

RESEARCH AND PRACTICE NOTE

THE SUSTAINABLE ECONOMIC PRODUCT:
A WAY TO MEASURE AND COMPARE
NATIONAL SUSTAINABLE DEVELOPMENT

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Abstract: Recently, evaluators and policy makers have turned their attention to societal indicators. In Canada the federal government's annual report, *Canada's Performance*, measures societal outcomes in the environment, the economy, and other areas. Other jurisdictions produce similar reports, and many international bodies collect supporting data. One area of continued attention is the measurement of sustainable development — the integration of economic, social, and environmental factors. Although considerable international effort has been paid to the measurement of sustainable development, little consensus has emerged. This article advances a new approach to the measurement of sustainable development and calls for an informed debate.

Résumé: Les évaluateurs et les décideurs ont récemment commencé à porter attention aux indicateurs sociaux. Au Canada, le rapport annuel du gouvernement fédéral, *Le rendement du Canada*, mesure les résultats sociaux dans les domaines, entre autres, de l'environnement et de l'économie. D'autres instances gouvernementales produisent des rapports semblables, et bien des organismes internationaux recueillent des données à cet effet. Un domaine qui attire constamment l'attention est celui de la mesure du développement durable, soit l'intégration des facteurs socio-économiques et environnementaux. Même si des efforts significatifs ont été déployés au niveau international à cette fin, il ne se dégage pratiquement pas de consensus. Le présent article a trait à une nouvelle approche pour mesurer le développement durable et fait appel à un débat éclairé.

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SUSTAINABLE DEVELOPMENT AND WHAT MAKES A GOOD INDICATOR

Sustainable development is commonly defined as development that meets the needs of the present without compromising the ability of new generations to meet their own needs. Most people think of it as a combination of economic, social, and environmental factors that underpin responsible and resilient societies, able to renew themselves and prosper.

Many bureaucracies have emerged to study and measure sustainable development around the world (see, for example, The Heinz Centre, 2002; National Round Table on the Environment and the Economy, 2003; Statistics New Zealand, 2002; Statistics Sweden, 2001; U.N. Department of Economic and Social Affairs, 2001; World Economic Forum, 2002). However, sustainable development indicators and indexes tend to be complex, often involving dozens of factors with many gaps in the data sets that underpin them.

This leaves governments to struggle with a simple question: what progress are we making toward sustainable development and how do we rank with other countries? This article answers that question, or at least enough of it to spark a healthy debate.

Much has been written about the attributes of sound economic, social, and environmental indicators (Mannis, 2002, provides a synthesis). This article argues that there are four important things that characterize a good composite indicator for sustainable development.

First, the indicator should be based on an accepted measure of economic strength. No society can adapt and prosper without economic strength, the ground floor of an ability to deliver on sound societal choices.

Second, the indicator should be intuitive. People know that economic growth without social cohesion and environmental stewardship is unstable. A sound indicator needs to integrate the “triple bottom line” of economic, social, and environmental measures of national health.

Third, it should be simple to construct and understand. The human brain best integrates information that has seven factors or less. Any more than that and most people fail to understand, or even try to understand.

Fourth, it must be measurable. Reliable data must be made available by recognized bodies on an ongoing basis, and these data should cover all of the major countries of the world.

The Sustainable Economic Product (SEP) and Its Constituent Parts

The single most common indicator of economic strength is Gross Domestic Product (GDP), roughly, the inflation-adjusted value of goods and services produced in an economy each year. Real GDP per capita is a widely quoted indicator of living standard but it is flawed — it ignores the underground economy and the work of volunteers and, most significantly, credits environmentally or socially harmful behaviour. For example, a major environmental disaster may, by definition, increase GDP by triggering a costly clean-up effort. But overall, societal welfare and sustainable development would be harmed.

Accepting GDP per capita as a measure of sustainable development makes little sense. But what if GDP per capita were used as the base for a broader societal indicator into which other social, environmental, and institutional performance factors might be grafted or integrated? Could that composite indicator — using no more than seven factors in total — serve as an easily calculated, intuitive indicator of sustainable development?

The concept of a sustainable economic product (SEP) is straightforward. A nation's GDP per capita would be taken as a base, but initially discounted by a set percentage. The maximum amount of any discount deserves debate but should be large enough to make a noticeable and intuitively sensible difference between GDP per capita and SEP, once the calculations set out below are made. For illustrative purposes, initial discounts of 30% and 50% of GDP per capita are used in the calculations set out in this article.

To calculate the SEP for any nation, this initial discount of GDP per capita could be “earned back” — or not — depending on the nation's comparative ranking against other countries relative to six *core* social, environmental, and institutional factors:

Social Factors

- Life expectancy at birth, a key measure of a nation's overall physical health

- Literacy as indicated in the U.N. Human Development Reports
- Economic equity, as measured by the share of total national income earned by the bottom 40% of income earners

Environmental Factors

- Clean water, measured by access to an improved water source (% of total population)
- Pollution, measured by carbon dioxide emissions per capita

Institutional Factor

- Institutional corruption as set out in Transparency International's Corruption Perception Index.

The choice of core factors is not arbitrary. Each of the six factors meets the “good indicator” criteria set out in this article. They are regularly measured, and reliable data are available on a broad international basis. They are simple to understand and intuitively linked to the long-term sustainability of a nation's economy and overall well-being. Together with the base economic measure (GDP per capita) they cover the three categories — economic, social, and environmental — that underpin all composite indicators of sustainable development.

