

INDICATORS, INDICES AND TOOLS FOR ASSESSING SUSTAINABILITY AS RELEVANT FOR INDIA

Prarthana Gupta
(prarthanagupta21@gmail.com)

(Discussion paper put together as volunteer with Kalpavriksh, January 2014)

There is no composite index in official use today, which could at a glance tell us whether India is on a path of sustainability. The currently used frameworks, such as UNDP's Human Development Index though significantly more preferable to the GDP-growth rate as an indication of 'development', are still woefully inadequate with regard to sustainability.

Existing Indices

1. An attempt towards a composite sustainability index was commissioned by the Former Minister for Environment and Forests, Jairam Ramesh (CSTEP 2011), but the draft available does not necessarily take into account several issues and factors. Currently used frameworks, such as the UNDP's Human Development Index, though significantly more preferable to the GDP-growth rate as an indication of 'development', are still woefully inadequate with regard to sustainability.

2. Attempt taking greater complexity, proposing a Composite Sustainability Index and doing a preliminary analysis of how various states in India are faring (Roy and Chatterjee 2009)¹. This paper proposes a method for arriving at a 'single index of sustainability' namely the CSI and demonstrates how to apply it to assess the status of the states and union territories of India on the development pathway. However it is quite evident from the current study that the areas of concern differ largely for the states and union territories. Unsustainability can result not only from environmental issue but from social and economic issues also. Hence a single policy for all of the states and union territories would not be the solution. Indeed, as Stiglitz et al (2009) have pointed out, a single composite index may be misleading and unable to represent the complexity of environmental factors that are important.

3. Better indicators which take into account shortcomings of the few existing indicators, include:

- Environment Sustainability Index: a composite index published from 1999 to 2005 that tracked 21 elements of environmental sustainability covering natural resource endowments, past and present pollution levels, environmental management efforts, contributions to protection of the commons, and a society's capacity to improve its environmental performance over time
- Green GDP: an index of economic growth with the environmental consequences of that growth factored into a country's conventional GDP. It monetizes the loss of biodiversity, and accounts for costs caused by climate change.
- ea-NDP (environmentally adjusted Net Domestic Product): It is obtained by subtracting the costs of natural resource depletion and environmental degradation from net domestic product (NDP).
- Adjusted Net Savings: it measures the true rate of saving in an economy after taking into account investments in human capital, depletion of natural resources and damages caused by pollution.

However, these have serious limitations as standalone measures. Another is the Environment Vulnerability Index, which takes into account 50 indicators related to weather, geography, biodiversity, natural resources, and human activities.

What is needed?

Also needed are a set of tools for assessment. Preferably, these should be widely usable and not dependent on a small set of 'experts', fully transparent, and subject to peer reviews. Some tools that are slowly being considered in official circles, and/or by civil society and the private sector in several countries, are:

1. Ecological footprint

DEFINITION: This tool calculates the ecological impact of a unit of population, from an individual to the entire human species, depicts it in terms of land area used by each unit, and compares this to a global optimum level to show whether the unit is exceeding its 'quota' of the earth's resources.

¹ <http://www.indiastat.com/article/01/drjoy/fulltext.pdf>

ECOLOGICAL FOOTPRINT IN INDIA: The only known attempt at calculating this for India is from the report of the Global Footprint Network and CII report², but their methodology is not clear in the paper. Systematic and periodic use of this tool could be made at various levels, from individual settlements to districts, states, and the country as a whole.

The Global Footprint network published a report in 2010 based on data collected in 2007. Data is given as global hectares per capita. The world-average ecological footprint in 2007 was 2.7 global hectares per person. With a world-average bio-capacity of 1.8 global hectares per person (12 billion in total), this leads to an ecological deficit of 0.9 global hectares per person (6 billion in total). If a country does not have enough ecological resources within its own territory, then there is a local ecological deficit and it is called an ecological debtor country. Otherwise, it has an ecological remainder and it is called an ecological creditor country.

