

Green accounting beyond GDP: A panel on critical thinking of the meaning of sustainable systems

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This Panel takes on the tradition of academic discourse of analysis, and critical thought, of accepted conventions associated with “Green Accounting beyond GDP.” The Panel should be of special interest to researchers who focus on the accounting, and measurement, of sustainability in context of complexity, adaptation, and the formalisation of nonlinear systems. The discourse complements the discussion of the special Panel on “Progress in Wealth Accounting and the Valuation of Ecosystem Services,” (WAVES) presenting the empirical work on inclusive wealth accounting assuming a Pareto criteria of non-declining (global) welfare function. The underlying proposition, supported in neoclassical economic theory, is that substitutability (or equivalence-in-values) is permitted among four well-defined categories of capital: economic, Social, Human, and Natural. The Panel will challenge the proposition of ‘weak sustainability’ and propose an alternative where the measure of sustainability, beyond the basic needs of the human population, is some culturally-determined minimal rate of *entropy production*.

The panelists present different perspective of the measurement of sustainability. Two papers concern empirical analysis of current practice. Haripriya Gundimeda provides a critical analysis of the conventional indicators of sustainability among the States of India, and draws the conclusion that, while economic performance applying weak sustainability criteria appears satisfactory, this may be illusory under conditions of strong sustainability. Andrew Brennan analyses the empirical studies of social and human welfare indices and the apparent ‘gap’ between GDP and sustainable economic prosperity. The conclusion drawn is that measures of the welfare function is not a fixed variable at a point-in-time, but co-evolves over-a-period time in context of socio-political values.

Two papers focus on the theoretical, methodological and ethical issues of sustainability. Anthony Friend proposes that ‘beyond GDP’ implies a radical shift in the paradigm of the accounting conventions which define the concepts of production, consumption and capital accumulation. The problem addressed is that of statistical integration of the accounting objects and functions in the distinctive spheres of the economy where values are conserved in-exchange, the sociosphere where values are conserved-in-use, and the ecosphere, where values are conserved-in-themselves, or intrinsic. The paper by H.M. Desarda concerns the difficult choices that need to be made today, in order to sustain the human population of 7 billion Homo sapiens on the planet Earth. Proposed is to re-look the Gandhian philosophy of village self-sufficiency applied to the Global Village.

“Entropy Accounting: the Metric for the Integration of the RIO Declaration with the Agenda 21”

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Abstract:

The RIO Declaration focused the attention of the World to the limitations of the Planet to support the material well-being of an expanding population of 20 billion, of which one half live in intense human-created urban ecosystems. Brundtland Report expressed this ‘fact’ as follows:

The Earth is one but the world is not. We all depend on one biosphere for sustaining our lives. Yet each community, each country, strives for survival and prosperity with little regard for the impact on others. Some consume the Earth’s resources at a rate that would leave little for future generations. Others,

many more in number, consume far too little and live with the prospect of hunger, squalor, disease, and early death. (WCED, 1987, p. 27).

Chapter 40 of the Agenda 21 is entitled “Information for Decision Making” which describes the need for, but not the how to, of an (integrated) System of Environmental and Economic Accounts, (SEEA). The UN Study on method (UN, 1993), describes the general framework for incorporating the environmental parameters in the System of National Accounts (SNA). Thus, restricting the accounting domain to the interaction, rather than interdependencies, of the economy and the environment. While recognising the validity of the science (and logic) of subsuming the SNA in a larger-scale ecosystem accounting structure, the authors of the Study relegated the so-called ‘ecosystem approach’ to some indefinite future research programme in favour of a parallel, associative, system of ‘satellite accounts’.

While at the time the idea of expanding the SNA towards the linear methods of valuation of environmental assets and services made sense, it turned out 20 years later that the assumption of equivalences (and substitutability) of economic and ecosystem production functions is not only logically inconsistent, but the relationships are nonlinear. In other words, ‘weak sustainability’ is no longer a tenable position in nonlinear accounting systems. Further, the design element of the SEEA does not permit (directly) to construct the correlation coefficients which connect the qualitative vectors of the degradation of ecosystem and human welfare functions with the quantitative parameters of technological change and material (global) consumption.

This paper takes the position that pluralism in valuation methods is a necessary, but not sufficient, condition, to develop the nonlinear parameters required for the “Green Accounting beyond GDP.” The sufficient condition being the necessity for a common metric which connects the state, and change of state, of the environment, with the state, and change of state, of the economy.

