Developmental Benefits from a Low-Carbon Pathway

SUDHIR CHELLA RAJAN, SUJATHA BYRAVAN

The Interim Report of the Expert Group on Low Carbon Strategies for Inclusive Growth neither prioritises inclusivity nor offers concrete solutions to adopt a low-carbon pathway. Such a growth path can produce co-benefits and savings while moving millions out of poverty in India. It is socially, financially and politically the right way forward, but it needs to be articulated in much more explicit terms than what is currently proposed by the government.

Sudhir Chella Rajan (*scrajan@gmail.com*) is with the Department of Humanities and Social Sciences, IIT Madras, and Sujatha Byravan (*sbyravan@yahoo.com*) is with the Centre for Development Finance, IFMR, Chennai.

The release of the Interim Report of the Expert Group on Low Carbon Strategies for Inclusive Growth in May 2011 gives us an occasion to place India's climate stance in perspective. The Report, while useful in discussing opportunities for greenhouse gas (GHG) emissions reductions in various sectors, does not make inclusivity its priority. Rather, with growth as its starting point, it gives us little or no sense of what "inclusive growth" amounts to or indeed what should motivate the country to embark on a low-carbon pathway. With the somewhat tendentious claim that "India needs to sustain an economic growth of 9% over the next 20 years to eradicate poverty and meet its human development goals", the Report provides no indication of how this strategy alone will emphasise inclusivity rather than inequality (GOI 2011: 10). Similarly, the argument that India's Copenhagen pledge requires us to devise a low-carbon trajectory does not make arithmetic sense – with a 9% growth in the gross domestic product (GDP), and GHG emissions growing at about half that rate (based on recent history), no further action may be necessary to reduce the emissions intensity by 20-25% over 2005 levels by 2020. The Report argues that a change in the growth mix, presumably because of a sudden increase in the share of energy-intensive sectors, is possible and that this could slowdown reductions in emissions intensity. However, this seems unlikely, given the secular trend of an increasing share of the services sector in the economy.

Changing Positions

It is nevertheless worth placing the Report in the broader context of climate change and examining what a low-carbon inclusive growth strategy would really entail. International negotiations on climate change are still struggling to come to an agreement that sets clear goals for the reduction of GHG emissions so that global warming is kept below the "two degree centigrade guardrail". Beyond this point, highly non-linear changes in the earth's systems may occur and jeopardise the livelihoods of billions. According to the analysis by the German Advisory Council on Global Change, global fossil-based emissions of carbon dioxide (CO_2) must not exceed 750 gigatonnes (GT) over the next four decades, if the world is to have a 67% chance of keeping the temperature rise below two degrees (WBGU 2009).

Ever since negotiations began, India's key defence against taking any action on climate change was based on the argument that its low per capita emissions, combined with millions of its citizens still living in poverty, required an ethically determined allocation scheme. Consequently, wealthier nations responsible for the bulk of the added CO_2 concentrations in the atmosphere since the industrial revolution ought to take aggressive steps to mitigate climate change first. Nevertheless, in recent months, realpolitik seems to have prevailed and India has evidently dropped any demand for an equitable allocation of responsibility for reducing global emissions, instead signing on to a less-specific, target-free notion of "equitable access to sustainable development". The implications are that developed countries will not be held to account for their historical contributions to the climate crisis or for inaction in the future.

All may not yet be lost, however. Article 3.1 of the Framework Convention on Climate Change affirms that "the Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and

Table 1: Cumulative Emissions from Fossil Fuels under Alternative Scenarios and Proposals for Major Emitters, 2010-50 (gigatonnes)

Proposals -->	Business as Usual	Equal Per Capita Emissions	Historic Responsibility	Ability to Pay	Preserving Future Development Opportunities
China	295.2	174.8	99.2	150.5	295.2
US	283.3	40.1	2.5	4.4	-67.9
Russia	65.8	18.7	1.5	6.1	65.8
India	108.1	150.4	289.7	278.5	108.1
Japan	43.2	16.8	2.1	2.6	-10.4
Germany	33.3	10.8	1	1.6	-8
Canada	25.3	4.4	0.3	0.6	-6.1
Indonesia	31.8	30	45.1	38.9	31.8
Brazil	24.2	25.3	22.8	12.4	24.2
EU	148.5	56.5	7.6	10.1	-12.8
All countries in sample	1,413.6	704.0	704.0	704.0	704.0

Source: Adapted from Mattoo and Subramanian (2010).

in accordance with their common but differentiated responsibilities and respective capabilities" and is still in effect de jure, if arguably not de facto. This means that any strong unilateral action by developing countries to reduce emissions must be acknowledged by the international community as going beyond their responsibilities and also be compensated as such for it. Moreover, while the world may not have enough of a carbon budget left, there are ample negative cost opportunities as well as cheap "low hanging fruit" in emerging economies to reduce carbon emissions far more aggressively than in their wealthy counterparts. This is not to say "they can and therefore they should", but rather that they ought to in their self-interest and also be rewarded for it by the international community. Unilateral commitments could in fact be offered by developing countries on the proviso that an agreed-upon equity paradigm would be binding, as established by the Convention, and that the international community would honour any existing and future carbon debt. Cynics may not be reassured by this argument, but it is also the case that any long-term interest in averting a climate crisis requires developing country participation, and it is indeed the BASIC countries – Brazil, South Africa, India and China – that hold the trump cards, even if they continue to remain timid players.

