

## Measuring the Long Term

*Alistair Whitby, Senior Policy Officer*

Dr. Jonas Salk, a pioneering medical researcher who worked on the polio vaccine, once said that the most important question we can ask ourselves is, “Are we being good ancestors?” Looking out at the state of the current economic, social and environmental landscape today and envisaging the contexts we are creating for future generations, it is hard to be optimistic about the answer to this question.

The world's continued fixation with economic growth ignores a rapid and largely irreversible depletion of natural resources that will seriously harm future generations. Coupled with the increasing short-termism of modern politics and a general inability to look beyond our own self-interests, the result is a crisis of opportunity for unborn generations. Long term perspectives are rarely factored into our decisions while future generations remain politically powerless; their interests limited to the whims of the present generations. As the UN Report ‘Our Common Future’ has noted “We act as we do because we can get away with it: future generations do not vote, they have no political or financial power; they cannot challenge our decisions.”<sup>1</sup>

The fallouts of this situation are familiar. Humanity’s use of natural resources is currently exceeding the regenerative and absorptive capacity of the biosphere. Evidence suggests the productivity of natural capital may increasingly become a limiting factor for future human endeavours. Under widely accepted projections, by 2050 humanity is expected to use resources and produce waste at 2.6 times the rate at which they can be renewed or sequestered (Moore et al., 2012).

Currently planetary boundaries for issues such as climate change, human interference with the nitrogen cycle and biodiversity loss have already been exceeded, and thus require reverse action and commitment (Rockström et al., 2009). Climate change – the greatest threat to sustainable development – will impact those yet to be unborn the hardest, compromising their very ability to meet basic needs.

Positive change that challenges this situation will certainly not happen on a systemic level without better measures of progress that go beyond our narrow view of economic progress. But how do we measure the effectiveness of long term planning? How best can we assess how decisions and choices made now are impacting on future generations?

### **Some alternative indicator methodologies**

Recent decades have seen a proliferation of methods and indicators that can both help governments with their long term planning and encourage businesses to look beyond the current quarterly reporting cycles.

Questions are increasingly being asked of how we can ensure we are safeguarding the interests of future generations and what kinds of indicators could be introduced to check on progress towards this objective. Those looking for potential solutions are also increasingly mainstream, with institutions like

---

<sup>1</sup> UN Report of the World Commission on Environment and Development, Our Common Future (1987, p.15)

the OECD and World Bank and UN processes such as the development of the Sustainable Development Goals (SDGs) all generating interest in the possibilities that alternative indicators offer.

The measurement tools that have emerged could bring issues such as greater intergenerational equality, higher levels of well-being for all and a vision of progress that is consistent with long-term environmental sustainability to the centre of our decision making. Composite indicators have been proposed in the academic literature, and many national statistical offices have adopted sets of sustainable development indicators or wellbeing that offer a toolkit of approaches to track progress towards a sustainable society.

Some of the methodologies that offer utility for long term planning will be explored below, including a short examination of criticisms or any recommendations on their use.

### **Ecological Footprint**

The Ecological Footprint (EF), or often simply 'footprint', is a term that has become widely known and used as a shorthand for environmental impact. As an index it represents an accounting framework that tracks humanity's competing demands on the biosphere by comparing human demand against the regenerative capacity of the planet. It does this by adding together the areas required to provide renewable resources people use, the areas occupied by infrastructure, and the areas required for absorbing waste. Since people consume resources and ecological services from all over the world, their 'footprint' is calculated as the sum of these areas, regardless of where they are located on the planet.<sup>2</sup>

There are several types of ecological footprint: **EF for nations** helps countries to understand their national ecological balance sheet, and so manage their resources, **EF for cities** allows governments to track a city or region's demand on natural capital, **EF for business** helps corporations improve their market foresight, set strategic direction, manage performance and communicate their strengths, and **EF for an individual** calculates personal pressures being imposed on our natural resources.

The Ecological Footprint is an important measure for measuring long term impact as it is often used to calculate global ecological overshoot. This occurs when humanity's demand on the biosphere exceeds the available biological capacity of the planet. By definition, overshoot leads to a depletion of the planet's life supporting biological capital and/or to an accumulation of carbon dioxide emissions, both of which will seriously impair the quality of life of future generations.

