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MANAGING ENVIRONMENTAL HEALTH: INSTITUTIONAL GAPS

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Rationale: Need for Focus on Environmental Health

Traditionally, much of the effort in health management was focused on treating diseases and on preventive medicine. However, there is in more recent times, a renewed recognition of the need for an assessment of risks to health with a view to prevention of disease (WHO 2002).

In the context of managing human health through prevention, environmental health (EH) management assumes significance given that environmental factors account for nearly one-fifth of the disease burden in India and other developing countries (World Bank 2002). EH management is also central to poverty alleviation and sustainable development because:

- EH management offers tremendous opportunities to proactively, and often through cost-effective means, tackle various elements of human health.
- Due to the centrality of environmental resources in livelihoods, particularly in rural India, EH management can contribute to economic betterment and general well-being.
- Environmental health concerns are an element of multi-dimensional poverty - with the poor being increasingly vulnerable not only due to exposure to multiple risks (such as indoor air pollution and ambient air pollution in the case of urban poor), but also due to inadequate access to healthcare facilities, malnutrition, isolation and lack of awareness.

Scope and Definition of Environmental Health

By definition, EH comprises “those aspects of human health, including quality of life, that are determined by physical, biological, social and psychological factors in the environment. It also refers to the theory and practice of assessing, correcting, and preventing those factors in the environment that can potentially affect adversely the health of present and future generations” (WHO 1993). Thus the scope of EH goes beyond the environmental and health sectors to include economic and human development sectors. Examples of environmental health include dengue, malaria, cholera and other diseases associated with water and sanitation as well as air pollution (WHO 2002a).

EH management entails interventions spanning various sectors such as water supply,

sanitation including management of municipal solid waste, energy, industry, transport, healthcare, education and agriculture. Vulnerability to EH risks is a function of environmental, socio-economic and demographic factors at the individual (e.g. gender), household (e.g. income, access to clean energy), community (e.g. access to water and sanitation and solid waste collection and removal services), national (e.g. access to social infrastructure) and global (e.g. climate change) levels. Evidently, managing EH calls for a cross-sectoral and inter-disciplinary approach.

Government Initiatives Related to Environmental Health

Various GoI (Government of India) initiatives – in the form of programmes, legislations, fiscal announcements as well as policy statements – are reflective of the government’s endeavour to secure environmental health. These initiatives – many of which are rooted in environmental concerns - address a number of varied issues such as rural energy, industrial pollution, transport sector emissions, rural water supply, rural sanitation, urban water supply, wastewater and solid waste management, and occupational health.

With a view to focus on EH aspects that are most crucial in the Indian context (Table 1), the current analysis is limited to GoI initiatives towards managing the following.

- Indoor air pollution associated with the combustion of traditional bio-fuels,
- Inadequate water and sanitation and solid waste management services, and
- Ambient air pollution associated with transport and industrial sectors.

Table 1 Environmental health priorities in India – based on case study in Andhra Pradesh

Parameter	Rural	Urban
Contribution of environmental factors to disease burden	22-23%	18-19%
Factors contributing to environment-related disease burden	Lack of access to water and sanitation Indoor air pollution	Lack of access to water and sanitation Indoor air pollution Air and water pollution from transport, industry etc.
Contribution of inadequate water & sanitation and indoor pollution in environment-related disease burden	Nearly 100%	80%

Source. World Bank (2002)

The following sections present a brief overview of past and ongoing programmes that are relevant for the major EH issues identified above, with emphasis on the extent and nature of inter-ministerial endeavours in addressing these concerns.

Indoor air pollution

Indoor air pollution associated with the combustion of biomass fuels in traditional cook-

stoves has important health implications, particularly for women and children. Several initiatives of the Government of India aimed at providing clean household fuels (particularly for cooking and water and space heating) at affordable prices, may be seen as contributing to the management of indoor air pollution. Prominent among such efforts are the promotion of:

- LPG and kerosene,
- Improved chulhas, and
- Selected renewable energy systems.

