Issue 5

Managing Natural Systems

Conserving and protecting natural systems for prosperity

India Green Economy Barometer 2017

green economy coalition

MAINSTREAMING ALTERNATIVE PERSPECTIVES
Towards Sustainable Economies

Development Alternatives

People and economies depend on nature – for a stable climate, food, clean air and water, energy and raw materials –and yet we have failed to reflect that dependency in our economic activities and projections. It is in our economic and societal interest to ensure environmental stability, favourable climatic conditions and the on-going provisions of environmental goods and services.

Economic growth policies pursued without sufficient investment in the natural world are unsustainable for three main reasons: **Resource-intensive growth** pushes up commodity prices -food, fuel, and metals become more expensive, leading to people and firms not being able to buy much, thus bringing growth rates down and in some cases making them negative. **Carbon-intensive growth i**mpacts the climate, with economic costs from increased numbers of extreme weather events, and reduced food production in some areas. **Ecosystem-destroying growth** undermines the foundations of future livelihoods and prosperity, particularly in the case of food growing and fisheries.

Economic resilience

Ecological assets contribute to a country's wealth and prosperity. The improved management of natural capital also strengthens a country's resilience to the increasing volatility to extreme weather conditions.

Prosperous societies

We are all dependent on the earth's resources, and all have our livelihoods, as well as our supplies of food and water, at risk when resources and ecosystems are allowed to decline. Sharing prosperity more widely is going to depend crucially on investing in the natural world, so that we can avoid the current widening distribution of prosperity. Investment in the natural world, including forest and water systems – from both public and private sources – is essential in order to create and sustain prosperity for the world.

Business opportunity

Advanced companies assess the impacts of the long-term trends ontheir business. This is a sensible strategic planning and minimises future risks. Firms that track social, environmental, and political trends – and are, therefore, able to foresee future changes in regulations and taxation – have a built-in advantage and a set of opportunities.

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State of Natural Systems

The current status of the world's **natural capital** is far from favourable. For over 40 years, humanity's demand for natural resources has exceeded the planet's biocapacity – the amount of biologically productive land and sea area that is available to regenerate these resources. Our Ecological Footprint indicates that 1.5 Earths would be required to meet the demands that humanity currently makes on nature. This is leading to deforestation, degraded soils, polluted air and water, and dramatic declines in numbers of fish and other species. As a result, we are running in an ecological debt of USD 4-4.5 trillion every year - double the losses estimated by the world's financial institutions as a result of the credit crisis of 2008. The problem is also getting worse as the population and consumption keep growing faster than technology finding new ways of expanding what can be produced from the natural world.(Global Footprint Network, 2014) If we continue on this path, it is estimated that by 2030, 2 Earths will be required to sustain human activity. In 2012, India had the third heaviest Ecological Footprint in the world, and its resource use was double its bio-capacity. The total Ecological Footprint of India is heavy because of its population of over 1 billion.(Ribeiro, 2014)

The global **Living Planet Index** (LPI), which measures trends in thousands of vertebrate populations, shows a decline of 58% between 1970 and 2012, with losses on track to reach 67% by 2020. In other words, the number of wild animals living on Earth is set to fall by two-thirds, by 2020. The biggest cause of tumbling animal numbers is the destruction of wild areas for farming and logging: the majority of the Earth's land area has now been impacted by humans, with just 15% protected for nature. Other causes include pollution, climate change and species over-exploitation. (WWF, 2016) As per the IUCN Red List, 92 species of mammals, 84 species of birds, 75 species of amphibians, 54 species of reptiles, 222 species of fish, 128 species of invertebrates and 388 species of plants in India were listed as threatened in 2016. Overall, 758 animals and plants species in India are listed by IUCN as globally threatened, which is only 0.55% of all extant species documented in India.(IUCN Red List , 2016)

About 30 per cent of our global land area has already been significantly **degraded**, that is, a reduction in the capacity of land to provide ecosystem services and assure its functions over a period of time. One third of grasslands, a quarter of croplands, and almost a quarter of forests experienced degradation over the last three decades. The annual cost of land degradation is estimated to be about USD 300 billion. (Nkonya, 2016) The extent of land degradation in India is 120.4 million ha, comprising of 82.6 million ha under water erosion, 12.0 million ha under wind erosion, 24.7 million ha under chemical degradation and 1.0 million ha under physical degradation.(Lok Sabha , 2016) Land degradation arises in part from land-use change and also from poor agricultural management practices.