The index is not without its critics who say the method could reward the replacement of original ecosystems with high-productivity agricultural monocultures by assigning a higher biocapacity to such regions. For example, replacing ancient woodlands or tropical forests with monoculture forests or plantations may improve the ecological footprint. Similarly, if organic farming yields were lower than those of conventional methods, this could result in the former being "penalized" with a larger ecological footprint.<sup>3</sup>

Recommendations: While some of these insights are valid they can be easily overcome if the ecological footprint calculations are complemented with other indicators, such as one for biodiversity, so it remains a useful tool with a number of practical applications. It has also seen some political impact,

---

<sup>2</sup> [www.footprintnetwork.org/](http://www.footprintnetwork.org/)

<sup>3</sup> Lenzen, M., C. Borgstrom Hansson and S. Bond (2006) On the bioproductivity and land-disturbance metrics of the Ecological Footprint. University of Sydney, ISA Research Paper, June, 06, in collaboration with WWF.

with, for example, the investment of US\$15 billion by the United Arab Emirates (UAE) government to develop alternative energy sources spurred on by a poor ranking in the Ecological Footprint.

#### **Sustainable Development Indicators<sup>4</sup>**

The last two decades have seen a number of methods and indicators to measure sustainable development. Many composite indicators have been proposed in the academic literature, while a number of institutes have adopted sets of sustainable development indicators (SDI) to track progress towards a sustainable society. These efforts are relevant for this study as frequently these concepts entail making choices between using resources to maximize current human wellbeing or preserving resources for use by future generations.

One example is the Eurostat Sustainable Development Indicators which are primarily used to monitor the EU Sustainable Development Strategy (EU SDS). The EU SDS sets out the objective of achieving improvement of the quality of life for present and future generations similar to the strategies implemented on national and local levels. The objectives of the strategy, primarily prosperity, environmental protection and social cohesion are to be achieved through sustainable communities which are able to manage resources efficiently and to tap into the ecological and social innovation potential of the economy. More than 130 economic, environmental and social indicators mapping achievements in different sustainable development areas are divided into ten themes and headline indicators including resource productivity, life expectancy, greenhouse gas emissions, energy consumption of transport and good governance.

These types of indicators provide impartial and objective statistical information about the socio-economic and natural environment in European countries. If used in a systematic and rigorous way not simply in parallel with traditional economic indicators but as part of an integrated policy process that also informs a more holistic approach to economic policy making they could bring about significant change benefitting the long-term.

#### **Natural Capital accounting**

Natural capital has been defined as ‘the world’s stocks of natural assets which include geology, soil, air, water and all living things’. The logic behind the natural capital approach is that by placing an economic value on nature (often monetary) it is more likely to be protected. Instead of receiving things like pollination and climate regulation for ‘free’, the environment’s value will be factored into our decision making because their ‘worth’ will be known.<sup>5</sup> If nature were properly valued and incorporated into the calculations of GDP, recognising how critical its services are to our collective welfare would be unavoidable. Future generations would, of course, stand to benefit hugely if this approach delivers the proposed protections for watersheds, biodiversity hotspots and our remaining forests, rivers and oceans.

Natural Capital accounting has some strong international backers, such as the World Bank, and a relatively high degree of political momentum. Many African countries signed the Gaborone Declaration in 2012, a commitment to valuing natural capital and subtracting its depletion from the quantification of economic output. For these proponents, natural capital accounting can become a powerful weapon against extractive African industries, forcing people to be rational in analysing the true gains and losses of potential developmental decisions.

---

<sup>4</sup> UNECE conference of European Statisticians

<sup>5</sup> <http://whygreeneconomy.org/who-should-value-nature/>

But there are many critics to this methodology who believe that nature's intrinsic value is priceless and argue monetary valuation will leave environmental protection at the mercy of market forces as nature is traded and speculated on using concepts such as maximising returns and managing risk. Goldman Sachs are reportedly working on introducing bonds for rainforests while some of the multinational corporations with the worst environmental track records, including Nestlé and Coca-Cola, have also declared an interest in financial instruments to conserve biodiversity. There is a potentially dangerous risk that, as with food speculation, giving something like biodiversity a monetary value could lead to price speculation that impacts the poorest hardest.<sup>6</sup>

Further questions: how could we decide who should do the valuing and whose values are taken into account? Which stakeholders have the power to limit monetary values? Who has the power to determine who has made the 'right' or 'wrong' calculation?

