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India: the next superpower?: managing the environment: a growing problem for a growing power

Report

Managing the Environment: a Growing Problem for a Growing Power

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India has undergone a remarkable transformation over the last two decades. Its economic growth, averaging at six percent between 1992 and 2001, and eight percent between 2002 and 2011, has seen it emerge as one of the fastest growing economies in the world today. The quadrupling of its national GDP, and the rise of its per-capita income from $915 in 1991 to $3,700 in 2011, has had a powerful impact in improving the economic and social welfare of its citizens across a range of parameters.

Despite a population growth of over 40 percent, from 850 million in 1991 to 1.2 billion in 2011, India's literacy rate has grown steadily from 52 to 74 percent over this period, its average life expectancy has risen from 58 to 68 years, and its infant mortality rate has dropped from 80 to 47 deaths per every thousand births. At the same time, India has continued to maintain the gains that it made in agricultural production during the Green Revolution in the 1970s to remain a largely food-secure nation. Although the benefits of its economic boom have not been equally distributed, with widening disparities between the rich and poor, there is little doubt that overall poverty levels today, however measured, are lower than they were in the past.

The economic growth of last twenty years has also been accompanied by the expansion and modernisation of India's industry and its public infrastructure. The Golden Quadrilateral project alone added more than 3,600 miles of four-lane highway over the last fifteen years, compared to the 300 miles that had been built in the previous fifty years since independence. This period has also witnessed stupendous increases in wealth for some, with the number of dollar billionaires growing from one to fifty-five, and the emergence of a burgeoning middle class, conservatively estimated at 50 million, whose rising discretionary incomes and changing tastes have had a profound effect on levels of private consumption. Between 1991 and 2011, the number of cars in India grew from 180,000 to 2.9 million; the number of air travellers expanded from 8.9 million to 57 million; and sales of consumer goods such as television sets, air conditioners and washing machines all multiplied manifold.

Yet amidst this picture of general progress, the one area which has shown little significant improvement in the last twenty years and has, by most accounts, actually worsened considerably, is the state of the country's environment. As a recent United Nations report concluded, with reference to both to India and China, the 'economic growth of recent decades has been accomplished mainly through drawing down natural resources, without allowing stocks to regenerate, and through allowing widespread ecosystem degradation and loss'. This dismal picture is confirmed by the 2012 Environmental Performance Index (EPI), a global metric developed by Yale and Columbia universities, which ranked India 125th out of the 132 countries whose environmental performance it evaluated, and placed it last among its peers in Asia. With threats to its natural environment mounting by the day, the prognosis for the future looks bleak.

If left unaddressed, the severe ongoing degradation of India's environmental assets, upon which millions of its citizens still depend daily for their survival, will pose one of the most serious challenges to its long-term development and growth prospects.

INDIA'S DETERIORATING ENVIRONMENT

While environmentalists may be prone to exaggerate the gravity of the situation, the rapid deterioration of India's air, water, land and other natural resources is hard to refute, going by hard facts alone.

On air quality, for instance, despite some positive initiatives such as the introduction of compressed natural gas-run autos and buses, and new Metro systems in cities such as New Delhi and Bangalore, the overall state of air pollution has worsened across the country. The 2012 EPI ranks India's air as the unhealthiest in the world, with levels of fine particulate matter at nearly five times the acceptable threshold for human safety in some cases. In 2004, based on measurements in 50 cities, the World Bank estimated the annual economic cost of damage to India's public health from increased air pollution alone to be $3 billion. While growing vehicular and industrial emissions are the principal contributors to this problem in urban areas, indoor air pollution caused by charcoal and biomass burning remains a major health hazard in the countryside, affecting particularly women and children, and causing, by World Health Organisation estimates, nearly 500,000 deaths every year.

The situation is no less dire when one considers the water sector. With only four percent of the world's usable fresh water supply, and 17 percent of its population, water has always been a limited resource in India. But poor management and excessive exploitation of this valuable, albeit hitherto under-priced, resource has now exacerbated the situation to a point where the country is headed towards a grave water crisis. Satellite assessments conducted between 2002 and 2008 revealed an annual decline of four centimetres in ground water levels in the fertile alluvial tracks of northern India, equivalent to a 70 percent increase in extraction rates compared to the previous decade. A decline in water tables is also evident in other parts of the country, where rates of natural recharge are even lower.

This has not only led to wetlands and rivers drying up due to reduced base flows, but also to contamination of ground water aquifers – a major source of drinking water in India – with arsenic, fluoride and other harmful substances. Water quality across the country has also been adversely affected by the pollution caused by excessive fertiliser run-offs from agriculture, inadequate sanitation and reckless dumping of industrial and household wastes into the country's rivers, lakes and other fresh water bodies. With only about 30 percent of the country's total sewage undergoing treatment prior to disposal, the public health consequences of this have been significant, with associated water-related diseases causing an estimated 450,000 deaths each year. Growing water shortages have also led to increased conflicts in various parts of the country. With demand for water rising by the day, the country is poised to face serious water scarcity in the coming years.

