

# **The end is near! Is it?**

Peter Bartelmus

## **1. Introduction**

Predictions of our future span doomsday and no-problem scenarios. The latest publication of Bartelmus (2018) tries to assess what the data tell us about future socioeconomic development and human wellbeing. The general findings are

- human wellbeing and aggregate welfare depend on a myriad of activities and impacts – we have to distinguish those that can be quantified from others that are a matter of opinions or beliefs
- the relative importance of quantifiable impacts needs to be evaluated in order to determine overall impact and trend
- the rest should not be silence – in fact, non-quantifiables need to be openly discussed so people can vote on them, at least in democracies.

Real political life does not follow these rules. Good- and bad-quality indicators mix in indices with murky procedures of aggregation. The indices may thus serve underlining ‘expert’ opinions rather than providing a true picture of reality. An overload of information hides useful data.

The book reveals these flaws by discussing the assumptions and beliefs behind the more popular measures. Few indices pass the test of accurately reflecting overall human progress or failure. Economic accounts and their expansion do capture systematically the broad concern of – economic – progress. Other approaches, notably those that look for human welfare beyond economic activity, serve politics rather than policy.

## **2. What do the indicators tell us?**

The book evaluates data availability for assessing socioeconomic progress. The problem is aggregating indicators into an overall index of human activity and/or welfare at national, international and global levels. Such aggregation requires the weighting of different indicators according to their contribution to an overall objective like the sustainability of economic growth or development.

Sustainability alerts to the transgression of a red line in long-term objectives. The sustainabilities of economic growth, nature’s services and human welfare have become popular objectives of long-term policies. However, different objectives create an unresolved dichotomy in measurement and policy. On one hand, economic preferences focus on the valuation of indicators in money terms. On the other hand, the limited scope of pricing is the reason for rejecting the weighting of indicators in monetary terms. Other forms of equal or unequal weighting seek to combine non-monetary indicators. Monetary indices contradict biophysical ones.

## *2.1 Economic indices*

The aggregation of economic indicators uses economic values as weights for the preferences of economic agents. Unfortunately, there are different valuations that provide different weights, and the resulting aggregates are difficult to compare or interpret. A good example is the Genuine Progress Indicator (GPI). It determines, albeit rather arbitrarily, what kind of economic activity is desirable or regrettable. The GPI also mixes market prices with welfare (damage and benefit) valuations (Kubiszewski et al. 2013). Leaning heavily on costs and damages, the global GPI shows economic stagnation since the 1970s.

Wealth indicators refer to the accumulation of goods and financial claims at a point in time. Of course, the accumulated value may change over a period of time. The national accounts attempt to link value changes in flow accounts to values of wealth at the beginning and end of an accounting period. Such linkage is difficult since it requires separating changes of 'real' wealth and inflationary changes. Moreover, the role of nature in a nation's wealth is far from clear.

The World Bank (2011) measures 'comprehensive wealth' including, besides produced capital, natural, human, social and institutional assets in terms of the willingness to pay for them. The assumption is that the value of current and discounted future consumption represents current economic wealth and welfare. Further assuming optimal (competitive) economic behavior shifts the World Bank's Comprehensive Wealth Measure from measurement into the realm of modeling. Global wealth doubled since the beginning of the century (Credit Suisse Research Institute 2016).

Following suggestions to incorporate services of the natural environment into the national accounts (Bartelmus et al. 1991), the United Nations et al. (2014) stayed within the accounting framework. They published a watered down System of Environmental-Economic Accounting' (SEEA), whose monetary accounts just rearrange natural resource use. This approach permits to use market values only, leaving the costs of environmental degradation (mostly from pollution) to research and experiments. So far, national statistical offices compiled only parts of the rudimentary SEEA. A first rough global study of the original system estimated that the global cost of natural resource depletion and pollution quadrupled from 3% to 6% of world GDP during 1990-2006 (Bartelmus 2009).

## *2.2 Non-monetary indices*

The sluggish acceptance of green accounting for an expanded analysis of – greened – economic growth encourages the development of non-monetary measures of environmental quality, socioeconomic development and human welfare. The argument is that economic growth is too narrow a concept to reflect human wellbeing. Among the more popular indices are environmental quality and human and sustainable development.

Lacking an overall numéraire like money for economic indices, environmental indices use energy consumption, land use and environmental pressure to measure the importance of nature. Popular indices are the Ecological Footprint (Global Footprint Network 2003-2017) and Material Flow Accounts (SERI et al. 2016/17). Both suffer from equal weighting of unequal issues in units of area and weight.

Indices of human and sustainable development include economic concerns but face similar problems of aggregation. They select indicators of the standards of living or individual wellbeing that are aggregated either by equal weighting or by ‘expertocratic’ weighting of sub-indices. Best known are probably the Human Development Index (HDI) (UNDP 2016) and OECD’s (2014) Better Life Index. The two measures also face the problems of indicator selection. The HDI ‘normalizes’ its indicators in a range from 0 to 1, with a reduced weighting of income. The OECD combines objective and subjective measures of material living conditions and life quality. None of these indices can provide a convincing index of development or wellbeing.

### *2.3 Towards an operational framework of sustainability*

The red line of sustainability or non-sustainability helps determine a common conceptual framework. The proposed framework confronts different categories of ecological, economic and developmental sustainability with physical, monetary and hybrid (mixed physical and monetary) measures (Bartelmus 2018). It facilitates organizing the subject area. But developing a *system* of measurement requires further discussion of integrating sustainability indicators of economic activity, environmental quality and development. As mentioned, Bartelmus considers, at least for now, economic sustainability, assessed by greened national accounts, as the best bet of finding at least a useful aggregate of *adjusted* economic activity and growth.