### **Long-term impact Index**

The Oxford Martin Commission for Future Generations, which brought together a group of business and other leaders concerned with addressing some of the biggest challenges to our future, have proposed the development of a 'Long-Term Impact Index'. Building on the advances of the World Bank, the Mo Ibrahim Foundation, Transparency International and other agencies in measuring governance, the proposed index would rate the effectiveness of leaders of countries, companies and international organisations in addressing longer-term challenges. The index would also intend to highlight the importance of investing in appropriate infrastructure and decision-making processes that enhance longer-term resilience and inclusiveness.

A small, manageable number of indicators – such as those tracking median household income, biodiversity protection, open decision making and carbon neutrality – have been picked for the specific relevance these domains will have on the long term wellbeing of future generations. It is planned that a select group of countries, companies and organisations be included in the first instance to test and develop the index.<sup>7</sup> Again it is crucial that these efforts do not simply run in parallel with traditional decision-making structures whose implications can be ignored, but rather form part of a new integrated policy process that also informs a more holistic approach to economic policy making. It is only in this context that a genuine systemic change will occur.

### **Inclusive Wealth Index (IWI)<sup>8</sup>**

The Inclusive Wealth Index (IWI), looks at a full range of assets such as manufactured, human and natural capital in its attempt to show governments the true state of their nation's wealth and the sustainability of its growth. The indicator was unveiled in a joint initiative launched at Rio+20 in 2012 by the International Human Dimensions Programme on Global Environmental Change (UNU-IHDP) and the United Nations Environment Programme (UNEP).

Wealth accounting, the concept behind the IWI, draws up a balance sheet for nations and shows countries where their wealth lies. By taking into account a wide array of capital assets a nation has at its disposal to secure society's well-being, it presents a more comprehensive picture and informs policy makers on the importance of maintaining their nation's capital base for future generations.

Unsurprisingly the results show that despite registering GDP growth, China, the United States, South Africa and Brazil were shown to have significantly depleted their natural capital base, the sum of a set of renewable and non-renewable resources such as fossil fuels, forests and fisheries. Of all the 20

---

<sup>6</sup> <http://www.iol.co.za/news/the-risk-of-putting-a-price-on-nature-1.1715827#.VIsZfXumC7a>

<sup>7</sup> <http://www.theguardian.com/sustainable-business/report-business-responsibility-long-term>

<sup>8</sup> [http://www.eurekalert.org/pub\\_releases/2012-06/ihdp-uau061312.php](http://www.eurekalert.org/pub_releases/2012-06/ihdp-uau061312.php)

nations surveyed (representing 56% of world population and 72% of world GDP), only Japan did not see a fall in natural capital, due to an increase in forest cover. While the index shows human capital has increased in every country, to a certain extent 'off-setting' the decline in natural capital in most economies, this shows there is a great need for policymakers to take far greater care over its natural resources many of which cannot be replaced. As a result, a more inclusive definition of wealth that will secure a legacy for future generations is urgently needed in the discussion of sustainable economic and social development.

A report on the IWI will be made every two years. A number of specific recommendations can be made that would go some way to safeguarding the interests of future generations:

- Countries witnessing diminishing returns in natural capital should invest in renewable natural capital to improve their IWI and the well-being of their citizens. Example investments include reforestation and agricultural biodiversity
- Nations should incorporate the IWI within key planning and development ministries and assure the cooperation of finance/economics ministries to encourage the creation of sustainable policies
- Countries should speed up the process of moving from an income-based accounting framework to a wealth accounting framework
- Macroeconomic policies should be evaluated on the basis of IWI rather than GDP per capita to evaluate the progress made on national policies.

### **Genuine Progress Indicator (GPI) and Index of Sustainable Economic Welfare (ISEW)**

Measures of economic welfare focus on the contribution of a nation's or region's economy to the overall level of well-being enjoyed by its citizens. In doing so, these measures typically focus on the costs and benefits of economic activities. The GPI/ISEW takes private consumption expenditures of a country or region as its starting point and then makes a number of corrections to incorporate aspects of economic activity that enhance or diminish welfare. For example the value of household labour and voluntary work is added, while income inequalities and the loss of ecosystem services that occur either through environmental degradation (water and air pollution, climate change, ozone layer depletion) or through the depletion of natural capital are deducted. This contrasts with GDP which includes all these activities in its calculation and is thus purely a measure of the size of the economy (quantity) rather than one of economic welfare (quality).

The best-known alternative measures of economic welfare are the Index of Sustainable Economic Welfare (ISEW) worked out by Daly and Cobb (1989) and Genuine Progress Indicator. The main advantages over other alternative measures is that they are calculated in monetary terms, so that it can be directly compared to the GDP. These comparisons reveal the striking differences between GPI and GDP and the potential for radically different policy options if decision-makers are measuring how their current choices are impacting the welfare of current and future generations.

