wealth.

No less important, the measurement of economic performance also needs to include non-market activities, especially the ones derived from family relations. For that, the best starting point may be the incentive to the realization of estimates on the use of time by people.

In short, the slogan "Beyond GDP" should be the main axis of the "Data Revolution" advocated by the report of the eminent persons(UN-HLPEP, 2013).

### 5.2 Recommendations for Brazil

As there are signs that Brazil is likely to have a very important role in the complex process that will lead to the adoption of the SDGs by the United Nations,[19] the conclusion above necessarily refers to the definition of the country's position on this historic issue of overcoming the GDP. And that cannot occur without an institutional articulation of that goal.

For Brazil to be a key player, its representatives that will participate more directly in the negotiation process – notably, of the most decisive discussions under the Open Working Group scope – should already be on top of the issues examined in this text, with emphasis on those relating to the measurement of economic performance. However, for this to occur, they should have already been getting subsidies from institutions that are home to skilled specialists. Starting with the Brazilian Institute of Geography and Statistics (IBGE) and the Brazilian Institute for Applied Economic Research (IPEA), but also the universities, where most researchers linked to the Brazilian Society of Ecological Economics are, for example.

Therefore, we must hope that the success of the project Pathways to the "Future We Want", developed by the Brazilian Center for International Relations (CEBRI) with the support of the Konrad Adenauer Foundation (KAS), and in which this text is inserted, stimulates Itamaraty to organize a network of consultations and exchanges on socio-environmental indicators. A crucial initiative for Brazil to "be a leading voice" in the preparation and negotiations of the SDGs, which begin to make possible, with long overdue, an effective global governance of sustainable development (VEIGA, 2013).

---

***With the most sincere thanks to the oral contributions on the occasion of the preparatory workshop held by CEBRI in 4/18/2013 and, in particular, to Renata Dalaqua (CEBRI), Paulo Gonzaga Mibielli de Carvalho (IBGE and SBEE) and Eduardo Viola (UnB) for suggestions regarding earlier versions. Of course, this does not mean that they agree or take responsibility for the result.**

*Note 19*

The UN Assistant Secretary General Olav Kjorven, goes on to say that this would be one of the few countries with high credibility when speaking in progress aimed at sustainable development. "I would like to propose a challenge to Brazil. (...) I think that Brazil could be the leading voice in this process, one of the few countries with high credibility when it comes to progress towards a sustainable development" (emphasis added, jev), cf. KJORVEN (2013).

**References**


AMAZONAS, Maurício de Carvalho (2002) "Desenvolvimento sustentável e teoria econômica: o debate conceitual nas perspectivas neoclássica, institucionalista e da economia ecológica". In: NOBRE, Marcos e Maurício Amazonas (orgs.) Desenvolvimento Sustentável. A institucionalização de um conceito. (Parte II). Brasília: Ed. Ibama, 2002.

CGSDI (2002) – Consultative Group on Sustainable Development Indicators. "Dashboard of Sustainable Development Indicators", Database on 09/01/2002 .

COBB, C.; Cobb, J. (1994) The Green National Product: a Proposed Index of Sustainable Economic Welfare, Washington, DC: University Press of America, 1994.

COBB, John; Herman Daly (1989) For the Common Good: Redirecting the Economy toward Community, the Environment and a Sustainable Future, Boston: Beacon Press, 1989.

COMIM, Flávio (2013) "O mirabolante IDH de 2012", Folha de S. Paulo, March 20, p. 3.

DALY, Herman E.; John B. Cobb Jr (1989). For the Common Good; Redirecting the economy toward community, the environment, and a sustainable future. Boston, MA: Beacon Press, 2th ed. 1994, with contributions from Clifford W. Cobb. (1st ed.: 1989).

DASGUPTA, Partha (2005) "Uma abordagem dosada" (counterpoint to Herman E. Daly's article "Sustentabilidade em um mundo lotado") Scientific American Brasil, Oct. 2005, p.98.

ESI (2005) 2005 Environmental Sustainability Index. (Global Leaders of Tomorrow Environmental Task Force – World Economic Forum). In collaboration with: Yale Center for Environmental Law and Policy, Yale University; Center for International Earth Science Information Network, Columbia University.

FOURQUET, François (1980). Les comptes de la puissance; Histoire de la comptabilité nationale et du plan. Paris : Éditions Recherches, 1980.

GADREY, Jean; Florence Jany–Catrice (2006). Os novos indicadores de riqueza. São Paulo: Senac, 2006.

GADREY, Jean (2010). Adieu à la croissance; Bien vivre dans um monde solidaire. Paris : Les petits matins/Alternatives Économiques, 2010.

HUNTINGTON, Samuel P (2010). O choque de civilizações e a recomposição da ordem mundial. Rio de Janeiro: Editora Objetiva, 2010 (c1996).