There has also been a steadily increasing pressure on **water resources** due to the growing human population combined with shifting consumption patterns. Nearly 50 countries, including India, experienced water stress or water scarcity in 2014, increased from just over 30 in 1992. Water stress is defined as annual renewable water resources less than 1,700 m3 per inhabitant, water scarcity as less than 1,000 m3 per inhabitant, and absolute water scarcity as less than 500m^3 per inhabitant. (UN-Water, 2011) It is predicted that most of the Indian states will have reached the water stress condition by 2020 and water scarcity condition by 2025.(Govt of India, 2009)

Finally, there has been a continuous degradation of the world's **air quality** since the Industrial revolution started in the mid-18th century. Today, 92 per cent of the world's population lives in places where air quality levels exceed WHO limits i.e. 10 µg/m^3 annual mean of PM2. This is mainly due to the emission of greenhouse gases. In 2012, CO_2 emissions ($MtCO_2$) of the world were34466. India's contribution to this was 1823, while its CO_2per capita was 1.5. This was much lower than the world average of 4.9.However, India's per capita emissions have risen by a significant 55% between 2003 and 2012. In 2012, India's CO2intensity of GDP was 1.33. While this was more than double the world average of 0.64, there was a 9% fall in intensity between 2003 and 2013. This implies that India's $CO_2$is low, but is also rising fast.(Knight, Robbins, & Chan, 2013)

Managing Natural Systems

Ideally, changing the global economic system would entail a transformation in which human development is decoupled from environmental degradation and social exclusion. For this to occur, a number of significant changes need to take place in the areas of natural capital protection, governance, financial flows and markets.(WWF, 2016)

Protecting Natural Capital

Earth's species and habitats have their own intrinsic value, but they also form the foundation of human societies and economies. Economy must particularly focus on protecting and restoring key ecological processes necessary for food, water and energy security, as well as climate change resilience and adaptation. To adequately protect natural capital, resources need to be used sustainably, and the global network of protected areas needs to be expanded. Adequate funding mechanisms are needed if protected area management is to be effective. Recognising the importance of biodiversity and natural resources, India's 12th Five Year Plan (2012-2017) has, for the first time, mainstreamed sustainability as a primary goal, noting that greater attention needs to be paid on addressing issues of forests, water and land resources, and incorporating environmental aspects into the national accounting system.(MoEFCC, 2014)

Government Initiatives

- In 2008, India formulated a **National Biodiversity Action Plan (NBAP)** and adopted 12 National Biodiversity Targets. These targets are in line with the 20 Aichi Biodiversity Targets which are part of the Strategic Plan for Biodiversity 2011–2020, adopted by India in 2010, being a party to the Convention on Biological Diversity (CBD).(MoEFCC, 2014)
- The MoEFCC is implementing a scheme called the **National Plan for Conservation of Aquatic Eco-systems (NPCAE)**, the principle objective of which is holistic conservation and restoration of lakes and wetlands for achieving desired water quality enhancement, besides improvement in biodiversity and ecosystem, through an integrated and multidisciplinary approach with a common regulatory framework. The scheme would contribute to reduction of pollution loads and improvement in biodiversity.(INDG, 2007)
- In 2008, India launched its **National Action Plan on Climate Change (NAPCC)**. NAPCC has eight national missions that outline priorities for both mitigation and adaptation to combat climate change. The current eight missions are on the areas of solar energy, energy efficiency, sustainable habitat, sustainable agriculture, Green India, water, Himalayan ecosystem and strategic knowledge. (TERI, 2016)
- In 2016, the government launched more than 300 projects along the banks of Ganga, ranging from construction and modernisation of ghats to afforestation of river banks, under the Namami Gange Programmeto clean and protect the 2,500 km long river. This programme has an outlay of INR 200billion for five years.(Bureau, 2016)
- The **Integrated Wastelands Development Programme**, which was launched in 2009-2010, is aimed to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. The outcomes are prevention of soil runoff, regeneration of natural vegetation, rainwater harvesting and recharging of groundwater.
- In 2016, India ratified the **Paris Agreement** on climate change. As part of this agreement, India has committed to reduce its emissions intensity per unit GDP by 33 to 35 percent below 2005, by 2030, create an additional carbon sink of 2.5 to 3 billion tonnes of carbon dioxide through additional tree cover, and have non-fossil fuels makeup 40% of its energy portfolio by 2030, among other things. (GOI, 2015)