The index has also recently had some impact on policy, particularly at the state level in the U.S. The State of Vermont, for example, is working through the state legislature to pass a law about measuring GPI. The state are using the index to chart a significantly different strategy intentionally focusing on "growth on sectors of the economy that provide local jobs but don't deplete natural assets or the social fabric of the state – sectors like arts and culture, clean energy, education, financial services, food and forest products, and healthcare" (Ceroni, 2014). The States of Oregon, Washington and California are also thinking about using the GPI instead of the GDP. Results from these States will hopefully add to the value of GPI as an actual measure for guiding policies.

## **The Sustainable Development Goals (SDGs)<sup>9</sup>**

Of course the most significant new international targets and indicators currently being negotiated by the United Nations are those associated with the Sustainable Development Goals. By the end of 2015, a new set of global development goals is expected to be adopted succeeding the current Millennium Development Goals (MDGs). It seems obvious, but in order to be intrinsically sustainable, these goals and targets should be beneficial for both present and future generations and not compromise the well-being or opportunities of either.

At present there are still some questions as to whether the SDGs will deliver this and be genuinely beneficial for future generations allowing equal development chances and a high degree of intergenerational equity. Several key themes that could be judged to be missing from the SDGs in this regard include planetary boundaries and tipping points, international public goods and environment and natural capital. One proposal suggested to counter this problem is that the SDGs should include the explicit statement “without compromising future generations in their ability to achieve these goals and having equal development chances”<sup>10</sup>

There are, however, many key thematic domains of the SDGs that have significant relevance to future generations. These include ecosystems and biodiversity, institutions, natural resources, climate change, energy, water, education, economy, food, and equality. In addition four general principles have been identified for evaluating whether the SDGs remain compatible with the interests of future generations: (1) ensure the regenerative capacity of the earth, stay within planetary boundaries and tipping points; (2) create a circular and sustainable economy, renewable role of business sector; (3) ensure equal development chances and intergenerational equity; and (4) create long term systemic and institutional change.<sup>11</sup>

As a result there are a number of key questions that need to be dealt with if the SDGs can be considered to be ‘future proof’ with regards to their long term impact on future generations; Are they consistent with moving beyond linear economic growth models towards a more circular economy? Are social and environmental costs of all economic activities taken into account? Is there a long term, multi-level mechanism for representing future generations within the political decision-making process?

### **Further recommendations:**

There is now widespread agreement that society needs a better statistical compass to shift emphasis from measuring economic phenomena towards measuring long term wellbeing and sustainable development. This entails making choices between using resources to maximize current economic development or preserving resources for future use and accommodating intergenerational aspects of human well-being. This will entail a significant shift in measurement and decision-making practices in both the fields of government and business. The indicator examples explored above reveal that while there is a wealth of diversity emerging in the alternative indicator scene several elements will be crucial if this shift is to have the necessary impact.

- It is clear that the well-being of future generations is dependent on the resources (capital) current generations leaves behind. A ‘future proof’ measurement system should therefore be able to clearly estimate and account for the current levels of capital and their increase or

---

<sup>9</sup> <http://sd.iisd.org/news/sdsn-proposes-100-sdgs-indicators-and-indicator-framework/>

<sup>10</sup> Bekkers, R. (2014) Including Future Generations in the Post-2015 Agenda, University of Amsterdam, IIS

<sup>11</sup> Bekkers, R. (2014) Including Future Generations in the Post-2015 Agenda, University of Amsterdam, IIS

decrease to show how the choices of the present generation are affecting the long term options available to future generations.

- There are a number of critical domains that have consistently been identified as crucial to the long term wellbeing of future generations.<sup>12</sup> A measurement system that serves this purpose should therefore provide information and trend analysis on one or more of the following themes critical to future generations.

