



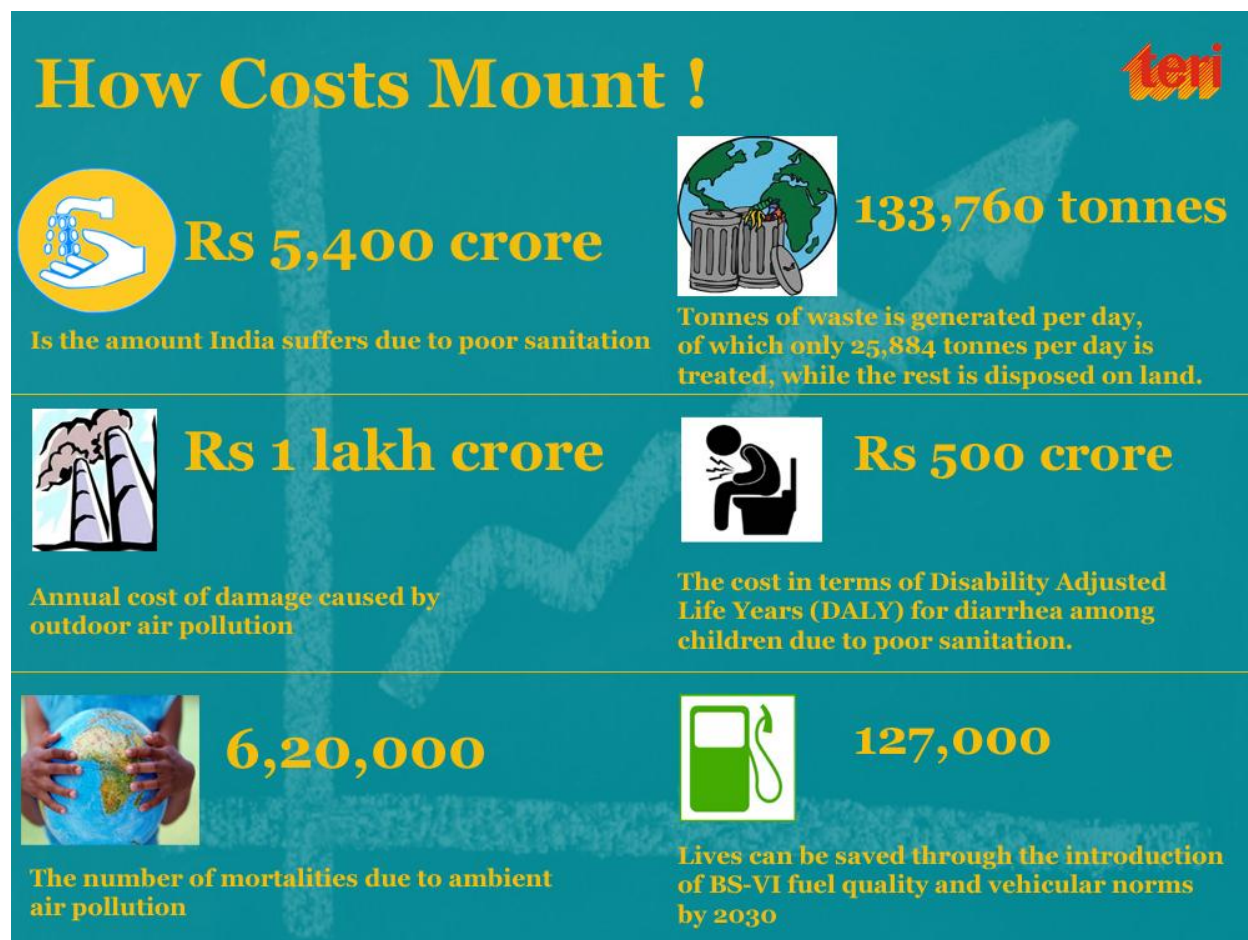
## **The costs of DEVELOPMENTAL INACTION**

### **TERI's agenda for the New Government and how it can reinvent sustainable development for all**

**New Delhi, 13<sup>th</sup> May 2014:** As we gear up to welcome the New Government, the high expectations of the electorate will test the functioning of the new dispensation. To achieve tangible results in the first 100 days, the new Government will have to perform beyond expectations in the field of sustainable development, which broadly covers fundamental issues such as water, energy and food security. Here, it is important that the New Government should focus on specific policies and institutional frameworks which will help achieve quick results and reverse the current trend.

