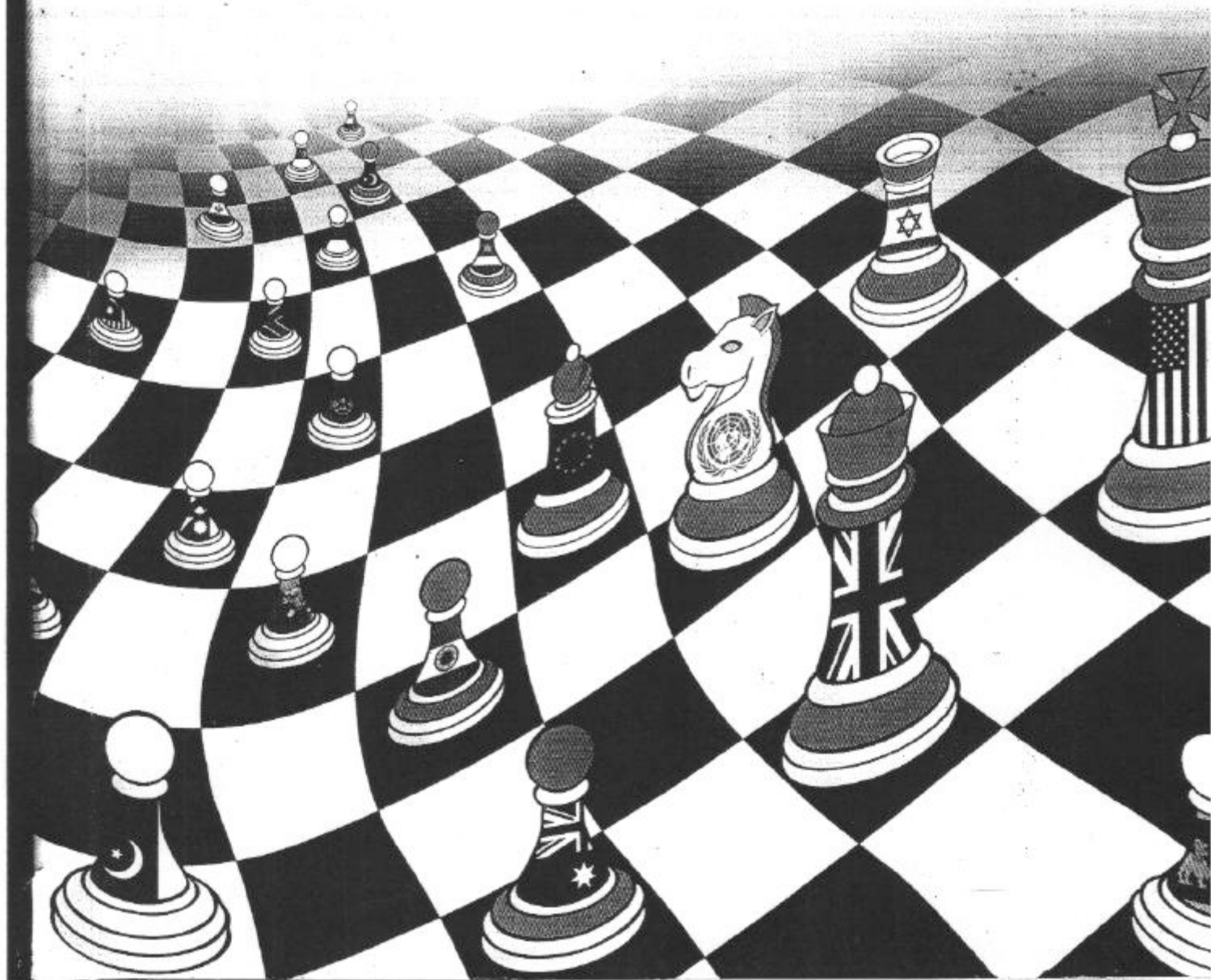


TROUBLED TIMES

Sustainable Development and Governance
in the Age of Extremes



Troubled Times

Sustainable Development and
Governance in the Age of Extremes



SDPI

Sustainable Development Policy Institute



SAMA

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BEYOND ENVIRONMENTAL STANDARDS: FROM
TECHNO-CENTRIC TO PEOPLE-CENTRIC
ENVIRONMENTAL GOVERNANCE

*Ravi Agarwal**

ABSTRACT

India has a wide-ranging set of environmental laws that lay down norms for air, water, waste, etc., along with codes of procedures and practices besides being very progressive in and cutting through embroiled political processes. The courts, besides being very progressive in and cutting through embroiled political processes have also interpreted environmental protection as part of fundamental rights. Civil society has been an important driver and very active, despite having little access to information, but helped by a very active media. However the 'environment' is under severe pressure, especially in the current economic development focus, and especially for the poor. The 'policing' model has not been supplemented by deeper, governance improvement, civil society participation and institutional building measures, giving rise to an erroneous belief that regulation has a limited role to play. The paper, citing three ongoing case studies in varying stages of progress, argues for a more holistic approach, where regulation is a key component, but needs to be augmented with information access and broader initiatives for a long-term sustainable environmental change that will improve people's quality of life more effectively and equitably.