While the provision of subsidies on LPG and kerosene is essentially seen as a subject of the MoPNG (Ministry of Petroleum and Natural Gas), issues specific to rural energy such as improved chulhas as well as renewable energy systems including biogas plants, solar energy for heating and cooking come under the purview of the MNES (Ministry of Non-conventional Energy Sources). Evidently, while all these initiatives were geared towards improving access to clean energy for domestic cooking and heating – addressing thereby the concern relating to indoor air pollution – these efforts were initiated by different ministries (each looking at a different energy supply sector) through isolated programmes. Also, while there is an Integrated Rural Energy Programme, its focus has been limited to renewable energy systems and traditional fuels (MoEF 2002a), possibly because of its being an MNES initiative.

Thus, there has never been an endeavour to review in an integrated manner, the issue of provision of access to clean energy. Each ministry, for its own programme, has looked at only those energy supply options that are within its forte. Such an ad hoc and limited approach to enhancing access to energy has resulted in the government losing opportunities to choose from a mix of or specific energy forms, after reconciling local priorities (e.g. availability of a certain energy form such as animal dung for biogas) with national considerations (e.g. energy security) (MoEF 2002a).

In terms of ground realities, the lack of a co-ordinated approach to managing household energy, translates into a very slow decline in the dependence on traditional fuels. Firewood and chips continue to meet the energy needs of 76% of rural households with only 3% of households switching to other cleaner energy forms since 1993-94. In the urban sector, LPG and kerosene have made some inroads and 8% of households have switched from firewood/chips since 1993-94.

Inadequate water and sanitation

A World Bank study on environmental health priorities in Andhra Pradesh clearly points to the potential of water and sanitation interventions in managing infant mortality and increasing life expectancy. That the study could not establish any association between public water schemes that operated in the late 1980s and the 1990s and reductions in child mortality (although private in-house connections demonstrated significant health benefits), is a pointer to gaps in public water and sanitation schemes.

Rural water and sanitation

Problems with public water schemes have been observed in several rural surveys,

including those undertaken by TERI (TERI 2001; TERI 2003a). According to the 1991 census, about 56% of the rural households had access to safe drinking water. The coverage of rural population with sanitation facilities has increased to 20% from 17% in the ninth five-year plan period. However the problems are evident from persistent regional disparities. For example, according to the census figures, only 3% of the rural households in Bihar have complete access to sanitation facilities. While some of the problems are related to gaps in implementation, others reflect a dearth of inter-ministerial and inter-departmental working towards shared goals.

To cite some observations from the surveys which point to the implications of lack of co-ordination, both across and within ministries:

- The need for co-ordination between the Ministry of Power (which is responsible for rural electrification) and the Ministry of Rural Development, which oversees the ARWSP (Accelerated Rural Water Supply Programme) implemented by PHED (Public Health and Engineering Department) was evident from surveys in Rajasthan and Karnataka, where the performance of public water schemes was hampered by inadequate power supply. PHED officials stated that while the ARWSP schemes were installed in the villages assuming power supply of 8 hours daily, power was reportedly available for only 3-4 hours a day (which also was not continuous).
- While the PHED or the local Rural Development Department is the implementation agency for the ARWSP, the CGWB (Central Groundwater Board) is responsible for groundwater quality monitoring. Where there is such sharing of responsibilities, any lack of co-ordination could have significant implications for the day-to-day lives of people. In Mainsar village in Bikaner, the TERI survey team observed that an open well installed under the ARWSP was rendered completely useless because its water was highly saline. Neither the PHED nor the CGWB seemed willing to take responsibility for (or even comment on) the predicament of the people in the village, which as per the records was already “covered” by the ARWSP.
- The lack of an integrated approach entailing cross-sectoral interventions also sometimes leads to negation of some of the benefits from public water schemes. In the villages in the Bundelkhand region, for instance, hand-pumps installed under the Swajal programme as well as by the UP Jal Nigam have reduced the problems of water shortage to an extent. But because of poor drainage, lack of sanitation facilities and virtually non-existent healthcare facilities, water-related diseases such as diarrhoea and malaria continue to be rampant.