The Energy and Resources Institute (TERI) has come up with an advisory that addresses not only the way forward, but deals with the critical aspect of the cost of inaction. Along with chasing targets, we need leapfrog measures, which will cover the “un-served” populations. Says Dr R K Pachauri, Director-General, TERI: “Environmental issues are often presented within the framework of conflict between environment and development. What is attempted here is a refreshing departure which provides a price tag on the damage that poor environmental quality and degradation is imposing on human society and how substantially lower-cost action can avoid this burden. What is included here are sectors largely within urban areas, but a similar analysis and presentation is essential for rural environmental degradation as well. Undoubtedly, that would be a far more complex challenge analytically, but given the large population in our villages, ignoring such analysis would be at the cost of ignoring the welfare of two-thirds of our population.”

TERI has proposed few quick solutions which are basic and easily implementable. The measures will not only bring down the costs of inaction, but improve the lives of millions in a sustainable manner. Here are some key issues that need to be addressed by the new government.



**WATER:** In India, more than 73 million workdays are lost each year on account of water-borne infections. Economic studies conducted at country level by the World Bank over the past 15 years have shown that impacts resulting from **poor sanitation and hygiene cost countries between 0.5 per cent and 7.2 per cent of annual Gross Domestic Product**. Under the Economics of Sanitation Initiative (ESI), the economic costs due to poor sanitation and hygiene have been shown to exceed 5 per cent of GDP in India. **India suffers economic losses from poor sanitation of Rs 5,400 crore each year.**

India has been successful in providing improved water supply facilities for more than 89 per cent of rural households and 96 per cent of urban households. However, for the rural sanitation sector, only 24 per cent used improved sanitation facilities, while in

urban areas, 60 per cent used improved sanitation facilities. The most **disturbing trend has been that 50 per cent of people are still resorting to open defecation.**

The challenge now is how to provide higher levels of service with sustainable sources and systems that provide good quality water to a growing population.

**TERI RECOMMENDS:** Development of 'Water and Sanitation Safety Plans' for Jal Boards, Urban Local Bodies and rural piped water supply and sanitation services could be made mandatory in order to maintain high standards in the sector. A high-level committee may be formed having representations from all the relevant Ministries, Boards, Water and Sanitation organizations and important stakeholders in order to ensure effective and efficient implementation of the water and sanitation safety plans.

The existing tariff for water consumption for domestic use is fixed and not volume-based, which discourages the promotion of best practices for the water conservation as the users do not feel any responsibility in managing the resources. A differential tariff structure on volumetric basis is recommended.

There is a need to address the core issues of establishing a standardized benchmark in water use efficiency, which would have technical as well as holistic explanations, and would be helpful in exploring the potential of establishing a 'Bureau of Water Efficiency'. The Bureau would be an autonomous institution with accountability and responsibility to cater to the demand-side management.

An outlay of between Rs 2,72,377 crore and Rs 303165 crore is suggested for the 12th Five Year Plan for Rural Domestic Water Supply, including the component of National Rural Drinking Water Programme (NRDWP) for lagging states, special component for scheduled castes and scheduled tribes. This would be about 305 per cent of the actual allocation in the 11th Five Year Plan for the sector. The State outlay would be Rs 1,49,807 crore – a similar increase. This would be feasible for States also, considering the increase in the 11th Plan over the previous Plan.

**AIR POLLUTION:** More than 80 per cent of Indian cities, where monitoring was carried out, do not meet the prescribed standards of air quality. The particulate matter (PM) concentration have been found to be many times higher than the standards in several Indian cities like Delhi, Ghaziabad, Gwalior, Raipur, Kanpur etc. Moreover, it is not only big cities that show high concentrations, but smaller cities have also recorded extremely high values.

Air pollution has been known to have grave consequences. **About 620,000 mortalities have been estimated to occur annually in India that is attributable to ambient air**

**pollution.** Not only respiratory problems, the cardio-vascular impacts are also evident, and these problems are linked to deteriorating air quality. The World Bank has estimated the cost of damage caused by outdoor air pollution in India to be around Rs 1 lakh crore annually. This is about **1.7 per cent of the total GDP** and clearly shows a dent in the economy caused by deteriorated air quality.