**For economic capital** — physical capital, knowledge capital and financial capital;

**For natural capital** — energy resources, mineral resources, land, ecosystems and biodiversity, water, air quality and climate;

**For human capital** — labour, education and health;

**For social capital** — trust and institutions.

- An effective ‘future-proof’ measurement system should also include *policy relevant indicators* for these critical domains so that decision-makers have the necessary tools to look at new policy options and judge the effectiveness of policy interventions over time based on the indicator trends. Policy relevant indicators for long term planning include indicators such as water abstractions, global CO<sub>2</sub> concentrations, resource productivity, waste generation, energy resources, threatened species and physical capital stocks. These alternative indicators must be adopted by local and national governments and collected and monitored as official statistics if this change is going to be effectively institutionalised.
- Alongside these new indicators new approaches to analysis and policy development are also required. Dealing more robustly with multiple long-term objectives and the trade-offs between them requires new approaches to policy analysis, and, at least in the short term, a willingness and ability to innovate when the results of policies cannot be accurately modelled. Experimentation and innovation will be needed (for example considering combinations of policies that have not been tried before and working across government departments. To gain legitimacy it will be important to clearly demonstrate how these alternative indicators will lead to different policy outcomes from conventional policy that benefit the long term future.
- The identification of successful institutional innovations which could support these alternative measurement and policy frameworks will also be crucial. The Hungarian Commissioner for Future Generations, the UK’s What Works Wellbeing Centre (just opened), or Korea’s successful commitment to wellbeing across a change of administration could all serve as models in this regard. These models all contain innovations in multi-disciplinary working, embedding a longer term horizon into policymaking that reinforces advocacy for the natural environment, human wellbeing and intergenerational justice. Work in advocating these best practices in other jurisdictions and contexts is also key.
- Finally, moving this long-term ‘alternative’ measurement revolution from the fringes to the mainstream is going to take commitment and cooperation to overcome years of entrenched resistance. The public must be fully engaged to define what really matters to them and how this can be measured, while the clear differences in policy outcomes that result from this shift must be demonstrated. The very education of future economists needs an overhaul to include voices that challenge the neoclassical economic model. These tasks are ambitious but not

---

<sup>12</sup> See for example [http://www.unece.org/fileadmin/DAM/stats/publications/2013/CES\\_SD\\_web.pdf](http://www.unece.org/fileadmin/DAM/stats/publications/2013/CES_SD_web.pdf)

insurmountable and efforts are already underway. Recent polls show there is clear international public support for this shift towards longer term and wider measures of societal progress, and the positive outcomes for society resulting from such a shift are becoming abundantly clear.

## References:

- Andersen, M.S. (2007). An introductory note on the environmental economics of the circular economy. *Sustainability Science*, 2, 133–140.
- Bekkers, R. C. (2014) Including Future Generations in the Post-2015 Agenda, University of Amsterdam, IIS
- Borucke, M. et al. (2013). Accounting for demand and supply of the biosphere's regenerative capacity: The National Footprint Accounts' underlying methodology and framework. *Ecological Indicators*, Volume 24
- Ceroni, M. (2014, September 23). Beyond GDP: US states have adopted genuine progress indicators. *The Guardian*. Retrieved from <http://www.theguardian.com/sustainable-business/2014/sep/23/genuine-progress-indicator-gdp-gpi-vermont-maryland>
- Gunther, M (2014) Natural Capital: Breakthrough or Buzzword?
- Leach, J., Hanton, A. (2014) Intergenerational Fairness Index 2014, Intergenerational Foundation
- Ellen MacArthur Foundation (2013). Towards the Circular Economy. <http://www.ellenmacarthurfoundation.org>
- Moore, D., Cranston, G., Reed, A. & Galli, A. (2012). Projecting future human demand on the Earth's regenerative capacity. *Ecological Indicators*, 16,
- Monbiot, G. (2014) The Risk of Putting a Price on Nature, *Guardian*
- Rabl, A. (1996). Discounting of Long Term Costs: What Would Future Generations Prefer Us to Do? *Ecological Economics*, Vol.17
- Roccisano, F. (2011). The Wellbeing of Future Generations: New Perspectives on Economic Growth. *China-USA Business Review*, Vol. 10, No. 10
- Rockström, J. et al., (2009). Planetary Boundaries: Exploring the Safe Operating Space for Humanity. *Ecology & Society*, Vol. 14, No. 2.
- Sachs, J.D. (2012). From Millennium Development Goals to Sustainable Development Goals
- Stiglitz, J.E. (2012). The Price of Inequality: How today's divided society endangers our future.
- United Nations (2013). Intergenerational solidarity and the needs of future generations. Report of the Secretary General. 68th UNGA Session, Item 19, 5 August 2013.
- Wackernagel, M. & Rees, W. (2013). *Ecological Footprint: Reducing Human Impact on the Earth*.
- World Economic Forum (2014) *New Growth Models: Challenges and Steps to achieving more Equitable, Inclusive and Sustainable Growth*