Under various equity-based allocation schemes, India, along with five other large developing countries, receives relatively high allocations (Table 1). It will have an available carbon budget of at least 108 GT CO_2, and as much as 290 GT, between 2010 and 2050. In 2007, India emitted about 1.4 GT CO_2 from the use of fossil fuels[1] with an annual growth rate of about 4.6% between 2000 and 2007. Under a business-as-usual (BAU) scenario,[2] as described by Mattoo and Subramanian (2010), India will have barely exhausted its carbon budget by 2050; this implies an annual

growth in emissions of around 2.5% during the next four decades, which seems plausible if we imagine slow decarbonisation as a result of technological change and structural shifts in the economy, but no new policies.[3]

In the course of identifying low carbon development pathways for the country as a whole, it makes sense to formulate a vision that focuses primarily on the development needs of 30% of the population living in poverty. We argue that this approach will avoid the problem of "hiding behind the poor" and will in fact put India on a sustainable development trajectory.

Consider a scenario where the government decides to reduce emissions to 20% below what they would otherwise be in 2030 using domestic monitoring and evaluation mechanisms to track progress. The target may be achieved with no reference to poverty alleviation and by adopting technology options such as energy efficient motors and lighting systems, fuel economy standards, more efficient power plants, a higher mix of renewable energy sources, and lower transmission and distribution losses. Alternatively, the government could impose the same overall emissions cap and apply the same technologies, but include a specific focus on providing energy services to the bottom 50 million or so households by providing liquefied petroleum gas (LPG) or advanced electric cook stoves where feasible, access to electricity for lighting, water, sanitation services, improved access to services in urban areas (involving changes in land-use and transport), improved agricultural services, and so on.[4] The increase in emissions associated with poverty reduction activities will need to be offset by reductions at the top end of the income scale, say, for the 95th percentile. Here, one could conceive of progressive taxes on luxury emissions generated by aircraft and personal automobiles or even personal carbon taxes on the wealthy (Fawcett and Parag 2010).

Choice of Low-Carbon Pathway

There are four economic reasons to adopt the second type of low-carbon inclusive growth pathway, which we characterise as "gathering money on the ground", "picking low hanging fruit for co-benefits", "unleashing untapped labour", and "collecting on our carbon debt".

The first reason is simply the well-known fact that energy efficiency will result in savings simply by reducing demand for energy and fossil fuel imports. Sathaye and Gupta (2010) have recently estimated these benefits for the power sector alone to be in the order of about $600 billion over about a decade through 2020. It is quite conceivable that the savings could be extended through 2050 and that there are similarly many negative cost efficiency options in the petroleum sector as well. It will not therefore be a stretch to assume benefits of 2% of annual GDP from savings through efficiency improvements alone for the next four decades.[5]

The second motive, picking low hanging fruit for co-benefits, is that investing in low-cost renewable energy options, such as wind, biomass, and mini-hydro, and making efforts to disseminate small-scale decentralised solar photovoltaic systems, particularly to areas remote from grid access, will provide tremendous environmental and social co-benefits. These include reduced pollution and associated health impacts, improved livelihoods from small-scale manufacturing and services associated with renewable energy industries, and reductions in import of fossil fuels. The full extent of the scope and scale of non-GHG external costs of energy services from fossil fuels has not been analysed for India, but it may be safe to assume, based on studies carried out elsewhere, that these would amount to close to the private costs especially for coal-based power and petroleum-powered transport.[6] Investments to replace conventional options with the most appropriate, easy-to-implement renewable energy options will at worst cause no net reduction in national income but may generate additional savings, especially if the health benefits are significant.