IISD (2000) – International Institute for Sustainable Development, Bellagio Principles, Winnipeg, IISDnet, 2000, available at: http://www.iisd.org/measure/principles/progress/bellagio.asp [Accessed on 9/07/2013].

JACKSON, Tim. Prosperity without growth; Economics for a finite planet. London: Earthscan, 2009.

KJORVEN, Olav (2013) Exclusive interview to Henrique Andrade Camargo, Mercado Ético (6/06/13), available at: http://mercadoetico.terra.com.br/arquivo/%E2%80%9Co-brasil-pode-ter-um-papel-de-lideranca-nos-objetivos-dedesenvolvimento-sustentavel%E2%80%9D/ [Accessed on 9/07/2013].

KUBISZEWSKI, Ida, Robert Costanza, Carol Franco, Philip Lawn, John Talberth, Tim Jackson, e Camille Aylmer (2013) "Beyond GDP: Measuring and achieving global genuine progress". Ecological Economics, 93 (2013) 57–68.

LAWN, Philip (ed.) (2006). Sustainable Development Indicators in Ecological Economics. Cheltenham, UK: Edward Elgar, 2006.

MAY, Peter (org.) (2010) Economia do Meio Ambiente; Teoria e Prática, Rio de Janeiro: Editora Campus/Elsevier, 2ª edição.

MÉDA, Dominique (1999). Qu'est–ce que la richesse? Paris: Flammarion, 1999.

MIBIELLI DE CARVALHO, Paulo Gonzaga e Frederico Cavada Barcellos (2010) "Mensurando a sustentabilidade", in: Peter May (org.) Economia do Meio Ambiente; Teoria e Prática, Rio de Janeiro: Editora Campus/Elsevier, 2ª edição, p. 99–132.

MUELLER, Charles C. (2007) Os economistas e as relações entre o sistema econômico e o meio–ambiente. Brasília: Editora da UnB e Finatec.

NISBET, Robert. História da ideia de progresso. Brasília: Editora da UnB, 1985 (c1980).

NORDHAUS, William D. e James Tobin (1972). Is growth obsolete? In: William D. Nordhaus e James Tobin. Economic Research: Retrospect and Prospect, Vol 5: Economic Growth. New York: NBER, p. 1–80, 1972, available at: www.nber.org/chapters/c7620 [Accessed on 9/07/2013].

ONU-SDSN (2013) Sustainable Development Solutions Network (A global initiative for the UN). An Action Agenda for Sustainable Development, Report for the UN Secretary–General, June 6.

PIRIOU, Jean–Paul (2006). La comptabilité nationale. Paris: La Découverte, 14ª ed., 2006, c.1987.

PNUD (Programa das Nações Unidas para o Desenvolvimento) Relatório sobre o Desenvolvimento Humano. Relatórios anuais (1990–2012), available at: http//www.pnud.org.br [ Accessed on 9/07/2013].

PONTING, Clive (1991). A green history of the world; The environment and the collapse of great civilizations. New York: Penguin Books, 1991.

RIST, Gilbert. The history of development from western origins to global faith. London: ZED Books, 1997 (c1996 em francês).

ROMEIRO, Ademar Ribeiro (2003) "Economia ou Economia Política da Sustentabilidade", in: MAY, Peter H., Maria C. Lustosa e Valéria da Vinha (orgs.) Economia do Meio Ambiente; Teoria e Prática. Rio de Janeiro: EcoEco e Ed. Campus, 2003, pp. 1–29.

SCANDAR NETO, Wadih (2006) Síntese que organiza o olhar: uma proposta para construção e representação de indicadores de desenvolvimento sustentável e sua aplicação para municípios fluminenses. Dissertação de Mestrado, Escola Nacional de Ciências Estatísticas (ENCE), 110 p, available at: http://www.lep.ibge.gov.br/ence/pos_graduacao/mestrado/dissertacoes/pdf/2006/wadih_jo%C3%A3o_scandar_neto_TC.pdf [ Accessed on 9/07/2013].

STIGLITZ, Joseph E.; Amartya SEN; Jean–Paul FITOUSSI (2010) Mis-measuring our lives; Why GDP doesn't add up. New York e London: The New Press.

STIGLITZ-SEN-FITOUSSI (2009) Report by the Commission on the Measurement of Economic Performance and Social Progress, available at: http://www.stiglitz-sen-fitoussi.fr/en/index.htm [Accessed on 9/07/2013].

ULLMER, James H. (2011) "The scientific method of Sir William Petty". Erasmus Journal for Philosophy and Economics, v. 4, n. 2, p. 1–19.

Van BELLEN, Hans Michael (2007) Indicadores de sustentabilidade. Rio de Janeiro : Editora FGV, 2ª edição, 2007 (c2005).

VANOLI, André (2002) Une histoire de la comptabilité nationale. Paris : La Découverte, 2002.

VEIGA, José Eli da (2013) A desgovernança mundial da sustentabilidade. S. Paulo: Ed. 34.