The quality of India's land resources has also deteriorated considerably in recent decades. The role played by the Green Revolution in enhancing national self-sufficiency in food production through the use of high-yielding crop varieties and intensive water and fertiliser inputs is indisputable. Yet it is only recently that some of the hidden costs of this approach have begun to be realised. The overuse of chemical fertilisers has not only adversely affected ground water quality and supply but has also resulted in severe soil degradation in some of India's most important agricultural regions. Moreover, the enormous state subsidies that have enabled the liberal use of these inputs have had perverse effects, contributing to soil nutrition imbalances that are now driving diminishing returns. Likewise, the extensive use of chemical pesticides, which grew from 154 tonnes in 1954 to about 90,000 tonnes in 2008, has had a damaging effect on the farming system by raising pest resistance, reducing populations of natural predators, and increasing local toxicity and health risks – including, in some cases, to cancer – among the country's agricultural communities.

Other natural resources in India – forests, fisheries, biodiversity – have also faced increased pressure over the last two decades. Although forestry is perhaps one area where the country has, as per government statistics, managed to hold on to, and even enhance, its tree cover over the last twenty years – largely due to the growth of manmade plantations – this relative success needs to be qualified by two points. First, that although the total area under forests may have increased, most natural ecosystems in the country continue to face varying degrees of degradation, and their quality – and the concomitant risks to biodiversity – has not necessarily improved. Second, India's forests today face impending threats not only from traditional sources, but also from the fact that most of the country's coal and other mineral resources on which India's future economic growth is predicated lie underneath these lands. Despite initiatives to involve disenfranchised forest-dependent communities and tribes in their local management and protection, a question-mark remains over the long-term security of these forestlands, given the ever-present possibility of their future acquisition, either by the state or by private interests, for purposes of industrial and infrastructure development. Moreover, the fact that the most recent assessment by the Forest Survey of India in 2011 shows a decline in national forest cover for the first time in several years – attributed to growing conflicts over the rights to forest resources in India's neglected hinterland – should further caution against any excess optimism.

Adding to all these existing challenges is the emergence of the newest, and perhaps most potent long-term, threat to India's environment, that of climate change. Although this is a problem that India has not caused, it is one whose effects it will feel most acutely in the future. According to the most recent assessment by the Intergovernmental Panel on Climate Change, rising temperatures are expected to cause erratic rainfall, declining crop yields, reduced fresh water supplies, increased frequency of floods and droughts, higher risk in the spread of diseases, and rising sea-levels across Asia. Finer-grained government assessments undertaken in key climate-sensitive regions and sectors of India paint an equally grim scenario for the country. Given the dependence of India's agriculture – which accounts for 15 percent of GDP and over half of its total workforce – on good monsoon rains; the reliance of its major river systems on Himalayan glacier flows; and a 7,500 km-long coastline that is both densely populated and vulnerable to extreme weather events and sea-level rises, climate change is a threat that cannot be overstated for India.

A BLEAKER ENVIRONMENTAL FUTURE?

Compounding these existing environmental threats even further is the trajectory of India's future expected growth and development. By most estimates, India's economy is likely to continue on its current growth path of seven to eight percent per annum for the next two decades. If this happens, it will go from being the world's tenth-largest economy today to the fifth-largest by 2020; the third-largest by 2030; and, by some accounts, even the leading economic power, in PPP terms, by 2050. On the one hand, this can be a cause for celebration, restoring India to its 17th century position of global pre-eminence and scoring a major victory in the global fight against poverty. On the other hand, if improperly managed, it could precipitate an environmental crisis that would negate the gains of growth and reinforce existing patterns of national inequity.

In assessing the environmental risks of India's projected economic growth, four trends stand out in particular, whose management will determine the nature of the outcomes that are realised. These are rising personal consumption levels; growing urbanisation; expanding infrastructure; and a greatly increased demand for all types of resources.

At current growth rates, India's real per-capita GDP is expected to grow five-fold by 2030 over 2005 levels. According to McKinsey, the size of India's middle class is also expected to expand dramatically from 50 million to 583 million by 2025. The same estimates suggest that increased spending by India's new middle and upper classes will quadruple aggregate consumption levels over the next two decades, catapulting India from being the twelfth-largest consumer market in the world to its fifth-largest, just ahead of Germany. One outcome of this future trend is seen in India's transportation sector, where, with rising private ownership, the country's total vehicle fleet (including

2-wheelers) is expected to increase seven-fold from 51 million in 2005 to about 380 million by 2030, with all the associated impacts of traffic congestion and air and noise pollution.