The third benefit is the improvement in income opportunities associated with the provision of energy services for the poor. The availability of modern energy services is a necessary, though not sufficient, condition for improving living standards, education attainment, food security and livelihoods. The improvement in capabilities brought about by these changes will more than likely help add around 100 million people into the labour market over the next decade or so, and assuming that other macroeconomic conditions prevail to absorb them, one could expect the infusion of at least $200 billion to the GDP by 2025, adding another 3%-5% on average to the GDP.[7]

An increase in "survival" emissions for the basic needs of the poor will have to be matched by a reduction in "luxury" emissions from the wealthy.[8] There are tremendous opportunities for India to reduce emissions from the lifestyles of the middle and the rich classes. Addressing this issue is critical not only because it will reduce emissions, but also because lifestyles build aspirations for the poor. It is important that India gets on a low-carbon inclusive growth pathway sooner rather than later, since the institutions (policies, procedures and rules for engagement), technology, and infrastructure investments commit us to adopting specific development paths, which will be difficult to modify if we were to wait till people move out of poverty or till rich countries reduce their emissions. The process of change will come under enormous pressure from all quarters (people, companies, international organisations, etc) and would require large and sustained doses of political will.

Fourth, even if India's internal cap were only modest, amounting to an average 1.5% annual growth in carbon emissions over the next four decades, as opposed to 2.5% under BAU conditions, India would have savings of about 25 Gt of CO_2. India could, moreover, press for recognition of the carbon debt under one of the more familiar equity schemes, e g, historical responsibility and ability to pay, which are together close to the formulation of Greenhouse Development Rights (Baer et al 2007). India could then rightfully occupy the moral high ground in the international community by arguing that it is meeting its development objectives *and* playing a key role (over and above its responsibility) in reducing the risk of global climate change, while claiming up to about 207 Gt of surplus emissions that could be sold on the international carbon market for a present value remuneration exceeding $3 trillion (at $50 per tonne of CO_2 and 8% discount rate). Assuming the payment is carried out over the next 40 years, a benefit equivalent to about 0.75% of annual GDP on average may be expected.

All the above imply an addition of around 6%-8% to India's average annual GDP over the next 40 years. Thus, a low carbon strategy that places poverty first instead of growth yields manifold benefits, including growth itself. Reddy (1991) expressed this as an energy policy that is DEFENDUS (development focused, end-use oriented, service directed) rather than GROSSCON (growth-oriented, supply-sided, consumption directed), "Look after the people, and energy will look after itself!" (ibid). The shift in focus changes the solutions, and that changes everything.

NOTES

1 Climate Analysis Indicators Tool, see cait.wri.org.

2 Annual average per capita GDP growth through 2050 in the BAU scenario is assumed to be 5.2% by Mattoo and Subramanian (2010). Average annual GDP growth is assumed to be around 7%.Throughout this paper we have deliberately used back-of-the-envelope calculations to show broad patterns and to keep the argument simple.

3 This average annual growth rate over 40 years will triple current energy-related emissions by 2050, which is within the range of other BAU scenarios constructed for India (MoEF 2009).

4 For example, profound changes have been brought about in China that have transformed the country in a few decades to near complete electrification between 1980 and 2000, China increased its electricity production by 822 terawatt-hours (TWh) and provided access to electricity for about 700 million people. During the same period, India added about 279 TWh but increased access to electricity to far few numbers (IEA 2007).

5 We assume that an additional $400 billion of savings in the oil sector is achievable over the next decade, based on negative cost measures such as switching some freight from road to rail, improved land-use/transportation strategies such as transit-oriented development and the promotion of bicycles and pedestrian infrastructure (Rajan 2010). The resulting $1 trillion in savings over the decade is equivalent to about 4.5% savings in annual GDP between 2010 and 2020. Assuming the availability of similar opportunities over the remaining 30-year period and the continuation of energy efficiency efforts, we arrive at the estimate of 2% average savings in annual GDP through 2050.

6 A review of estimates of externality costs in the power sector shows very wide variation, with a median value of around 8-10 (1998) US cents/kWhfor oil and coal plants (Sundqvist 2004). An earlier study in India by S C Bhattacharyya (1997) for a single coal plant arrived at an estimate of 1.26 US cents/kWh, but it only looked at power production and the impacts of air pollution on mortality, morbidity and effects on buildings, with a relatively low "value of statistical life" of about $9,044, compared with about $4 million, which is normally used in international studies. We have therefore assumed that the externality costs of coal and oil plants in India may appropriately be equivalent to at least 8 US cents/kWh (or about Rs 3/kWh), which is close to their average generation costs. Adding these externality costs to conventional energy sources will make many renewable options, including solar, competitive.

7 We have assumed about 7% annual growth through 2025 and additional income for each working adult currently in poverty of about $1,500 (with one such person per poor household).

8 Assuming that the 95th income percentile is responsible for about 10t CO_2 per capita, a one-third reduction in their annual emissions through a combination of technology and lifestyle changes would spare about 600 mt CO_2, but would still be above the present world average of 5t CO2 per capita. This would nevertheless be enough to raise per capita emissions for the bottom 30% by about 0.6t CO_2, which could be associated with substantial improvements in energy services for them.

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