VIVERET, Patrick (2006) Reconsiderar a Riqueza. Brasília: Editora UnB, 2006 (c2003 in French).

WACKERNAGEL, Mathis, Chad Monfreda, Dan Moran, Paul Wermer, Steve Goldfinger, Diana Deumling e Michael Murray (2005) "National Footprint and Biocapacity Accounts 2005: the underlying calculation method" (May 25, 2005), based on Monfreda, C., Wackernagel, M., Deumling, D. (2004). "Establishing national natural capital accounts based on detailed ecological footprint and biological capacity accounts". Land Use Policy, 21 (2004) 231–246..

WORLD BANK (2006). Where is the Wealth of Nations? Measuring Capital in the 21st Century. The World Bank, Washington D.C.: 2006.

WWF (2006) Living Planet Report 2006. WWF International, ZSL – Zoological Society of London, Global Footprint Network Published by WWF – World Wide Fund for the Nature (formerly World Wildlife Fund), Gland, Switzerland, October 2006.

WWF (2004) Living Planet Report 2004. WWF International, Global Footprint Network, and UNEP–WCMC (The Unep World Conservation Monitoring Center). Published by WWF – World Wide Fund for the Nature (formerly World Wildlife Fund), Gland, Switzerland, October 2004.

WWF (2012) Living Planet Report 2012, WWF-International, Gland, 2012. WWF e The Zoological Society of London (2012), The Living Planet Index database.

YOUNG, Carlos Eduardo Frickmann (2010) "Contabilidade Ambiental Nacional: Fundamentos teórios e aplicação prática no Brasil", in: Peter May (org) Economia do Meio Ambiente: Teoria e Prática, Rio de Janeiro: Editora Campus/Elsevier, 2ª edição, p. 133–160.

# *Credits*

***Editorial Production***
Roberto Fendt
Rafael Costa
Renata Hessmann Dalaqua

***Translation***
Julio Carpio Zegarra

***Technical Revision***
Clarissa Vargas
José Renato Botafogo Brito

***Graphic Project***
Barbara Coelho
Caio Alves

***Printing***
Walprint Gráfica e Editora


Centro Brasileiro de Relações Internacionais
Rua da Candelária, 9 / 2º andar – Centro
Cep: 20091-020 – Rio de Janeiro, RJ
Tel: 21 2206-4444
cebri@cebri.org.br
www.cebri.org

## KEY-POINTS

1. Since the 1950s, when the international debate on the difference between development and growth began, the supremacy of the Gross Domestic Product (GDP) as an indicator of development is being questioned.

2. The Measurable Economic Welfare (MEW) and the Index of Sustainable Economic Welfare (ISEW) are limited indicators, created to correct the GDP, which include components of development and welfare, but leave out environmental sustainability.

3. The Human Development Index (HDI) was the only measure that achieved notoriety similar to the GDP. Despite its popularity, the HDI can lead to a precarious welfare analysis; since it´s an arithmetical average, a high level of GDP per capita can compensate for deficits in the other dimensions of health and education. Moreover, the HDI expresses an outdated notion of development, as it does not consider the socio-environmental problem.

4. Although it is featured among the emerging indexes, the Genuine Savings Indicator (GSI) is controversial, because it presupposes the possibility of complete replacement between labor, capital and natural resources.

5. The Environmental Sustainability Index (ESI) is a deep and structural indicator that encloses five broad dimensions: environmental systems; stresses; human vulnerability; social and institutional capacity; and global responsibility. A simplified version of this indicator, the Environmental Performance Index (EPI) was developed to facilitate the monitoring of the Millennium Development Goal regarding environmental sustainability.

6. Considering that the Ecological Footprint indicates the pressure that the consumption of a given nation exerts on the biosphere, this index can be useful to identify the populations that contribute the most to global unsustainability and, thus, promote positive changes in consumption patterns.

## RECOMMENDATIONS

1. In the process of creating the Sustainable Development Goals (SDGs), the high number of indicators for monitoring these goals must not obliterate the need for "broader measures of progress that complement the GDP".

2. "Beyond GDP" must be the main axis of the Data Revolution advocated by the report of the eminent persons. It is important that the economic monitoring, under a household perspective, reveals the actual material progress of the population and not just the productive capacity of the country in which they live.

3. For Brazil to be a key player in the United Nations process of adopting the SDGs, Brazilian representatives need to be well-versed in the current socio-environmental indicators and the main issues regarding the measurement of economic performance.


**The Project "Pathways to the Future We Want" represents the continuation of the efforts promoted by CEBRI to advance the knowledge on the international agenda for sustainable development. The main objective of this initiative is to contribute to the implementation of the decisions agreed by countries in multilateral meetings.**

**The use of socio-environmental indicators in the conception, implementation and evaluation of sustainable public policies constitutes the core topic of this article.**

**cebri.org**