## **3. Predicting the future**

Policy-making looks into the future. It can be based on the interpretation of past time series or on more structured modeling of the future. Modeling can still be close to the statistical database like input-output models that are derived from the national accounts. Alternatively, complex optimization models may predict the farther-away future, but assume questionable optimal or at least efficient behavior of economic agents.

The results of predictive analyses are therefore contradictory. Economists are optimistic about removing obstacles to attaining sustainability. Environmentalists, on the other hand, tend to be pessimistic about the impact of economic activity and their effects on human welfare. For example, PwC (2017-2018) estimates that real GDP will more than double by 2050. Unfortunately, there are no predictions of the SEEA’s EDP, the environmentally adjusted NDP, even for the short term.

Predictions of non-monetary indices are usually pessimistic, but still diverge widely. They are hardly a good base for comprehensive policy-making. For instance, the Ecological Footprint of the limits-to-growth model (Meadows et al. 2004) increases until 2012 and later declines because of the anticipated collapse of the world economy. On the other hand, the Footprint might increase at a similar pace as the economy, when no economic collapse is factored into the model (Bartelmus 2013). Optimization models show different conclusions, depending on their assumptions notably about technological progress.

Development indices differ in coverage and definition and tell different development stories. None of the development indices dares to use models to predict the

future. The indices seek to find out, though, which countries are on the way to – albeit differently defined – sustainability.

#### 4. What should we do?

Obviously, a lot of work is needed to improve and apply the existing data for aggregative analysis. So far, the expansion of the national accounts into environmental services and impacts looks most promising. The integrative environmental-economic accounts of the SEEA are extensions of the national accounts *system*. Accounting is also the starting point for the short- and medium-term predictions of input-output analysis. The greened accounts need to be incorporated into such analysis.

A lot of modeling has already been done for narrowly defined environmental impacts such as the effects of global warming (IPCC 2014). The problem here is scope and coverage, as the IPCC reports do not cover social, economic and environmental effects that are not, or not clearly, related to greenhouse gas emissions.

High priority should be given to overcoming the inhibiting polarization of economists and environmentalists. As long as there is no meaningful discussion between the two camps there is no chance of combining or rejecting different arguments for an agreed application in policy-making. Too much is left to murky politics. We might not know – and possible never will – where and when the ‘end’ will arrive. In the meantime we could at least make the transition from normative vision to a rational assessment of sustainable socioeconomic progress.

#### References

- Bartelmus, P. (2018). *Sustaining Prosperity, Nature and Wellbeing – What Do the Indicators Tell Us?*, Routledge: Abingdon, U.K. and New York, USA.
- Bartelmus, P. (2013). *Sustainability Economics, An Introduction*, Routledge: London and New York.
- Bartelmus, P. (2009). ‘The cost of natural capital consumption: accounting for a sustainable world economy’, *Ecological Economics* 68, 1850-7.
- Bartelmus, P., Stahmer, C. and van Tongeren, J. (1991) ‘Integrated environmental and economic accounting: framework for an SNA satellite system’, *Review of Income and Wealth* 37, 111–48.
- Credit Suisse Research Institute (2016). *Global Wealth Report 2016*. Online: <https://www.credit-suisse.com/corporate/en/articles/news-and-expertise/the-global-wealth-report-2016-201611.html>.
- Global Footprint Network (2003-2017). *Data and methodology*. Online: <http://www.footprintnetwork.org/resources/data/>.
- Kubiszewski, I., Costanza, R., Franco, C., Lawn, P., Talberth, J., Jackson, T. and Aylmer, C. (2013). ‘Beyond GDP: measuring and achieving global genuine progress’, *Ecological Economics* 93, 57-68.
- Intergovernmental Panel on Climate Change (IPCC) (2014). *Synthesis Report*, IPCC: Geneva.
- Meadows, D., Randers, J. and Meadows, D. (2004). *Limits To Growth, the 30-years*

- Update*, Chelsea Green Publishing: White River Junction, VT.
- Organisation for Economic Co-operation and Development (OECD) (2014). *How's Life? 2015 Measuring Well-being, Summary*. Online:  
[http://www.oecdbetterlifeindex.org/media/bli/documents/how\\_life-2015-summary.pdf](http://www.oecdbetterlifeindex.org/media/bli/documents/how_life-2015-summary.pdf).
- PricewaterhouseCoopers (PwC) (2017-2018). *The World in 2050*. Online:  
<https://www.pwc.com/gx/en/issues/economy/the-world-in-2050.html>.
- Sustainable Europe Research Institute (SERI), WU, Ifeu, Wuppertal Institute (2016/2017). *www.materialflows.net, the online portal for material flow data*. Online:  
<http://www.materialflows.net/trends/analyses-1980-2013/shares-of-global-material-extraction-by-world-region-1980-2013/>.
- United Nations, European Commission, Food and Agriculture Organization of the United Nations, International Monetary Fund, Organisation for Economic Co-operation and Development and World Bank Group (2014). *System of Environmental-Economic Accounting 2012 – Central Framework*, United Nations: New York. Online:  
[http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA\\_CF\\_Final\\_en.pdf](http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf).
- United Nations Development Programme (UNDP) (2016). *United Nations Development Report 2016*, UNDP: New York. Online:  
[http://hdr.undp.org/sites/default/files/2016\\_human\\_development\\_report.pdf](http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf).
- World Bank (2011). *The Changing Wealth of Nations, Measuring Sustainable Development in the New Millennium*, The World Bank: Washington, D.C.