According to the data, India has a population of 1164.67 million. The ecological footprint (measured in gha/pers) is 0.91 and the bio-capacity is 0.51 gha/pers. Thus, the ecological remainder for India is -0.40, making India an ecological debtor country due to the ecological deficit.³

2. Carbon footprints

DEFINITION: Several organizations and processes are using different methods to calculate the carbon footprint, basically Greenhouse Gas (GHG) emissions (direct or indirect, e.g. emissions from a factory or car, as also emissions from production processes used in making products we use), of a country/region/city, organization, event, product or person. As a single parameter, it is useful to gauge some aspects of sustainability, though this will not cover all aspects.

LIMITATIONS OF CARBON FOOTPRINTS: GHG accountings are a widely used metric of climate change impacts and the main focus of many sustainability policies among companies and authorities. However, environmental sustainability concerns not just climate change but also other environmental problems, like chemical pollution or depletion of natural resources, and the focus on CFP brings the risk of problem shifting when reductions in CFP are obtained at the expense of increase in other environmental impacts. Carbon footprints in many situations turn out to be a poor representative of the environmental burden of products. Thus, use of more broadly encompassing tools to assess and manage environmental sustainability is needed.

CARBON FOOTPRINTS IF INDIA: The US Dept of Energy Carbon Dioxide Information Analysis Centre calculated data collected from country agencies by the UN Statistics Division. Countries are ranked by their tonne of carbon dioxide emissions per capita in 2009. The data only considers carbon dioxide emissions from the burning of fossil fuel and cement manufacture, but not emissions from land use such as deforestation.

In India the annual carbon dioxide emission (in tonnes) per capita was measured at 0.8 in 1990 and increased to 1.6 by 2010. This data when compared to that of many countries during the same time period shows that India ranks much better than a lot many of the developed countries.

Country	1990	2010
India	0.8	1.6
China	2.2	6.6
Japan	9.4	10
USA	19.1	-na-
UAE	29.4	-na-

Table: Annual Carbon Dioxide Emissions (tonnes) Per Capita⁴

Thus, in this respect, India fairs pretty well. However taking into consideration the limitation of the CFP estimation, better tools, which take into account more environmental hazard, are needed.

As at the international level, where there is common but differentiated responsibility, there needs to be an intra-national common but differentiated responsibility too. Developed nations need to cut their CO₂ emissions not only to prevent climate change but also to give space to the developing world to catch up, without cooking the planet. The same is true within India; if the upper and the middle class do not manage to check their CO₂

² <http://www.footprintnetwork.org/download.php?id=504>

³ http://en.wikipedia.org/wiki/List_of_countries_by_ecological_footprint

⁴ http://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions_per_capita

emissions, they will not only contribute to global warming, they will also deny the hundreds of millions of poor in the country, those who will be the most severely impacted by climate change, access to development. The rich income classes need to acknowledge that their wealth and freedom to consume, adds to the increasing crisis and poverty of the poor. Lifestyles with excessive carbon emissions are similar to a smoker smoking in a room: they not only affect the smoker, but others around as well. As discussed in the introduction, it impacts mostly the ones who have contributed least to the problem.⁵

3. National accounts of well-being

DEFINITION: Proposed by the New Economics Foundation and building on recommendations made several decades back before being displaced by purely economic/financial indicators and methods, this measures people's subjective well-being. It is based on the realization that indicators like income or economic wealth are highly unreliable in assessing whether people are actually satisfied and happy, and what needs to be measured are a number of factors in people's personal and professional lives, including social relationships, self-esteem, emotional well-being, sense of belonging, and so on.