**TERI RECOMMENDS:** Improvement in fuel quality and advancement of vehicular emissions norms is the key to reduce vehicular emissions. The emission reduction that can be accrued through the introduction of BS-VI fuel quality and vehicular norms can result in the reduction of 127,000 mortalities by 2030, and economic benefits ranging between Rs 3.9–6.7 lakh crore cumulatively till the year 2030. Benefits of implementation of these norms will soon outweigh the costs incurred on initial capital investments.

Major institutional changes required include integration of efforts from multiple sectors as most of them are inter-linked, and a regulatory body on the lines of California Resources Board should be constituted. The body should be empowered to take sector specific decisions based on scientific knowledge for control of air pollution. Whereas, the policy changes suggest that the transport sector should move away from the current dual fuel policy in the country. Policies on subsidies on kerosene and price differential for diesel also need to be reconsidered to reduce adulteration, and market shifts that are not environment friendly. The National Program on Improved Chulha should be revived with inclusion of latest research and technologies for control of indoor and outdoor air pollution due to biomass burning.

**WASTE:** The process of urbanization has not only increased municipal solid waste (MSW) generation, but also led to increasing quantity of domestic wastewater. Cities considered as engines of growth are also guzzlers of resources and today's mismanagement of resources is producing huge amount of wastes. The Central Pollution Control Board (CPCB) says that **the annual generation of MSW is pegged at 62 million tonnes or 133,760 tonnes per day, of which only 25,884 tonnes per day is treated, while the rest are disposed on land** requiring around 2,12,752 m<sup>3</sup> of landfill space. The requirement of land during the next 20 years is estimated to be as high as 66,000 hectares (1,240 hectares per year).

Inappropriate management of these waste adversely impacts the environment and ecology of the region, thereby contaminating human health. For example, the **cost in terms of Disability Adjusted Life Years (DALY) of diarrhea for children from poor sanitation is estimated at Rs 500 crore.** A similar study by the Water and Sanitation Programme of the World Bank using data for 2006 shows that **the per capita**

**economic cost of inadequate sanitation, including mortality impact in India, is Rs 2,180.**

**TERI RECOMMENDS:** The way to address waste mismanagement would be to build waste reduction strategies in overall waste management programmes, increase waste processing, maximize resource recovery, recycling and ensure that land requirement for ultimate disposal is minimized by adopting resource efficient processes. The suggested policy changes would include:

- A formal waste management policy addressing all the different diverse waste streams centered around elements of 3Rs (Reduce, Reuse, Recycle) and the need for closing the material use cycle,
- Incentive-based mechanism for enhancing/promoting waste reduction and recycling-based programmes, and,
- Mechanism for creation and promotion of market for recycled products.

The suggested institutional changes would include:

- Integration of clean technology and waste minimization and pollution prevention schemes of Ministry of Environment and Forests to deal with waste-related issues in a holistic manner,
- To address the problem of indifference in sectoral ministries of environmental issues, environmental cells at the central and state level should be constituted. MoEF should sensitize these cells and also monitor their functioning,
- The Ministry of Urban Development, being the nodal Ministry dealing with issues related to urban solid and liquid wastes, needs to set up a dedicated cell for implementation of proposed waste management policy at the national level with similar cells to be constituted at the State level.

**GREEN INFRASTRUCTURE:** As per the XII Five Year Plan of India, urban India would need hefty investments towards meeting just the capital expenditure requirements of providing urban infrastructure. **Capital expenditure requirement of nearly Rs 2,88,000 crore and Rs 99,000 crore will be required for meeting the infrastructure needs of urban transport and other sectors** (water supply, sewerage, storm water drainage and solid waste management), respectively between 2012 and 2017. Given the financial situation of our urban local bodies and other urban agencies, meeting these investment requirements will not be easy and would need support of all stakeholders, including the private sector. Innovative financing methods for meeting infrastructure investment requirements will be critical.

Equally important would be to create capacity amongst urban institutions to be able to select, plan, design and deliver infrastructure projects that are sustainable in the long

run. The conventional approach of looking for short-term solutions to infrastructure gaps may not help address the challenges of infrastructure and would definitely not help in meeting the long-term vision of sustainable and green growth of urban areas, which essentially means urban growth that has least environmental footprint, is inclusive and which generates economic growth opportunities with minimum environmental and social impacts. Realizing such a model of growth for urban India would need a larger vision and a long-term sustainable urban development policy. This policy should look at a period of 20 to 30 years and should dwell on: projections for the nature of urban growth in future, expected challenges, sustainable and green solutions, and, essential requirements to achieve these solutions – capacity, institutions, and finances. Urban India will also need to look at the way it plans, designs, constructs and uses its buildings.