Consistent with thinking in the United Nations (U.N. Department of Economic and Social Affairs, 2001), the SEP also includes a factor related to institutional performance, here represented by Transparency International's index on corruption (Transparency International, 2004). However, where the U.N. tends to define “institutional” performance in relatively uncontroversial terms such as access to information and international cooperation, the SEP would highlight institutional corruption on the grounds that this factor, if left unchecked, is highly corrosive to the long-run sustainability of any economy and society.

Calculating the SEP

The SEP is a simple numeric calculation. In the case of an initial discount of 30% of a nation's GDP per capita, 5% would be notionally allocated to each of the six social, environmental, and institutional factors discussed above. In effect, 30% of a nation's GDP would

be “at risk” but could be “earned back,” factor-by-factor, in 5% increments, depending on the nation’s ranking relative to that of all other nations.

If an initial discount of 50% of GDP per capita were used to calculate the SEP, 8.3% of that discount would be notionally allocated to each of the six core factors and be eligible for earn-back, factor-by-factor.

By way of example, for any single core factor (say, literacy), a nation’s performance would be ranked and sorted by 10% deciles. National performance that ranks in the top 10% of all nations would earn back the full percentage of GDP per capita at risk; ranking in the middle would earn back half that; while ranking in the bottom 10% of all countries would re-earn a mere one-tenth of the percentage “at risk.” Percentages earned back for rankings at each of the ten deciles would be calculated on this same basis.

At the high extreme, a nation ranking in the top 10% of all rated countries in all six core factors would “earn back” everything at risk and record a sustainable economic product equal to its GDP per capita. In practical terms, most nations will record an SEP that is less than their GDP per capita, a result consistent with the idea that not all economic output is sustainable on a long-term basis.

Table 1 displays the GDP per capita along with data sources for each of the six core factors of the SEP. Countries are sorted and ranked by 10% deciles for each of the core factors.

Table 2 calculates the SEP for each of these nations at two thresholds — first with 30% of GDP at risk and second at a 50% risk level. A percentage change between GDP per capita and SEP (always lower for the SEP) for both of these calculation methods is also represented.

The sustainable development product can be calculated in a way to compare any one nation with all world nations or, as the *Little Green Data Book* of development indicators does, by grouping countries into regions or income groups (World Bank, 2004a).

It is worth noting that for nations such as Sweden that rank near the top of most core factors, the difference between GDP per capita and SEP will be marginal and there will be little variation in SEP under either of the two calculation methods represented in Table 2.

Table 1
A Sample of Countries: GDP Per Capita and Their Deciles for Each of the Six Core Factors

Country	GDP per capita (US\$) ¹	Life expectancy at birth ¹	Clean water (% of population with sustainable access to improved water source) ¹	Pollution (CO ₂ emissions per capita) ²	Literacy (% ages 15 and older) ¹	Corruption Perception Index ³	Economic equity (share of total national income earned by the bottom 40% of income earners) ⁴
USA	35,750	1	1	10	1	3	5
Canada	29,480	1	1	7	1	2	3
Sweden	26,050	1	1	3	1	1	1
Portugal	18,280	2	1	3	1	5	4
Brazil	7,770	3	2	1	2	8	8
Ukraine	4,870	3	1	4	1	10	2
Indonesia	3,230	4	3	1	2	10	3
Uganda	1,390	8	7	1	4	9	5

¹ http://hdr.undp.org/statistics/data/index_alpha_indicators.cfm

² [http://inweb18.worldbank.org/ESSD/envext.nsf/4ByDocName/TheLittleGreenDataBook2004/\\$FILE/TheLittleGreenDataBook2004.pdf](http://inweb18.worldbank.org/ESSD/envext.nsf/4ByDocName/TheLittleGreenDataBook2004/$FILE/TheLittleGreenDataBook2004.pdf)

³ <http://www.transparency.org/cpi/2004/cp12004.en.html#cp12004>

⁴ World Bank, 2004b

For high-income countries with a more variable record in the six core factors (e.g., Canada and the U.S.A.), the difference becomes significant in both dollar and percentage reduction terms. And for low-income, low-performing countries such as Uganda, the sustainable economic product under either calculation method will be significantly reduced.

Table 2
Calculation of the SEP with 30% and 50% of GDP at risk

Country	GDP per capita (US\$)	SEP with 30% of GDP at risk	% difference between SEP and GDP	SEP with 50% of GDP at risk	% difference between SEP and GDP
USA	35,750	33,069	-7.5	31,276	-12.5
Canada	29,480	28,153	-4.5	27,264	-7.5
Sweden	26,050	25,790	-1.0	25,611	-1.7
Portugal	18,280	17,366	-5.0	16,754	-8.3
Brazil	7,770	7,071	-9.0	6,603	-15.0
Ukraine	4,870	4,505	-7.5	4,261	-12.5
Indonesia	3,230	2,955	-8.5	2,772	-14.2
Uganda	1,390	1,195	-14.0	1,066	-23.3

AN IDEA WORTH DEBATE

Because the SEP would graft other societal indicators to a widely accepted measure of economic output, it may be seen as a significant departure in the debate on measuring sustainable development. Is it legitimate to deflate a commonly quoted economic indicator, GDP per capita, with factors that measure broader societal performance? This article argues yes.

Are the seven elements discussed in this article the best possible composite measures of economic, social, environmental, and institutional health? Perhaps not, but given the very few measures that cover most countries, they are among the best available. Evaluators may want to ask whether the results chain and contribution analysis concepts discussed in two recent *Canadian Journal of Program Evaluation* articles (Mayne, 2001, 2004) might be adapted to help in the choice of factors that contribute most to sustainable development.

Do the six core factors discussed in this article embody value judgments? Yes again, and that is one more reason why the concept of a Sustainable Economic Product should be debated.

Can a well-debated, simple calculation along these lines eventually produce an intuitive and useful sustainable development indicator? Quite possibly.

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