WHAT DOES WELLBEING DEPEND UPON? Well-being does not depend only on social and economic factors but also on environmental ones. Indeed, historically, much of the research on expanded measures of well-being has been driven by concerns about environmental degradation. Concern about sustainable development emphasises the need to take into account resources and capital stocks that are not included in the production boundary of conventional economic accounts. Although a sustainable development approach has direct implications for the measurement of income – in particular in terms of resources and environmental values that are affected by production but not calculated in market exchanges – there are not yet established mechanisms for integrating these concerns into measurements of economic resources. Further, as in the social area, the relation between environmental quality and economic development is complex. Higher GDP levels generally tend to stress the environment more, but also increase the capacities and resources for dealing with environmental problems.

Studies have shown that individuals who report higher levels of satisfaction with their lives are also rated as happier by their relatives and friends, tend to smile more during social interactions, have higher pre-frontal brain activity (the part of the brain associated with positive states), are more likely to recall positive life events, and have a higher resilience to stress. The best example under this kind of a study is the Gross National happiness tool used by Bhutan.

No exact measure exists for India, and thus, it might be safe to say that there surely exist mixed levels of well being in the Indian society.⁶

4. Environmental accounting/budgeting

DEFINITION: Predominantly economic in nature, these attempt to portray environmental assets, and damage to these assets in monetary terms, including showing how they may be contributing to or reducing overall GDP or NDP. These have been heavily criticized for attempting to quantify or monetize the essentially qualitative values of the environment, but they may be of use as part of larger sets of tools and measures that include the socio-cultural, normative, and physical aspects of the environment. They could also include periodic assessments of the creation or exacerbation of poverty by ecological damage, including loss of ecosystem-based livelihoods.

ENVIRONMENTAL ACCOUNTING IN INDIA: Former Union Minister of State for Environment and Forests, Jairam Ramesh, says he has set the ball rolling for a system of green national accounting in India, by 2015 at least. India currently does not have "green accounting"⁷. The Green National Accounts in India- A Framework is a report by an Expert Group Convened by the National Statistical Organization Ministry of Statistics and Programme Implementation Government of India. The Chairman, Partha Dasgupta, St John's College, Cambridge says, "This report was commissioned by the Government of India under the direction of the Prime Minister".⁸

⁵ <http://www.greenpeace.org/india/Global/india/report/2007/11/hiding-behind-the-poor.pdf>

⁶ http://www.beyond-gdp.eu/download/oced_measuring-progress.pdf

⁷ <http://www.hindustantimes.com/India-news/Bangalore/India-to-have-green-national-accounting-system-in-five-years/Article1-605742.aspx>

⁸ http://mospi.nic.in/mospi_new/upload/Green_National_Accounts_in_India_1may13.pdf

Economists estimate gross domestic product (GDP) as a broad measure of national income, while net domestic product (NDP) accounts for the use of physical capital. But as yet, India has no generally accepted system to convert gross domestic product into green domestic product that would reflect the use up of precious depletable natural resources in the process of generating national income. Economists all over the world have been at work for quite some time on developing a robust system of green national accounting but India has not reached there yet.

By using the tool of environmental/ green accounting, we can report both gross domestic product and green domestic product, and will get a better picture of the trade-offs involved in the process of economic growth.

5. Sustainability reporting

DEFINITION: 'Sustainability reporting is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development'; and the framework used for this includes a host of environmental, human rights, economic, and social performance indicators. Several private or public sector companies are voluntarily reporting on their sustainability performance. Sustainability Reporting is not a mandatory requirement in India. Except for some high performing, visible companies, a lot of organisations in India haven't started using the GRI sustainability reporting framework effectively.

in the GRI reporting database, only 74 companies from India are listed, compared to 242 companies from China, 334 companies from South Africa, 213 companies from Brazil. So for India's economic might, it still has a long way to catch up with other emerging economies on the area of Sustainability Reporting.⁹

SUSTAINABILITY REPORTING IN INDIA: India is one of the fastest growing economies in the world. With growth comes pressure on resources, social inclusion and environmental sustainability. Sustainability reporting is not a mandatory framework requirement in India. Except for some high performing, visible companies, a lot of organisations in India haven't started using the GRI (Global Reporting Initiative) sustainability reporting framework effectively.