Business Initiatives

- In 2012, L**eaders for Nature (LfN)** launched its second network in India. LfN is a business biodiversity network, initiated in the Netherlands by IUCN in 2005, which engages multinationals to work towards greening the economy. LfN's vision is that by 2050, businesses in India will have implemented solutions to reduce their ecological impacts, resulting in a net positive impact on natural capital,thus, collectively

creating an Indian economy that values, conserves and restores nature. Currently 8 large Indian firms are part of this network.

- Application of the **Natural Capital Protocol**, which offers a standardised framework to identify, measure and value impacts and dependencies on natural capital, has begun In India. For example: The TATA group has started valuing natural capital by applying the protocol to three of its companies (TATA Power, TATA Chemical & TATA Steel) and is committed to demonstrating the value of the approach to key internal and external stakeholders, so that it becomes a valuable decision support to strategy and business development, project execution, operations and the supply chain of businesses.

Civil Society Initiatives

- The **Jharkhand Jungle Bachao Andolan** started in 2000 as a grass-roots movement for restoration of forest rights for the indigenous people, providing them a common platform for sharing of experiences, coordination and cooperation in Jharkhand. This project is run by the Bindrai Institute for Research Study and Action (BIRSA), with support from the International Work Group for Indigenous Affairs (IWGIA). It now has about 5000 registered members in 45 blocks in 12 out of 22 districts of the state. As a result, indigenous people of Jharkhand have become conscious of their rights, as well as the importance of forest conservation.
- The **Chipko Movement** started in 1973 as a non-violent movement aimed at protection and conservation of trees and forests from destruction in the Chamoli district; from there it spread to other parts of the country. The Chipko Movement gained momentum under Sunderlal Bahuguna, an eco-activist, who spent his whole life persuading and educating the villagers to protest against the destruction of forests and the Himalayan Mountains by the government. One of the major achievements of the Chipko Movement was the ban on cutting trees for 15 years in the forests of Uttar Pradesh in 1980. Later on, the ban was also imposed in Himachal Pardesh, Karnataka, Rajasthan, Bihar, Western Ghats and Vindhayas.(EcoIndia)
- The **Save Silent Valley Movement** started in 1973 to save the Silent Valley Reserve Forest in Kerala from being flooded by a hydroelectric project. It was led by Kerala Sasthra Sahitya Parishad (KSSP). This movement forced the government to abandon the project in 1980, and resulted in the area being declared as a National Park in 1984.(India Today , 2009)
- The **Appiko Movement** was launched in 1983 by the representatives of a Yuvak Mandali to save the Western Ghats in Southwest India. This movement has created awareness about the ecological destruction of forest wealth, among villagers throughout the Western Ghats.People now closely monitor the exploitation of forests by the forest department, and have been able to show the discrepancy between the professed and actual practices of forest management. The Appiko Movement forced the government to change its forest policy. Some specific changes include ban on clear felling, no further issuing of concessions to logging companies, and moratorium on felling of green trees in the tropical rainforests of Western Ghats. (Mondal, 2002)

Source: Wikipedia

Equitable Resource Governance

Legal and policy frameworks should support equitable access to food, water and energy, and stimulate inclusive processes for sustainably managed land and sea use. This will require an evolved definition of well-being and success that considers personal, societal and environmental health. It will also necessitate decision-making that respects future generations and the value of nature.