**TERI RECOMMENDS:** With over two decades of experience on sustainable buildings, TERI has developed a robust rating system of green buildings, GRIHA (Green Rating for Integrated Habitat Assessment), which was adopted as the national rating system for green buildings by the Government of India in 2007. Consequently all buildings of Government of India and Public Sector Undertakings have mandated minimum GRIHA rating. Several State Governments including Delhi, Assam, Punjab and several corporations have adopted GRIHA. **TERI calls upon all States to adopt GRIHA as a framework to achieve resource efficiency in the built environment.** This would help streamline approvals for real estate projects, ensure regular monitoring, follow-up on environmental clearances and compliances, during the course of construction and operation of building projects.

It will also facilitate a two-way communication between the authorities and projects; and, essentially, help move away from the 'check the boxes' approach of EIA, provide relief to projects having to move from pillar to post for seeking approvals, and ensure execution of projects in a time-bound manner. TERI also proposes higher taxes on non-compliant and inefficient appliances/buildings, developing open and transparent institutional mechanisms at the State and Municipal levels to facilitate implementation of resource efficiency through GRIHA. Some level of disincentives must be constituted to prevent mainstreaming of defaulters. Resource efficiency must be integrated in all schemes and initiatives around affordable housing.

**TRANSPORT:** Road accidents alone are estimated to cost three per cent to India's GDP, a trend that would have to be reversed given that we hold the dubious distinction of having the maximum number of road accident deaths in the world. Urban transport in India undoubtedly needs urgent action in a mission mode.

**TERI RECOMMENDS:** All cities above 0.5 million population should be provided with adequate and quality bus transport systems. Mega cities above five million should provide city-wide metro rail based transit systems. TERI also recommends that all urban centres in the country, small or large, should compulsorily provide facilities for pedestrians and non-motorized transport users. Million-plus cities should also put together clear action plans for implementing transport demand management tools that encourage use of sustainable modes of transport. Urban transport authorities, as envisaged in the National Urban Transport Policy, should be established in all 0.5 million-plus cities and should lead the agenda for sustainable mobility in their cities.

**ENERGY SECURITY:** As per 2011 census, there were around 32.7 per cent un-electrified households in India. Moreover, several households that had an electricity connection and the ability to pay for the services are deprived of reliable and continuous electricity supply, impacting livelihoods and household welfare. Despite the increase in availability, **India faced an energy deficit of 8.7 per cent and a peak deficit of 9 per cent in 2012-13.**

TERI's analysis indicates that under a Reference Scenario, India's total energy requirements would increase three folds from the current level by 2031, with coal and oil continuing to contribute a large part of this energy need. Further, it is anticipated that even with best efforts to improve efficiencies and enhance availability of domestic fuels, India's energy import dependency is likely to continue increasing and remain high during the next few decades. While India's oil import dependency could spiral from around 77 per cent at present to over 90 per cent by 2031, with growing concerns regarding the extractable reserves of coal apart from issues related with its quality and transportation, coal imports are also expected to continue increasing. Consequently, the overall fossil fuel import dependency in the Reference Scenario is also expected to increase to 74 per cent by 2031. India's net import bill was around 41 per cent of the country's export earnings in 2012/13, and in a scenario of rising and volatile energy prices, India's vulnerability on account of high energy import bills could increase significantly in future.

**TERI RECOMMENDS:** Energy efficiency measures can be implemented on the energy supply as well as demand side across the energy intensive end-use consuming sectors. For instance, in the transport sector, key interventions include introduction of energy efficiency standards and encouraging use of public transport. Within the industrial sector, the Micro, Small and Medium Enterprise (MSME) segment is associated with low efficiencies due to several barriers such as use of obsolete technologies, non-

availability of readymade technological solutions, low level of awareness/information availability, non-availability of technology providers at local/cluster level, relatively high cost of technologies and poor access to finance. **It is estimated that there is a possibility to reduce energy consumption by up to 25-30 per cent by introducing energy efficiency measures in these sectors.**

There is a need for implementing innovative pricing mechanisms that reflect true costs of alternative options and induce efficiency in energy production and consumption. Further institutional changes and regulatory mechanisms geared towards creating a more enabling environment and ensuring constant compliance and progress are warranted. A co-ordinated approach cutting across various energy sub-sectors (coal, oil, gas, renewable, electricity etc.) would be instrumental in pushing forward a coordinated and integrated energy policy for the country. **It is proposed that a Cabinet of Secretaries (CoS) be set up with representation from the ministries concerned to define policy and address all issues in an integrated manner.** To ensure this, there is a need to gradually move towards a single energy regulator. It is envisaged that the structure for Single Energy Regulatory Commission is such that the existing energy sub-regulators would automatically become a part of the Commission at the member level.

