

Climate Change and Energy Challenge: A Focus on India

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Abstract

Climate change is one of the most important global environmental challenges, with implications for food production, water supply, health, energy, etc. Addressing climate change requires a good scientific understanding as well as coordinated action at national and global level. This paper addresses these challenges. Energy is the main driver of climate change as it contributes most of green house gases. The reliance of the world on fossil fuels and their increasing consumption has led to the present scenario. Unless the issue of energy with all its ramifications is tackled, the climate change issue will not be solved. India has been famous for arguing that it (and the rest of the developing world) should incur no expense in controlling emissions that cause climate change. The west caused the problem and it should clean it up. That argument is increasingly untenable—both in the fundamental arithmetic of climate change, which is a problem that is impossible to solve without developing country participation, and in the political reality that important western partners will increasingly demand more of India and other developing countries. India's own public is also demanding more. This paper suggests that a large number of options to control warming gases are in India's own self-interest, and suggests that leverage on emissions could amount to several hundred million tonnes of CO₂ annually over the next decade and an even larger quantity by 2030.

Keywords: Climate Change, Energy, Challenge, India, Management, Strategies.

1. Introduction and Background

India's energy policy faces enormous challenges ahead: challenges linked to addressing its energy poverty, managing India's high energy import dependence, and finding ways to address the electricity gap. Its ability to move to a more energy-secure future will depend very much not only on the sort of policies it adopts, but especially in the context of energy – on what a “partially globalized world,” a “world of thick networks of interdependence in which boundaries and states matter a great deal” makes possible or constrains. This world is characterized by an intense competition for resources, increased resource nationalism, a period of high and volatile oil prices, and an increased link between energy security and climate change issues. India's energy is insufficient to meet its needs. Some 600 million Indians lack electricity and 700 million depend on traditional fuels. Per capita consumption of 650 units of electricity per annum is well below the global average. The country imports 70 percent of its oil, 11 percent of its coal, and 17 percent of its natural gas. Its total installed electrical generating capacity is less than 150 gigawatts (GW), leading to estimated shortages of nearly 10 percent in energy terms and almost 17 percent in peak demand. Energy requirements to meet India's development goals, according to the Integrated Energy Policy (IEP) formulated by the government's Planning Commission, would require India to go from 327 million tons of oil equivalent (mtoe) in 2003-2004 to as high as 1858 mtoe in 2031. India's fossil fuel “path dependence,” coupled with a low domestic resource base for oil and now increasingly the evidence of a smaller resource base than projected for coal, results in very high imported fossil fuel dependence. India's share of global supply of fossil fuels is projected to be between 3.7 and 10.9 percent by 2031-2032 in a range of scenarios. Thus, the concern is that India needs to increase its share of fossil fuels in a global market that is constrained by supplies and a global market in which other country demands are also rising. Potential irregularities of supply and affordability become key energy security concerns.

To add to these import dependence concerns, the emerging carbon constraint poses a key challenge to India's ability to manoeuvre on the energy front, especially since India still needs to depend heavily on fossil fuels (especially coal) during the next 20 years. Ever since the rapid economic rise of China in the 1990s – and more latterly the growth of India – the centre of the climate debate has shifted away from deciding how to address climate change based on a “common but differentiated responsibility” that took account of the historic responsibility of the developed world. The debate now focuses on the historic *and* future responsibilities of major carbon emitters, including large emerging nations such as India and China. No climate agreement is possible or sensible; the argument goes, unless these countries – which will use coal-based systems to develop – are treated as serious negotiating partners. So an extraordinary amount of pressure is being mounted on India and China to curb future emissions by accepting targets: “if not in a direct manner then indirectly through the guise of sectoral targets, efficiency or intensity norms or standards and norms for equipment.”