Government Initiatives

- The Central Pollution Control Board (CPCB), established in 1974 by MoEFCC, has been playing a key role in **abatement and control of pollution** in the country by generating, compiling and collating data, providing scientific information, rendering technical inputs for formation of national policies and programmes, training and development of manpower and thorough activities for promoting awareness. CPCB has identified a list of polluted cities in which the prescribed National Ambient Air Quality Standards (NAAQS) have been violated. Action plans are being formulated and implemented to control air pollution in non-attainment cities by the respective states. (Central Pollution Control Board , 2015)
- **Joint Forest Management** was initiated in 1990, under which local communities and the forest department jointly plan and implement forest regeneration programmes. The total number of Joint Forest Management Committees (JFMC) in the country as in2010 is112,896, and the forest area brought under it is 24.6 million hectares, as observed till March 2010.Though there is an overall increase in the number of JFMCs, the area covered under forests has decreased, as compared to 2006. There has been a downward correction in the number of JFMCs and forest area covered in the states of Andhra Pradesh, Himachal Pradesh, Mizoram and Punjab, as many registered JFMCs, on monitoring, were found to be non-functional. (ENVIS Centre on Forestry, n.d.)
- The **Indian Network for Climate Change Assessment (INCCA)**, established by MoEFCC in October 2009, is a network based programme to make science, particularly the three Ms (measuring, modelling and monitoring),the essence of India's policy making in the climate change space. It brings together over 120 institutions and over 220 scientists from across the country. The INCCA has been devised to ascertain climate change impacts in 2030. In 2010, the INCCA established a network-based scientific programme for monitoring key aerosol parameters by establishing long-term monitoring stations across the country. The programme is designed to assess the various aspects of climate change in India. (MoEF&CC, 2010)

Source: Development Alternatives

Resilient Markets for Production and Consumption

Contemporary systems of accounting in India do not fully capture the value of India's biodiversity, natural resources and ecosystem services. The national Gross Domestic Product (GDP), so far, incorporates mainly market-based commodities, such as some Non-Timber Forest Products (NTFPs) and timber from forestry. Forests are estimated to contribute barely 1.5% to the GDP, though, with a geographical area of more than 20% of the country, they provide multiple benefits that are not reflected in the national accounts. (Parikh et. al., 2012)

Producing better and consuming more wisely are important for establishing resilient markets that stay within our planet's safe operating space, safeguard our natural wealth, and contribute to our economic and social well-being. Sustainable resource management and incorporation of the true costs of production in the value chain will encourage these better choices.

Government Initiatives

- India has taken the first step to account for environmental damage while calculating its national income or gross domestic product, with the release of a report (April 2013)of an expert group, titled '**Green National Accounts in India-A Framework**' (www.pib.nic.in). The report outlines concepts that go beyond the conventional measures of wealth (measured in terms of GDP alone) and guide the development of tools for green measurement. Various ministries have begun pooling data to create environment accounts for forest cover, water, waste and soil resources, among others, under a newly introduced System of Environmental Economic Accounting. However, an expert panel set up by the statistics ministry in 2013 said that green national accounting in India will be a mammoth task, given the paucity of data and absence of any operating manual on how to work on it.
- The Ministry of Environment, Forests and Climate Change (MoEFCC) launched **The Economics of Ecosystems and Biodiversity (TEEB) -India Initiative(TII)** in 2011 to highlight the economic consequences of the loss of biological diversity and the associated decline in ecosystem services. The initiative focuses on three ecosystems, namely, forests, inland wetlands and coastal and marine ecosystems. (MoEFCC, 2015)
- In order to ensure that the values of biodiversity conservation get mainstreamed into development programmes, India is working on developing an **Environmental Performance Index(EPI)**. The EPI will serve as a measure of a state's green initiatives, focusing on pollution abatement, promotion of adherence to environmental standards, natural resource conservation and implementation of the three Rs (Reuse, Recycle, Recover). (Suneja, 2016)
- **Renewable energy**: A number of measures have been taken to reform the **fuel subsidy system** to discourage consumption and encourage investment in cleaner forms of energy. The Indian government has doubled the **Clean Environment Cess** on coal production from INR 200 per tonne to INR 400 per tonne in the 2016-17 Budget, to help India meet its voluntary target of reducing the amount of carbon dioxide released per unit of gross domestic product by 30-35% from 2005 levels, by 2020. This cess contributes to the National Clean Energy Fund (NCEF). The use of renewable energy by the private sector is given 100% depreciation benefits. T**ax Free Infrastructure Bonds** of INR 50 billion were introduced for funding of renewable energy projects during the year 2015-16.
- **Perform, Achieve and Trade (PAT)**, as a market based energy efficiency trading mechanism, at present, covers 478 plants (designated consumers) in eight energy-intensive industrial sectors, accounting for one-third of the total energy consumption in the country. The mandated decrease in the specific energy consumption under PAT programme has led to a decline of 4-5% in 2015, as compared to that in 2012. Energy Saving Certificates (ESCerts) are issued to consumers who overachieve the target. The scheme is to be widened and deepened to include additional sectors, like railways, electricity distribution and refineries, in the next cycle.