About 80 Indian companies are now doing sustainability reporting using the framework developed by the GRI. The framework enables organizations to measure and report their economic, environmental, social and governance performance - the four areas that are seen to be key to sustainability.

The Indian government, and each state government, could be required to present an annual Sustainable Development–Human Well-being report. However, it is important that such a report be produced in a participatory and transparent manner. Indeed, the process of preparing such a report could itself become a tool towards assessing and furthering the goals of sustainability and equity.¹⁰

6. Genuine Progress Indicator

GPI is a refined version of the Index of Sustainable Economic Welfare developed by Herman Daly and John Cobb in the late 1980s. GPI starts with the same personal consumption data as GDP, but then makes some crucial distinctions. It adjusts for factors such as income distribution, adds factors such as the value of household and volunteer work, and subtracts factors such as the costs of crime and pollution. The GPI is used in green economics, sustainability and more inclusive types of economics by factoring in environmental and carbon footprints that businesses produce or eliminate.¹¹

Comparatively speaking, the relationship between GDP and GPI is analogous to the relationship between the gross profit of a company and the net profit; the Net Profit is the Gross Profit minus the costs incurred; the GPI is the GDP (value of all goods and services produced) minus the environmental and social costs. Accordingly, the GPI will be zero if the financial costs of poverty and pollution equal the financial gains in production of goods and services, all other factors being constant.¹²

The calculation methodology of GPI was first adopted to US data in late 1990s. According to results, the GDP has increased substantially, but at the same time the GPI has stagnated. Thus, according to GPI theory, the

⁹ <http://efficientcarbon.com/blog/state-of-sustainability-reporting-in-india>

¹⁰ <http://efficientcarbon.com/blog/state-of-sustainability-reporting-in-india>

¹¹ http://steadystate.org/wp-content/uploads/CASSE_Brief_GDP.pdf

¹² http://en.wikipedia.org/wiki/Genuine_progress_indicator

economic growth in the USA i.e. the growth of GDP, has not increased the welfare of the people during last 30 years. So far, GPI time-series have been calculated for USA and Australia as well as for several of their states. In addition, GPI has been calculated for Austria, Canada, Chile, France, Finland, Italy, the Netherlands, Scotland and the rest of the UK.

An elaborate calculation of India's GPI has been explained in a book, along with an analysis of India's GDP vs. GPI.¹³

7. Happy Planet Index

HPI measures the ecological efficiency with which human wellbeing is delivered. It is calculated by multiplying indices of life satisfaction (estimated by compiling responses to international surveys) and life expectancy, and dividing that product by ecological footprint. Nations score well when they achieve high levels of satisfaction and health while impacting environmental resources lightly.¹⁴

The Happy Planet Index is a new measure of progress that focuses on what matters: sustainable well-being for all. It tells us how well nations are doing in terms of supporting their inhabitants to live good lives now, while ensuring that others can do the same in future. At a time of uncertainty, the index provides a clear compass pointing nations in the direction they need to travel, and helping groups around the world to advocate for a vision of progress that is truly about people's lives.¹⁵

Nine out of the ten top countries are located in the Caribbean Basin despite high levels of poverty. India's HPI score of 50.9 and ranks number 32 of all the countries analysed. India's HPI score reflects a 'middling' life expectancy, relatively low levels of experiences well-being, and a very low ecological footprint.¹⁶

¹³ http://econpapers.repec.org/article/blaapacel/v_3a23_3ay_3a2009_3ai_3a1_3ap_3a117-118.htm

¹⁴ http://steadystate.org/wp-content/uploads/CASSE_Brief_GDP.pdf

¹⁵ <http://www.neweconomics.org/publications/entry/happy-planet-index-2012-report>

¹⁶ <http://www.happyplanetindex.org/countries/india/>