TERI Environmetal Survey 2013

Executive summary

India has been growing at an average GDP growth rate of 8.025 per cent for the last eight years (Ministry of Finance, 2013). The cities, in particular, have grown at rapid rates according to the Census of India 2011. The urban population increased from 286.1 million in 2001 to 377.1 million in 2011, at an average annual growth rate of 2.76 per cent. Rapid urbanization has resulted in environmental degradation caused by increased pressures on the limited land available, leading to reduced open spaces, increased air and water pollution, and problems of waste disposal and its management. Various climate related changes pose additional stresses.

The 2013 Human Development Report highlights that "*unless people can participate meaningfully in events and processes that shape their lives, national human development paths will neither be desirable nor sustainable.*" Keeping this view in mind, the 2013 TERI Environmental Survey sought to assess people's erceptions, behaviour, awareness, and opinions towards the environment. The findings of this survey, it is hoped, will feed into policy and implementation measures in the context of moving towards sustainable metros (and if possible, sustainable cities). Six themes were selected for the study: overall environment, air quality, water quality, forest/green cover, climate change, and waste and waste management.

The survey was conducted in the six most populous cities in India with a total sample of 4,039, distributed as a proportion of the total population of these six cities. The cities of Bangalore, Chennai, Delhi NCR, Hyderabad, Kolkata, and Mumbai were chosen and the sample was spread across the cities to capture diversities of localities, age groups, occupation, education, income, and so on. The key findings for each city are highlighted below.

Results from different environmental domains

Overall Environment
The views on the overall environment were assessed in terms of perceptions of the state of the environment over time in the different cities, awareness and perception towards government policies for different environmental domains, the role of various actors in environmental protection, and its interplay with development. The responses have been varied for the aforementioned parameters.

Air quality for the respondents in the six cities over time has either become worse or has seen no change. In terms of drinking water quality and availability, there is a perception that it has improved in all cities barring Hyderabad, where the respondents felt it has worsened. Surface water quality is seen to have worsened in all cities apart from Mumbai (no change). Five cities have seen worsening of ground water availability (excluding Chennai) and tree and forest cover (excluding Mumbai), and all six cities have seen a decline in the number and species of birds and animals. Respondents from Bangalore, Chennai, Delhi, and Hyderabad have seen deterioration of waste and waste management in their city, while respondents from Kolkata and Mumbai have seen an improvement.

Assessments of how aware people are of government policies relating to different environmental domains provided a mixed picture. Respondents from Hyderabad, Kolkata, and Mumbai felt that policies on air quality existed, but were inadequate or not well implemented. Respondents from Bangalore, Chennai, Kolkata, and Mumbai felt that the policies on water pollution were well implemented, while respondents from Hyderabad

felt the policies were inadequate or not well implemented. Respondents from Bangalore, Chennai, Kolkata, and Mumbai perceived that policies on water availability existed and were well implemented. Respondents from Hyderabad felt that the policies were not well implemented or were inadequate. Waste and waste management policies in Bangalore, Chennai, and Hyderabad were perceived to be inadequate or not well implemented. Kolkata respondents were equally divided in their perceptions that policies were well implemented and not well implemented/inadequate. Delhi respondents indicated a significant lack of awareness of policies on all environmental domains. Respondents from Chennai also showed a lack of awareness on policies related to air pollution and climate change. The majority of the respondents from other cities were aware of policies related to forest conservation and climate change, but felt that they were inadequate or not well implemented. The respondents' opinions on groups, which should take the lead in protecting the environment, varied across the cities. The respondents from Bangalore, Chennai, Delhi, and Mumbai felt that the government should take the lead, followed by business. Respondents from Kolkata stated that the government should take the lead, following which consumers/citizens should be proactive. In Hyderabad, however, respondents felt that academic and research organizations should take the lead while the government came second. A global debate exists on whether protecting the environment hinders the imperative of development. Respondents were asked for their opinions on this debate and varied responses were received from the different cities. Nearly equal numbers of respondents from Chennai felt that the two go hand in hand or that environmental protection should be prioritized approximately 30 per cent each). Delhi was the only city where nearly 59 per cent felt that environmental protection and development could go hand in hand. Nearly 85 per cent of the respondents in Hyderabad felt that environmental protection and development should be treated differently, with a majority of respondents amongst this 85 per cent responding that development should be prioritized. Only 1 per cent of the respondents in Kolkata felt that environmental protection and development go hand in hand, with nearly 65 per cent of the respondents stating that environmental protection should be given priority. Equal numbers of respondents from Mumbai stated that the two go hand in hand and development should be prioritized (approximately 34 per cent each). The majority of respondents from Bangalore could not say or did not know.

Air
The views of respondents on air quality was obtained through their perceptions of the sources of air pollution in their cities, impacts of air pollution on human health, usage of public transport as an action to reduce air pollution, and their perceptions of the strategies adopted by the government to improve air quality in the cities. Amongst the various causes of air pollution, the respondents were asked for their opinions on the top two causes pertaining to their city. The transport sector was ranked the highest followed by factories in and around the city as the second highest contributor towards air pollution in Chennai, Delhi, Kolkata, and Mumbai. The respondents from Bangalore rated factories as the highest contributor followed by transport, and those in Hyderabad rated construction activities in the city as the worst offender followed by the transport sector.