Business Initiatives

- Companies are beginning to align themselves to the ratification of the **Paris Agreement** on climate change, by the Government of India. *Example: Mahindra & Mahindra has announced an internal Carbon Price of USD 10 per ton of carbon emitted, in order to meet its goal of reducing its GHG emissions by 25% over the next three years.*
- There is a growing understanding on the imperative for a business to be cautious about taking **natural capital related risks** and how best it could tap into potential natural capital

opportunities. *For example: A recent study conducted by Truecost found that the Indian Financial sector is highly exposed to natural capital risks, as it is financing business sectors with a total natural capital cost of INR 90,496 billion, equivalent to 2.9 times the credit provided to these sectors. If these natural capital costs were internalised by borrowers, it would impact their ability to repay loans, significantly. (Truecost, 2015)*

- Eco-friendliness is gradually finding its way into the Indian construction ecosystem. As of May 2015, the country has at least 3,155 green building projects, covering more than 3 billion square feet. The CII has initiated the **'Green Co' rating** for companies, based on their environmental performance across nine parameters, including energy efficiency, water conservation, use of renewable energy and waste management. (Arun, 2015)

Civil Society Initiatives

- Several valuation studies have been carried out by academic researchers to capture specific ecosystem service values; at the same time, holistic approaches are being adopted to cover multiple values. (Parikh et. al., 2012; Singh, 2007;Chopra & Adhikari, 2002; Verma, 2000; Chopra & Kadekodi, 1997 and Chopra, 1993) Direct contributions to economies through market values often contribute only a proportion to the total value of ecosystem services. *For example: the value of direct consumptive benefits from forests in Himachal Pradesh was estimated to be approximately 1% of the total benefits, while the value of indirect benefits from their ecosystem services accounted for nearly 93% of the total benefits. (Verma 2000)*
- Many large international nature conservation organisations with offices in India, like WWF and IUCN, are recognising the importance of valuation, and are pushing businesses and governments to take environmental costs into account while taking decisions. *For example: In 2014, IUCN initiated a project to economically valuate the ecosystem services provided by vultures. The study concluded that it makes financial sense to breed and release vultures in the wild (augmenting their wild population) for their scavenging services, than to replace these services with technological solutions. These findings will feed into the National Action Plans for Vulture Conservation in India.*

Source: Development Alternatives

Redirecting Financial Flows

Sustainable financial flows that support conservation and sustainable ecosystem management are an essential enabling condition for both preserving natural capital and promoting resilient and sustainable markets. Despite this, many financial institutions continue to invest substantially in harmful and unsustainable activities, such as coal mining, environmentally damaging agriculture and oil drilling, due to their short-term perspective on financial risks.