There is well-accepted recognition of the impacts of climate change among Indian policy makers and the general public, although priority is given to economic and social

development. Regarding international attempts to establish an internationally-binding regime to curb carbon emissions, India finds it unacceptable, stating that most emissions were produced by developed countries and that India needs economic development and industrialisation. India's per-capita emissions are only one-third of the world average and 14% of per-capita emissions of OECD member countries. India took a leading role in the G77 during the COP 15 in 2009, denouncing any attempt by industrialised countries to impose carbon reduction targets on developing countries. That said, India is increasingly engaged in reducing carbon emissions and alleviating environmental degradation. India announced its National Action Plan on Climate Change in 2008, and during COP15 in Copenhagen in 2009, India's environment minister reconfirmed India's goal to reduce carbon emissions per unit of GDP by 20% to 25% below 2005 levels by 2020. Frequent flooding and droughts, deforestation and desertification as well as possible glacial melting in the Himalayas have focused on climate change and provide strong impetus towards India's transition to a low-carbon economy.

The sober math of climate change, which underscores the need for radical changes in the world's energy systems, has been known for some time although most governments have not made much investment in actually changing the status quo. All that is now changing, and policy efforts on climate change are becoming much more serious. The pivotal shift has been the emergence of real policy in the United States (US) – the world's largest economy, the largest of per capita emitter of GHGs of the all the major economies, and an absent leader on many issues of international concern in recent years. The essential role of the developing countries is now widely known and appreciated, even in the key developing countries such as China and India. Indeed, the Bali "road map" for the climate change talks that are slated to conclude this year in Copenhagen envisions that developing countries will make efforts to control growth in their emissions. India is now responding – both to demonstrate its contribution to the global effort and because it realises that India, too, stands to suffer from unchecked changes in climate. The country has crafted a National Action Plan on Climate Change (NAPCC), which provides the road map for India's climate change policy.

India's NAPCC, while asserting its emphasis on adaptation to climate change and priority for economic development, also lays out, in general terms, the overall framework for actions in different spheres of its energy system in response to climate change. Specifically, it lays out eight national missions as the way forward (GOI 2008a): national missions for solar energy, energy efficiency, sustainable habitat (public transport; building codes), water, Himalayan ecosystem, green India (afforestation), sustainable agriculture, and strategic knowledge for climate change. The NAPCC is a positive first step in India's efforts to combat global climate change.

2. Adaptation or Mitigation: Changing Dynamics

Since the very beginning of international negotiations on climate change, India has disavowed direct responsibility for emissions mitigation efforts and instead has

emphasised adaptation to climate change as its preferred response. It has fiercely advocated that the international response to climate change be based on the principle of equity “that must allow each inhabitant of the earth an equal entitlement to the global atmospheric resource”. India has also been a foremost proponent of adaptation as a cornerstone of international response to climate change, and championed the Delhi Ministerial Declaration on Climate Change and Sustainable Development issued in 2002, which emphasised “urgent attention and action on the part of all countries” for adaptation. Although this stance has evolved, and somewhat softened, over the last two decades, the essence and tone remain the same. Parts of India’s climate strategy are unassailable. Adaptation must play a larger role; the deal crafted on climate change must be seen as fair and equitable. But the view that India is most famous for espousing – which is that the west caused the climate change problem and the emerging markets should not be expected to focus on this problem until they are wealthier – is increasingly unsustainable. India’s rapid economic growth since 1991 – mainly fuelled with the most carbon-intensive fossil fuel, coal – has put India in a leading role for controlling emissions.