We propose that the common metric is the rate ‘entropy production’ in any well-defined process, which permits the multi-dimensional mapping in Topological Domain Space (TDS) of the qualitative/quantitative properties on objects and functions. These are defined in a hierarchic-structured value system as follows:

(A) the *Econosphere*: values are *conserved-in-exchange* and represent the accounts of the inflows, outflows, and balances of the economic process described by ‘economic statistics’

(B) the *Sociosphere*: values are *conserved-in-use* and represent the accounts of the inflows, outflows, and balances of the social/demographic processes described by ‘social and demographic statistics;’

(C) the *Ecosphere*: values are *conserved-in-themselves*, or intrinsic and represent the accounts of the inflows, outflows, and balances of the global ecosystem described by environmental spatial and volume statistics.

The mapping in the TDS is in the form: $C \rightarrow [B \rightarrow (A)]$ and its inverse, $C \leftarrow [B \leftarrow (A)]$.

References

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“The challenge of harmonising economics, ecology and ethics: A Gandhian perspective of greening the economy”

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Abstract:

‘Earth provides enough to satisfy every man’s needs but not for every man’s greed.’
- M.K. Gandhi.

At this juncture in our ‘development’ journey, the first and foremost question before humanity is: to preserve, protect and ensure the stability of our planetary system and wellbeing of all people.

The obsession with the growth, which is largely *undifferentiated* and *undirected*, has pushed the limits *beyond* the carrying capacity of the planet. The fossil fuels- based modes of transport and energy-intensive (read electricity through the non-renewable resources) production, consumption and overall *lifestyle* is not at all sustainable. The throughput intensive model of industrialization and urbanization has become a serious threat to the stability of the planetary system. Because of the phenomenal rise in the resource-use and emission of the CO₂ and other toxic gases, the temperature of the earth is rising at the rate which is most alarming. The overwhelming scientific evidence confirms that *climate change* is the undeniable fact. Its impact and implications on the sustainability of the growth process are terribly frightening.

As such, the need of the hour is to rethink, reorient and re-structure the global growth process to make it ecologically sustainable. Given vast disparities between consumption of the North and South, among the countries and across the social classes, there is an urgent need to make the global growth process geographically and socially equitable. Then alone it can be ecologically sustainable. Undoubtedly, equity and sustainability are *not* either/or issues and should be tackled simultaneously.

Let us not forget that there is an organic link between the ecological systems and economic systems and it should be carefully maintained. It has to be harmonized by adopting ethical and moral approaches to the growth and development. Quintessentially, it is a question of *lifestyle*, and related choices about the consumption. In our view, the life and work of M.K. Gandhi can show the world a pathway which is sustainable. In fact, we *view* Gandhi as a representative of the global green thought and role model of the environmental ethics and basic ecological values in *generic* term. Indeed, he stands as an epitome of ecological wisdom.

Indeed, the current global economic crisis should be utilized as an opportunity to come out of *the trap* of non-sustainable growth trajectory. As of now, the basic challenge before the world community is: to protect *the remaining natural capital*. The available evidence amply proves that the throughput intensive growth path has weakened the biophysical foundation of growth in a very substantial way. The decline, damage and degradation of the life-support-ecosystem are the grim reality.

Luckily, there are cheaper, quicker and safer *alternatives* to the resource-squandering growth model, blatantly imposed on all countries and communities in the name of faster growth and globalization. Take the example of basic needs of the people- water, food, energy, transport, health and education-there are local, low-cost, socially just and environment-friendly alternatives. Alas, ‘The politics and economics of gigantism’ does not allow the alternatives to work and succeed!

The vicious influence of the market forces can be easily seen in the domain of the automobile industry, which at present is very dominant economic force globally. It will never allow people to desist and /or dispense a personal motor vehicle and make its possession a social anathema, and non-preference good! The diabolic design of the global market forces, controlled by the transnational corporations has turned people into the consumer numbers. The craze of unbridled consumption is indeed the worst kind of social menace!