Additionally, there are issues relating to water quality monitoring - an extremely important issue from the health point of view. It needs to be noted that while WHO (World Health Organisation) and ISI (Indian Standards Institution) standards exist for drinking water quality, the state of Rajasthan has relaxed these norms, given the acute shortage of water in the state. It is not clear whether there is any centralised check on water quality standards being adopted in different states.

There are also implementation gaps as far as the public water schemes are concerned, in that very little attention is paid to their maintenance - broken taps, cracks in tanks, and unclean

storage tanks, unclean surroundings around water sources are commonly observed and this too offsets possible health benefits associated with the water schemes. Of relevance here, is the top-down approach that the government has adopted, hitherto. This issue may in part be addressed through a community-driven participatory approach as has been envisaged in the Swajaldhara programme launched by the Government in late 2002. The launch of the Total Sanitation Campaign (TSC) which integrates all aspects of sanitation - accelerating sanitation coverage in rural areas, including schools; creating awareness and health education, disposal of solid and liquid wastes and drainage – is another welcome step. Both, Swajaldhara and the TSC are relatively new initiatives and it is early days yet to gauge their effectiveness.

Urban water and sanitation

While, according to official figures more than 90 percent of the urban population has been covered with water supply and around 55 percent by sewerage and sanitation facilities (Ministry of Urban Development and Poverty Alleviation 2002), coverage figures do not reveal issues such as unaccounted for losses in the water supply system, inequity of distribution, contamination of supply due to poor maintenance, and inequity in tariff due to flat rate system. Water supply as well as sewage treatment are a responsibility of Water Boards (called Jal Boards and Jal Nigams).

With increase in urban population, the solution to water supply is often seen as capacity addition, rather than operating the existing capacity more efficiently. This bias in favour of new projects may be partly due to the lack of accountability on the part of agencies at both local and state levels, because inefficient management of systems goes unnoticed. The focus on additional capacity detracts attention from other often more cost-effective opportunities. For example, there exists an enormous recycling opportunity in the use of sewage for irrigation. However, this requires intensive co-working by the MoA, MoEF and MoHFW. Sewage treatment through wetland technology (or root zone) instead of conventional energy intensive treatment units could be worked out through the MoUDPA in collaboration with the MoEF (Ministry of Environment and Forests).

Inadequate solid waste management services

At the central level the responsibility of dealing with municipal solid waste lies with MoUDPA (Ministry of Urban Development and Poverty Alleviation). The other ministries involved are MoEF and MNES (Ministry of Non-conventional Energy Sources). The MoUDPA plays a coordinating and monitoring role, sponsors research and development projects, and organizes training courses and workshops on issues related to solid waste management. After MoUDPA the second important ministry involved in waste management is MoEF. MNES is currently implementing projects in recovery of energy from waste. At the local level, urban local bodies like municipal authorities or corporations are responsible for collection, transportation and disposal of wastes. The collection, transportation and disposal of municipal solid waste is regulated and controlled by Municipal Acts in each municipality. These Acts also deal with environmental pollution caused by improper disposal of municipal solid waste.

The plague outbreak in Surat in 1994 was a stern reminder of what negligence in the area of solid waste management can lead to. After that disaster the city diligently tried to improve its

living conditions. Institutional changes were the first thing to happen when the city began its journey from a city ridden with plague to the second cleanest city in the country, a status it achieved in a short span of 18 months. The city was divided into six zones to decentralize the responsibilities for all civic functions. A commissioner was appointed for each zone with additional powers; the officials responsible for solid waste management were made accountable for their work; and field visits were made mandatory for them each day. The solid waste management department and other related departments were made to work in concert and cooperate with one another. Indeed, these are some of the very basic changes that need to be introduced in the functioning of all urban local bodies. Community participation played a key role in the rapid implementation of decisions taken by the corporation. People were issued grievance redressal cards, which they could fill in and drop at the zonal office to register their complaints. The complaint was attended within 24 hours and the card returned to the citizen. In addition to the administrative changes, the changed laws had an important role to play in improving the conditions by also making the citizens aware of and responsible for certain preventive actions. Initially, the Gujarat Municipal Act did not have the provision of imposing a penalty for littering, which was introduced later as a fine of Rs 50 for every offence of littering and the fine was doubled for every subsequent offence. The corporation, in an appreciable attempt, has now engaged private sweepers to cover different inner areas of the town. Private contractors are also actively involved in the transport, collection, and disposal of solid waste. Coordination between different ministries like MoUDPA, MNES, MoEF and at the local level with local bodies is therefore required to ensure effective management of municipal solid waste.