Government Initiatives

- In order to deal with critical issues like deforestation and degradation of the forests, along with the sustenance of forest-dependent communities, the **National Afforestation and Eco-Development Board (NAEB)** provides support to Forest Development Agencies through the National Afforestation Programme. In 2010-2011, the State Forest Development Agency was constituted to facilitate the flow of funds to Forest Development Agencies. The National Forest Policy (1988) aims at maintaining a minimum of 33% of the country's geographical area under forests and tree cover. The new legislation has allocated USD 6.2 billion to building new forests across India.
- **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** was launched by the Supreme Court on 10 July 2009, on the premise that it will be the national advisory council under the chairmanship of the Union Minister of Environment & Forests, for monitoring, providing technical assistance and evaluating compensatory afforestation activities. CAMPA is meant to promote afforestation and regeneration activities as a way of compensating for forest lands diverted to non-forest uses. As of November 2006, the amount lying with the ad-hoc CAMPA was INR 12billion. This had increased to INR 236 billion on 31st March 2012.
- India imposed a **cess on coal** in 2010 @ INR 50 per tonne of coal. Recently, it has been quadrupled to INR 200 per tonne of coal. This forms the corpus for the National Clean Environment Fund, used for financing clean energy, technologies, and projects related to it. The total collection of INR 170.84 billion till 2014-15 is being used for 46 clean energy projects worth INR 165.11 billion. (Sinha, 2016)
- India has set up a **National Adaptation Fund** with an initial allocation of INR 3,500 million to combat the adaptation needs in sectors like agriculture, water, forestry etc., in addition to sectoral spending by the respective ministries.
- Another important initiative has been the 14th Finance Commission (FC) recommendation on incentives for the forestry sector. According to the estimations based on 14th FC data, this initiative has effectively given afforestation a massive boost, by conditioning about USD 6.9 billion of transfers to the states based on their forest cover, which is projected to increase up to USD 12 billion by 2019-20. Implicitly, India is going to transfer roughly about USD 174 per hectare of forest per year, to the states, which compares very favourably with other afforested countries.

Business Initiatives

- In 2013, the Government of India amended the Companies Act to make **Corporate Social Responsibility (CSR)** spending of 2% of average net profits mandatory for every company with a net worth of INR 500 crores or more, or turnover of INR 1000 crores or more, or a net profit of INR 5 crores or more, during any financial year. This has forced companies to integrate economic, environmental and social objectives with the company's operations and growth. Ensuring environmental sustainability has been identified as one of the nine activities to be covered under CSR activities.

  For example: The watershed programme of India Tobacco Company Limited (ITC) promotes development and local management of water resources, by facilitating village-based participation in the planning and execution of watershed projects in eight states across India- Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu and Uttar Pradesh. Adopting a bottom-up participatory approach, with disadvantaged sections as the primary target, ITC works with NGOs as implementation partners to mobilise them to form Water User Groups. ITC's integrated watershed development programme conserves soil and moisture in over 90,000 hectares of land in water-stressed areas.

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"Businesses don't fail to recognize the value of natural capital but the focus is short term. At some level we still do not believe that the challenges that climate change and resource availability pose are real. Very few civil society networks are engaging with businesses on issues of sustainability. There is a need for stronger advocacy for business to move beyond short-termism and single bottom line."

- Dr Bimal Arora, Chairperson, Centre for Responsible Business

"Conservation of nature and natural resources are an essential prerequisite for economic development. While we realise the importance of ecosystem services and benefits provided, we have to look beyond the considerations of direct or immediate economic benefit to prioritise conservation of entities with "Incommensurable Values", such as charismatic species or unique landscapes. "

- Ravi Singh, WWF India

About Development Alternatives Group www.devalt.org

Development Alternatives (DA) is a premier social enterprise with a global presence in the fields of green economic development, social equity and environmental management. It is credited with numerous technology and delivery system innovations that help create sustainable livelihoods in the developing world. DA focuses on empowering communities through strengthening people's institutions and facilitating their access to basic needs; enabling economic opportunities through skill development for green jobs and enterprise creation; and promoting low carbon pathways for development through natural resource management models and clean technology solutions.

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