It would be a mistake to think that the insatiable consumer appetite of the seven billion humans and their growing numbers can be satisfied through the technological innovations and large scale production. The rapidly expanding ecological footprints have already jeopardized the stability of the planet. The huge cost and consequences of this are explained in details in the full paper- attached to this mail. The desirable and feasible action agenda of *the alternative pathway* is suggested for the consideration of the ecological economists' fraternity and the world community aspiring to make global green economy a living reality, through a conscious collective endeavour of caring and sharing. The main focus and concern of the paper is: holistic approach to development and plea for *normative* choice to harmonize economics, ecology and ethics.

Finally, as a grassroots academic activist, this paper writer humbly pleads for following the pathway shown through the ages by the Global Green Gandhians on the lifestyle issue; and resuscitating *reverence for nature*. That alone can bail-out the world from the colossal ecological-debt and catastrophic environmental crisis.

“How green is our growth? - an analysis for Indian states”

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Abstract:

The main objective of this paper is to examine if current growth pattern in Indian states is sustainable. To check this we examine if the natural capital and human capital along with human-made capital is increasing or decreasing in different Indian states. To illustrate this, we considered forests, renewable natural capital, minerals (non-renewable natural capital) and human capital and examine if the stock of wealth is declining, increasing or constant. If the total stock of wealth is non-declining, the pattern of growth is sustainable, otherwise it is not sustainable. The results of the analysis show that from weak sustainability point of view, in almost all the states the capital accumulation has been positive. This is excluding the physical capital formation. However, if we look at the environmental capital, it has decreased in most of the states, showing that the critical capital is declining. This shows that economy is doing quite well from weak sustainability aspect in some of the states at the cost of critical natural capital and is giving a illusion of growth when in fact the valuable capital is losing. This necessitates the need for an urgent action to preserve the natural capital through proper policies along with economic policies.

“How useful are 'green GDP' measures without a strong socio-historical institutional apparatus? A critical political economy review of the ISEW & GPI literature”

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Abstract:

Popular 'Green GDP' measures such as the Index of Sustainable Economic Welfare (ISEW) and Genuine Progress Indicator (GPI) are scrutinised. ISEW/GPI may be referred to as 'Sustainable Well-Being Indices' (SWBIs), since they are summary monetary-based measures that attempt to include 'welfare' and 'sustainability' aspects into a single index. Thus far (up to December 2011), there have been over fifty individual empirical studies in which authors have constructed SWBIs; and the historical application of

indices typically spans a couple of decades. The empirical aspects of these measures are worthy of a more detailed appraisal because it is generally accepted that SWBIs are adequate measures of environmental and social welfare. A critical review of the literature is necessary and significant, as no such document exists. Specifically, this paper focuses on identifying ongoing/potential problems of the historical applications of GDP and SWBI—from the perspective of political economy.

In political economy, a detailed socio-historical institutional analysis is critical. Simon Kuznets (1966:6) argued that it was the *role of institutions* to condition economic growth. In a footnote to the Austrian ISEW study, Stockhammer *et al.* (1997:33) hinted at having a more detailed institutional analysis. They alluded to social structures of accumulation theory, where the dominant set of institutions that contribute to capital accumulation are scrutinised over 40–60 years' waves. In this study, we are predominantly interested in the degree to which the SWBI advocates provide specificity in their socio-historical institutional analysis. GDP is the very measure advocates of SWBIs wish to minimise from the policy spotlight. Yet, the growth rate of GDP in a historical context is relatively good at both depicting the stage of the business cycle and any effective demand problems emanating from the system. It is imperative then to see how well the particular SWBI describes reality during the relevant trend period. *To what degree does a SWBI describe the underlying socioeconomic evolutionary patterns? How are the trends between a SWBI and GDP analysed in relation to the socioeconomic system? How can one explain the results over the business cycle or over long waves of growth and development?* This paper provides answers to such questions.

The results are that the majority of SWBI studies *do not have a detailed socio-historical account*. In these studies, a *raw* ecological economic approach is undertaken, which limits the approach of the study into the territory of strong sustainability. There is too much focus on 'the gap' between GDP and the SWBI. This study argues that the *most fundamental lesson* is not about the indicator itself but about having a strong socio-institutional analysis—an indicator (this includes GDP) is completely futile without a detailed explanation substantiating the results—*institutional theory must guide the statistical work*. The historical-institutional material is very important, but it was missing from the vast majority of these aggregate 'Green GDP' indices. There is a tendency in the SWBI literature to engage in *quantification for the sake of quantification*, but this will not aid our understanding of how degradation or enhancement of social and environmental welfare is panning out during the historically interesting epochs.