**RENEWABLES:** Power generation from renewable sources is on the rise in India. The share of renewables in the total energy mix reached 12.3 per cent in 2013. India has total installed capacities about 30177.9 MWe and 973.13 MWe for grid-interactive power and off-grid/captive power respectively. Currently, wind accounts for about 67.5 per cent of the capacity with 20298.23 MWe installed capacity and India is fifth largest wind energy producer in the world. However, in recent times, **wind sector has suffered due to withdrawal of GBI (generation based incentive) and AD (Accelerated Depreciation).** While GBI has been reinstated after a gap of more than a year, AD is yet to be reinstated.

**TERI RECOMMENDS:** TERI proposes that Wind Mission should be launched as early as possible. Consistent long-term policy is needed for stable business environment, and, land for wind projects can be allotted on priority basis.

Solar is important and comparatively underutilized energy resource in India with the potential to supply both grid-connected and off-grid power. India has 300 sunny days per year on average and receives average annual radiation of 1600 – 2200 kWh/m<sup>2</sup>, leading to annual estimated potential of 6 billion GWh. To properly assess this vast potential, the Ministry of New and Renewable Energy has launched the Solar Radiation Resource Assessment initiative to develop solar atlas quantifying solar radiation availability throughout the country.



TERI proposes integrated renewable energy policy to mainstream renewables. A renewable energy law for larger role for renewables in the energy sector with emphasis on renewable power being at the center-stage of the new power policy. Priority must be given for allocation of land resources to renewable power projects. Policies must address wider support to demonstration and adaptation of RE technologies developed at global research centers. The focus must be on faster implementation of the National Solar Mission and development of bioenergy and wind energy sector through state level policy initiatives. As far as institutional reforms are concerned, TERI proposes strengthening of the Ministry of New and Renewable Energy, a larger role for research centers in renewable energy, new initiatives for RE industry development with special incentives for green energy, a green energy corridor development and creation of incubation centers with international research centers for promoting renewable energy basic and technology research and development.

**Solar mission needs impetus and JNNSM targets can be advanced. There is need to make domestic manufacturing competitive in global market and special incentives may be considered for this.** Special impetus must be given to indigenize solar thermal power generation technologies which have advantage of storage and dispatchability. Other solar applications should be promoted on a priority basis to reduce fossil fuel consumption.

Solid biomass availability in India is estimated at about 500 million tons per year, of which 120 -1Te50 million tons is available for power generation. The Ministry of New and Renewable Energy has estimated that about 18 GW of power can be generated from agro based residues including agricultural and forestry residues. In addition to this, there is potential to generate about 5 GW power by raising dedicated plantations on two million hectares of land. TERI strongly feels the Union government should focus on bioenergy development and the Indian Bio-Mission should be launched.

To view more details, please click:

[http://www.teriin.org/featured\\_services/may/mailler.php](http://www.teriin.org/featured_services/may/mailler.php)

### **ABOUT TERI:**

The Energy and Resources Institute (TERI) is an independent, not-for-profit research organization deeply committed to every aspect of energy, environment, and sustainable development. From providing environment-friendly solutions to rural energy problems, to helping shape the development of the Indian oil and gas sector; from tackling global climate change issues across many continents to enhancing forest conservation efforts among local communities; from advancing solutions to growing urban transportation and air pollution problems to promoting energy efficiency in Indian industries, the emphasis has always been on finding innovative solutions to make the world a better place to live

in. All activities at TERI move from formulating local and national-level strategies to suggesting global solutions tackling critical energy and environment related issues.

Headed by Dr. R.K. Pachauri, also the chairperson of the Nobel Peace Prize winning climate change body, IPCC, TERI has emerged as an institution of excellence for its path-breaking research, and is a global brand widely respected by political leaders, policy makers, corporate entities as well as the civil society at large.

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