Ambient air pollution in urban and industrial areas

Several government initiatives in the transport, petroleum and industrial sectors – particularly standards for fuel quality, vehicles and industrial emissions have all had implications for ambient air pollution. While emission and air quality standards are the forte of the CPCB and/ or the MoEF, fuel quality standards under the purview of the MoPNG and vehicle norms co-ordinated by the MoST, there is no evidence of inter-ministerial interactions and of working with other ministries, notably the MoHFW. There does not appear to be an initiative by any of the agencies towards how the various ministries through their standards and norms could move in a co-ordinated manner towards the set air quality guidelines.

The recommendation to use CNG, LPG or ULSD as “clean” transport fuels, with no prior experiment-based demonstration of the benefits from use of these fuels in the Indian context in terms of reduction in emissions and / or health effects – is an illustration of the lack of a systematic and integrated approach.

In respect of industrial air pollutants, emission standards have been prescribed for major industries including integrated iron and steel, refineries, fertilizers, chlor-alkali, thermal power, cement, sulphuric acid and nitric acid. The management of industrial pollution in India has been characterised by a marked dominance of a top-down approach with a flurry of regulatory measures.

A recent initiative of the CPCB / MoEF, sought to harness commitment and voluntary initiatives of industry through a series of interactive meetings. Seeking to formulate a charter on

corporate responsibility for environmental protection (CPCB 2003), this initiative is path-breaking in its endeavour to bring together various industry stakeholders. However, two important gaps in this exercise are that: firstly, from the government's point of view, the initiative is driven by a single ministry (the MoEF), with no mention of the roles of other ministries in facilitating the process of managing industrial pollution and secondly, there is no explicit mention of the role of the small scale sector. The need to ensure environmental compliance by the small-scale sector has been highlighted in various forums and unless this issue is addressed, the impact of other initiatives to combat industrial pollution may be somewhat offset.

EH institutionally confined to EHH Cell in MoEF

While as indicated above, the government has through its various endeavours, attempted to address the issue of EH, an explicit recognition of the potential and need for EH, in a more holistic sense is – in line with the trend world-wide, relatively recent. This recognition was first evident in the late 1990s with the setting up of the Committee on Environment and Health in the year 2000 to review the current status of environmental health and to develop appropriate policy, strategy and action plan for environmental health.

EH Cell in MoEF – role and responsibilities

Based on the recommendations of this Committee, an EHH Cell (Environment and Human Health Cell) was set up within the MoEF. The EHH Cell is responsible for implementing the recommendations of the EH Committee and also for formulating environmental health related projects in the country for its implementation. The EHC has commissioned studies to document the environmental health profile of nine cities (Ludhiana, Delhi, Lucknow, Ahmedabad, Kolkata, Mumbai, Manali, Bangalore and Thiruvananthapuram) towards evolving necessary measures to address major EH concerns (MoEF 2003a). A study on adverse health outcomes of benzene exposure has also been commissioned (MoEF 2002b).

The Ministry in collaboration with the World Health Organisation, World Bank, the United States Environmental Protection Authority, USAID and Confederation of Indian Industry organized a two-day Conference on Environmental Health in November, 2002 to sensitise representatives of the central and state governments and other stakeholders on issues pertaining to major environmental health concerns in the country. The workshop recommendations have been finalized and are to be implemented depending on availability of resources and infrastructure (MoEF 2003 a).