Economic models predict that over the next two decades India’s emissions will grow threefold to reach over 3.5 billion tonnes CO₂/yr in 2030 (but per capita emissions still remain lower than most other major countries; At both the international level and within its domestic politics, the government of India is increasingly feeling severe pressure to take active part in the global response to climate change. At the international level, India has been the most visible member of a coalition of nearly all developing countries that has firmly maintained that the moral and economic responsibility to combat global warming lies with the industrialised nations that, due to their industrialisation based on fossil fuels, have caused most of the atmospheric build-up of GHGs. Moreover, this coalition under India’s banner has made their engagement conditional on financial and technological transfers. This view has held for nearly two decades – ever since the first climate change talks began in 1991 – in part because the industrialised countries, especially the US, themselves did not advance a particularly coherent and significant action plan. But the situation is rapidly changing – GHG mitigation is a top priority for most Annex-II countries now. The new US administration under President Barack Obama has been vocal about its seriousness on the issue. The \$787 billion economic stimulus package has provided about \$40 billion in new funding to the Department of Energy (DoE) for low-emission energy investments (notably renewable power). Within the US several economy-wide cap-and-trade policies are being actively debated. The Waxman-Markey discussion draft, “The American Clean Energy and Security Act of 2009”, pushes strongly for national limits on GHG emissions and for aggressive use of renewable sources of energy. But crucial elements of climate change action began to emerge bottom-up (at the state and local levels) as early as 2002. Several states (most prominently California and the north-eastern states) are well ahead of the US federal government in promoting energy efficiency and electricity from renewable sources. The European Union, a long-time champion of aggressive mitigation actions by industrialised nations, too has notched

up its own mitigations plans. In an agreement reached on the “20/20/20 by 2020” European Union (EU) programme, the EU is committed to reducing GHG emissions by over 20% in 2020 compared with 1990 levels. As the industrialised nations get more serious on climate change, action on mitigation efforts will form a crucial part of India’s continued successful international relations with these countries. At the domestic level within India, the debate has become a lot more dynamic over the years. The government and various ministries concerned with energy are engaged in the process in one way or another through the NAPCC. Awareness of the climate change issue is also increasing among the public, thanks to non-governmental organisations (NGOs) and other ad campaigns. There is also increasing evidence that India will be one of the worst sufferers of the consequences of drastic climate change (IPCC 2007; TERI 2003). Such evidence has done more to galvanise the attention of Indian people and policymakers alike than two decades of international negotiations. The political equation on climate change is rapidly changing, and India’s stances in years past are losing steam. It is imperative that India realises this, and engages more constructively in global mitigation efforts.

3. Framework for India’s Engagement

The implication of this shifting political equation is that India must search for ways to engage with the climate change issue – not only in easing India’s adaptation to likely climate effects but also in mitigating emissions. In the face of that serious engagement, the international community must prepare to recognise (and where possible to facilitate) the positive efforts that India is making in that direction. We suggest that the only serious and viable approach for India’s engagement in global efforts to tame global warming is one that aligns with India’s own core interests. Those interests are complex, but at their core are the goals of economic development and energy security.

Virtually, every Indian policymaker agrees that a strong and sustained economic growth is essential to raise living standards and bring India’s masses out of poverty. This belief is reinforced by the material difference that the growth since 1991 has brought. At the national level, any policy measure, whether related to energy or not, must further India’s economic development, or at least align well with this agenda. Energy security is the other major issue that concerns India. The Indian political leadership considers energy security as the ability to “supply lifeline energy to all our citizens as well as meet their effective demand for safe and convenient energy... at affordable cost” (GOI 2006). Moreover, India’s continued economic success and energy security hinge on obtaining reliable and cost-effective energy supplies; increasingly, those supplies depend on delivery chains that are unsustainable. Central policymakers in India are quite aware of the situation, and they see energy sector reforms and better energy infrastructure as the key to India’s energy problems (GOI 2006, 2008a). All domestic and international strategies involving India must realise

these core interests as boundary constraints on what India is willing to offer as part of its contribution to climate change.

4. Conclusion

Based on arguments of equity and per capita emissions, India has shied away so far from direct engagement in global efforts to mitigate emissions of GHGs. While essentially valid, such arguments are becoming increasingly unsustainable in the international politics of climate change. A serious climate change policy, backed with necessary action, will increasingly become a part of India's relations with industrialised countries, especially the US – as the world gears up for serious mitigation action, some kind of engagement on India's part may be unavoidable.