Given that the transport sector was seen as a major contributor to air pollution in all cities, the respondents were asked whether they use public transport more than three times a week. More than 50 per cent respondents in all cities and as many as 90 per cent respondents in Bangalore used public transport more than three times a week. The respondents were asked for their reasons for using or not using public transport. The respondents from Hyderabad used public transport because they felt it is good for the environment. Respondents from Chennai and Mumbai used public transport to save time and the majority of the respondents from Delhi cited all of the above as their reason for

choosing public transport. For those who did not use public transport in Chennai, Delhi, and Hyderabad, the main reason was that they do not find it convenient. Respondents from Bangalore and Mumbai felt that the time spent travelling on public transport is more than when using private vehicles. The respondents in Kolkata cited the low frequency of public transport as the main deterrent. Safety concerns were also relatively high for respondents from Bangalore, Chennai, Delhi, and Mumbai. In order to improve air quality in their city, respondents from Hyderabad felt that there is a need to improve the public transport infrastructure in the city. A need to tax private vehicles in Bangalore and Chennai (followed very closely in Chennai by setting up of industrial clusters for industries to enjoy common environment friendly technological facilities) was highlighted to reduce air pollution. Respondents from Delhi, Kolkata, and Mumbai felt that there is a need to convert all polluting industries into environment-friendly ones.

Water
Since water availability is seen as a big concern in all cities, the survey asked the respondents to choose the major causes of water wastage in their cities. The survey asked for the respondents' views on the cost of water supply and whether there is willingness to pay the actual cost of water supply and the relevant billing mechanisms to change current practices (as households in Indian cities do not pay the actual cost of water supply). The respondents were asked for reasons for wastage of water in their city. Respondents from Chennai, Hyderabad, and Mumbai felt that water is being wasted during its distribution to the households. Most respondents from Bangalore felt that water is being wasted due to leakages in taps and faucets in the household, while respondents from Delhi and Kolkata felt that water is being wasted due to overconsumption by consumers. The respondents were asked whether citizens should pay the actual cost of water supply. Respondents from Bangalore, Chennai, Delhi, and Kolkata said that citizens should not pay the actual cost of water, while respondents from Hyderabad and Mumbai felt that citizens should. Quite a large number of respondents from Chennai, Bangalore, Delhi, and Hyderabad stated that they did not know whether they should pay the actual cost of water.

The respondents were asked what their preferred billing mechanism for water delivery to households was, that is, whether they preferred metered or consumption based pricing, fixed or a flat charge for water, or other mechanisms. Most respondents in all cities apart from Chennai preferred metered or consumption based pricing while Chennai respondents preferred a flat charge on water delivery.

Forest/Green Cover
The forests and green cover in every city is important for recreational and social activities, to reduce air pollution, as well as for the beautification of cities. The survey asked respondents about the frequency of their interface with the green cover in their city and how it can be improved. They were asked for their opinions on the strategies they feel the government should adopt to improve the forest/green cover in the cities. Declaration of protected areas was the best strategy according to the respondents from Bangalore, Delhi, and Kolkata. According to the respondents from Chennai, reclamation of wasteland for parks and other such green zones was considered the best policy; the respondents from Hyderabad and Mumbai felt that the government needs new and improved policies to improve its forest/green cover.

Climate Change
The survey asked respondents for their opinions towards climate change and any observed changes in climatic variables like temperature, precipitation, wind pattern, and incidence of extreme events. The respondents were given a broad definition of climate change and were asked whether they felt that the climate was changing. Those respondents who felt

that climate was changing were then asked about their perception of changes in the climatic factors in their cities over time. Most respondents in all cities felt that climate change was occurring, except in Chennai, where a very large number of respondents felt that climate change was not occurring.

Respondents from all cities apart from Mumbai perceived that there has been a lot of change in temperature over time in the cities and precipitation or rainfall pattern has also seen some change. In Mumbai, the respondents felt that there has been some change in the temperature, but rainfall/precipitation has seen a lot of change in the city. In terms of wind patterns, all cities saw some change other than Chennai, which was equally divided between a lot of change and no
change in wind patterns. Respondents from Delhi, Kolkata, Hyderabad, and Mumbai perceived some changes in terms of extreme events in the city while respondents from Chennai and Bangalore perceived changes to be very high.

Waste and Waste Management
On the subject of waste and waste management, the respondents were asked for their opinions on the negative impacts of improper waste management on human health. In Bangalore, Delhi, Kolkata, and Mumbai, the respondents' opinion was that the impacts of improper waste and waste management on health are very severe. The respondents from Hyderabad thought the impacts were severe, and equal numbers of respondents from Chennai felt that the impacts were moderate or severe.

The respondents were asked about the waste collection practices in their locality. The majority of the respondents from Delhi said that the waste from their households is collected by private entities, followed closely by public entities. In Bangalore, Kolkata, and Mumbai, waste is being collected by public entities while the majority of the respondents from Chennai and Hyderabad said that waste is being collected through public-private-partnership. A significant number of respondents in Chennai were not aware of who collected the waste from their city.

The respondents were asked for their opinion on a government strategy they thought was best suited to manage the problem of solid waste. Respondents from Bangalore, Chennai, Delhi, and Mumbai felt that the best way to manage the problem of solid waste would be to segregate waste at source, that is, it should be segregated by the households. Respondents from Hyderabad and Kolkata felt that the consumers should generate a smaller amount of waste to manage the problem of solid waste. Following their opinion on the best strategy to manage solid waste in the city, the respondents were asked whether they were willing to segregate their waste at home. Respondents from all cities apart from Kolkata said that they were not willing or not at all willing to segregate their waste. Respondents were also asked the reasons for their willingness or unwillingness. The respondents who were unwilling from Chennai, Hyderabad, Kolkata, and Mumbai stated that having two dustbins requires more space in the house. Respondents from Delhi felt that it was the job of the local authority and the respondents from Bangalore felt that it is cumbersome to segregate the waste. Amongst the respondents who were willing to segregate the waste, those from Bangalore, Kolkata, and Mumbai stated that it was good for the environment while those from Chennai, Delhi, and Hyderabad said that they could use the biodegradable waste for compost making.