

INDIA'S BIOPHYSICAL ECONOMY, 1961 - 2008: SUSTAINABILITY IN A NATIONAL AND GLOBAL CONTEXT

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India's economic growth in the last decade has raised several concerns in terms of its present and future resource demands for materials and energy. While per capita resource consumption is still extremely modest but on the rise, its sheer population qualifies India as a fast growing giant with material and energy throughput that is growing exponentially. India, comprising almost a fifth of the world's population, draws a share of per capita income that is only 11% of the global average, 6% of global energy, and 10% of global material supply. Thus, the sustainability indicators for an average Indian are rather favourable: per capita carbon emissions (from fossil fuels and cement manufacturing) and the ecological footprint amount to only a third of the global average (0.31 t /cap and 0.75 ha/cap, respectively). But owing to its vast population and high population density, these modest numbers become problematic in terms of sustainability. Industrial activity has led India to be the second highest emitter of carbon dioxide, while its pressure on land is enormous: for materials this is 17 t/ha and for energy 114 GJ/ha, not so far below industrialised nations.

At the same time, discrepancies within regions in terms of their social metabolism explain increasing resource extraction conflicts. If such national and local trends continue, the challenges for regional, national as well as global sustainability are immense in terms of future resource availability, social conflicts, pressure on land and ecosystems and atmospheric emissions. Using the concepts of social metabolism and material flow analysis, this paper presents and discusses resource use trajectories for India from 1961 up to 2008. Some of these indicators are also presented in relation to GDP to better understand the relationship between the economy and biophysical flows. We argue for India's need to grow in order to be able to provide a reasonable material standard of living for its vast population. To this end, the challenge is in avoiding the precarious path so far followed by industrialized countries in Europe and Asia, but to opt for a regime shift towards sustainability in terms of resource use by building on a host of promising examples and niches to make India a trendsetter.