A second important trend is that of growing urbanisation within the country. India's urban population, which was about 285 million in 2001, and 380 million in 2011, is expected to grow to over 600 million by 2030, comprising about 40 percent of its total projected population of 1.4 billion. Given the poor infrastructure of India's present towns and cities – with woefully inadequate sewage, water, sanitation, roads, transportation, housing and other public facilities, especially for the urban poor – the growing spread of mostly unplanned urban settlements across the country is expected to further worsen this situation. According to an estimate by Goldman Sachs, the number of Indian cities with populations of over one million could double by 2020, and quadruple by 2050. This would place severe strains on basic infrastructure and lead to increased urban congestion, waste generation, and air and water pollution.

It is widely accepted that in order to achieve and sustain a rapid rate of economic growth, and meet the growing demands of urbanisation, India urgently needs to expand and upgrade its overstretched infrastructure – its power plants, roads, ports and airports, as well as other public and private facilities. Total investments for infrastructure development in India over the next decade have been estimated at around $620 billion, and plans to implement this expansion are currently underway. The construction sector, which has grown at a compounded annual rate of 11 percent over the last eight years, and presently accounts for nine percent of national GDP, is expected to maintain its current pace of growth in the forthcoming future. However, the environmental consequences that will result from converting much of the country's landscape into a giant construction site are likely to be significant, as are the social tensions that will almost inevitably accompany the related processes of land acquisition.

Cumulatively, all of the above trends are certain to result in a vastly increased demand for natural resources of every kind. Economic growth, changing consumption patterns, urbanisation and infrastructure development will drive up demand in all sectors; be it for power, building stock or consumer durables, or for the raw materials needed to produce them: coal, oil, water, cement, steel and other natural minerals and resources. Demand for building stock in India, for instance, is estimated to rise by more than five times in the next two decades over 2005 levels, causing in turn a six- to seven-fold increase in the demand for cement and steel. Similarly, oil consumption in the transportation sector is expected to grow fivefold by 2030. India's total primary energy demand is expected to triple by 2030, making it the third largest consumer of energy in the world, after the United States and China. This scale of resource use and extraction is unlikely to happen without imposing significant environmental costs. India's power sector, for instance, which is and will remain heavily dependent on coal, will inevitably generate environmental externalities which will manifest themselves at different spatial scales – local, regional and global – including through increased greenhouse gas (GHG) emissions.

Thus the environmental consequences of India's future economic growth will also have a global dimension. Although miniscule in historical and per capita terms, its national GHG emissions, which currently amount to about five percent of total global emissions, are expected to rise rapidly in coming years, making it the third largest GHG emitter in the world by 2015. Consequently, India will continue to come under increased international pressure to moderate the growth of its emissions in the future. The ecological footprint that India will cast abroad will also expand in other ways, given the limited domestic supplies of natural resources, especially oil and coal, that it needs for its development. This is already evident, for example, through its increased competition with China and other traditional Western powers to access untapped resources in Africa and elsewhere. India's future growth could therefore have adverse environmental consequences for the quality of natural resources, biodiversity and climate, not just at home but outside its borders as well. However, this needs to be tempered by the fact that for all its vaunted growth, India's consumption of the planet's resources, and indeed its emissions, remain, on average, well below that of the industrialised world, and this will continue to be the case in the foreseeable future.

GLIMMERS OF HOPE

On the whole, it is clear that the current pattern of India's economic growth bears significant environmental costs and risks, including in terms of undermining its own future growth potential. Yet there are some strands of hope. For instance, the country has registered significant successes in renewable energy development in recent years. Between 1990 and 2010, India's power generation capacity from grid-interactive renewable energy sources, excluding large hydropower, expanded 1000-fold from 18 MW to over 18,000 MW, and India is one of the top five producers of wind energy in the world today. New forays and investments in solar, wind, and other renewable energy technologies and options could, in time, provide it with more feasible alternatives to traditional fossil fuels. Moreover, national levels of both energy and emissions intensity have been steadily declining over the years. Some industries, such as steel and cement, have also successfully managed to modernise and achieve world-class standards on efficiency of production.

The positive role historically played by India's judiciary, press, civil society organisations, and its rich tradition of people-based movements, in promoting environmental awareness and sustainability across the country also lends hope for the future. Though poorly enforced due to inadequate governmental capacity and other systemic weaknesses, India nevertheless also holds some of the strongest legal statutes in the world to protect the natural environment. Furthermore, there is a growing realisation today of the fact that environmental degradation poses a serious long-term threat to the future growth and well-being of the country, and it would be in its own interest to pursue a more environmentally sustainable developmental pathway.

With 80 percent of the India of 2030 still to be built, there is an opportunity still for course-correction. But the bottom line is that India will need to become more efficient, frugal and technologically innovative in its use and disposal of natural resources. It will also need to seriously rethink its present understandings of modernity, development, and, perhaps above all, power. Unless India is able to 'manage its environment' effectively, in every sense of the term, any hopes that it might foster of achieving future superpowerdom will remain only a futile dream. ■