Gaps thus far in efforts to manage EH

Evidently, some knowledge-building and knowledge-sharing initiatives are under way to strengthen the understanding of environment- health linkages in the country. However some gaps remain:

- There is no evidence of any inter-ministerial working in this area, though EH, by its very nature calls for a cross-sectoral and inter-disciplinary approach. All efforts seem confined to the EHC in the MoEF, with inputs from the CPCB, also of the MoEF. There is apparently no serious involvement of any other ministry in this regard.

- Environmental health is markedly missing in the agenda of the MoHFW. The National Health Policy (NHP) 2002 recognizes that “the ambient environmental conditions are a significant determinant of the health risks to which a community is exposed”. However the Policy does not elaborate on this further but considers it sufficient to remark as follows: “The initiatives in respect of these environmental factors are conventionally undertaken by the participants, whether private or public, in the other development sectors. In this backdrop, the Policy initiatives, and the efficient implementation of the linked programmes in the health sector, would succeed only to the extent that they are complemented by appropriate policies and programmes in the other environment-related sectors.” In the context of occupational health, the NHP 2002 states that it will address the risks faced by child labour.
- The lack of any co-ordinated effort to look at the crucial inter-linked aspects of water, sanitation and hygiene (WSH) is distressing, particularly given that WSH interventions may prove to be most cost-effective particularly for rural areas (World Bank 2002). The reason for the EHC not looking into these issues appears to be that water-related issues are not included in its portfolio. Unfortunately, as has been elaborated in the issues paper on water (TERI 2003 b) water-related issues are looked into by a host of departments and organizations in various ministries (including Rural Development, Urban Development and Poverty Alleviation and Water Resources). Thus due to EH endeavours being confined to and driven by a single ministry, important opportunities for managing environmental health, may be lost. The endeavour to integrate WSH as part of the new Swajaldhara initiative is heartening and it is hoped that this view percolates to the implementation level.
- The ongoing initiatives of the EHC appear to focus on bridging the knowledge gaps in EH, but it has to be recognised that an analysis of implementation gaps is at least as important in working out effective EH solutions.
- Additionally, the current endeavour in EH appears to focus on health as the absence of disease rather than overall well-being. For a more holistic approach to EH management, it would be necessary to build an understanding of issues such as socio-economic and demographic vulnerability to EH risks as also integrate with aspects that are relevant for all dimensions of poverty alleviation such as income augmentation; empowerment and security.

The recently released Vision Statement on Environment and Human Health (MoEF 2003 b) vision document of the EH Cell does appear to address some of these gaps. To illustrate, the Statement highlights the need for inter-disciplinary and inter-ministerial co-ordination. In the Roadmap for Environmental Health, the Statement does include a section on water pollution and health effects, though on the most important issue of WSH-related problems, it merely states that “policy interventions need to be taken up by the concerned departments engaged in water supply and sanitation...”. While there is a continued emphasis on bridging knowledge and information gaps (which is undoubtedly important for decision-making and priority-setting), there is a recognition of the need for institutional strengthening and an implementation and co-ordination mechanisms for programmes and activities envisaged in the roadmap.

Environmental health management: need for co-ordinated inter-sectoral approach

In summary, an issue as wide and complex as EH, entails a range of interventions beyond the scope of any single ministry or stakeholder – inter-departmental and inter-ministerial co-ordination and multi-stakeholder partnerships are imperative. As mentioned earlier, in several instances the health impacts of isolated single-sector efforts (e.g. improved quality of drinking water) would not come about unless accompanying investments are made in complementary activities (viz., sanitation and drainage, healthcare and education). There also exist cross-sectoral complementarities – e.g. the opportunities offered by rural energisation in facilitating reliable access to safe water and improving healthcare and education facilities. Such opportunities can be tapped only if there is inter-ministerial co-ordination towards a shared goal of improving the quality of life of the people. While the MoEF through its EHH Cell has initiated activities on this front, other concerned ministries including MoRD, MoWR, MoUD&PA, MNES and importantly, the MoHFW need to take responsibility for managing environmental health in India.

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