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ENVIRONMENTAL REGULATION IN INDIA

The last two decades have witnessed substantial attention being paid to environmental issues in India. Besides, the legislating of several new laws, environmental activism has been high, with increasing general awareness. In particular, the role of various courts of law, especially the Supreme Court of India in this area stands out. Interpreting Article 21 of the Indian Constitution on the Right to Life, to include the right to a clean and healthy environment, the Hon'ble Court has enunciated and activated several fundamental principles of environmental management including 'polluter pays' and the 'precautionary principle' in its various judgments.¹ In many ways, there has been a dramatic shift in perception and approaches to the environment from the traditional ways of dealing with environmental problems under various types of 'nuisance' and municipal laws as in the past.

In particular, on the issue of 'brown' pollution, soon after the Stockholm Convention in 1972, India embarked upon passing various Acts of Parliament dealing with the environment. Beginning with the Water Act in 1974, and the Air Act in 1981, the Bhopal gas disaster led to the adoption of a broad based Environmental Protection Act of 1986 (EPA) that gave the government powers not only to prosecute offenders but also to frame laws and notify standards as and when required for environmental conservation and preservation. Some attempts at enunciating policy were also made.² For example in 1992, the Government of India issued a 'National Policy on Pollution Abatement', that read more like a wish list rather than a practicable actionable document.³ Alongside that under the provisions of the EPA, several new legislations dealing with various aspects of environment, both urban (noise and waste) and rural including the coastal regions, forests, industry, have been notified over the years. Several new source standards have been made as minimum national standards, which are applicable throughout the country without exception.

Internationally too, the country has, though with waning enthusiasm in recent years, participated in almost all international conventions and initiatives, though it has been less forthcoming in ratifying various multilateral environmental treaties. Ratification would imply bringing national legislation in line with international law, and that has taken place only selectively.⁴

EFFECTIVENESS OF THE REGULATION

It is commonly accepted that environmental degradation is increasing, contamination of soil, water and air is rising, evidence of pollution related health impacts is growing, cancer and asthma rates are rising, as is contamination of food and groundwater especially from chemicals.⁵ A question that arises is that despite legislative efforts, why is the environment of country in an increasingly sorry state, since it is often popularly held that if there is an environmental problem in India there is a law lurking somewhere around the corner.

The causal response to the question of environmental degradation, despite the legal framework as enunciated above, is that there is a 'lack of implementation.' However, there are not enough attempts to examine the premise, which would entail evaluating the capacity of the system in general to include environmental issues in its daily working. The legislative framework has been developed on a belief that a policing model is sufficient. However, it does not automatically go beyond that, to establish institutional capacities able to deal with or incorporate 'another' or a newer way of doing things that are more 'environmentally friendly'.

By limiting the environmental intervention to mainly technical standards and compliance requirements, the approach does not recognize that though such standards and laws can drive environmental improvement, it needs to be backed up by governance, housekeeping and citizens' involvement.

INVOLVEMENT OF CITIZENRY

Little effort to involve citizenry in environmental decision-making, sharing information, emphasizing on transparency and access has been made. Recently though through both state and national level general 'Right to Information' laws, environmental information may be more accessible, but this is still to be tested thoroughly. However, it is extremely difficult if not near impossible for a citizen to say obtain information of the extent and type of pollution from a neighborhood industrial unit. This demonstrates both a lack of recognition on the part of policy makers on both the impact of pollution on people's health and also their role in protecting the environment. In fact in other societies, mainly developed, where strong regulatory approach has been successful, there is simultaneous information access and availability, which in itself has a salutary effect on keeping pollution in check.⁶ Hence in the absence of continuous data generation, monitoring, and the deafness of the state to the voices of the citizens the issue of environmental compliance has become an arbitrary-business between the regulator and the regulated, leading to corruption and increased judicial and citizens' activism to protect themselves from the breakdown. On the ground, environmental degradation is the order of the day.

NEW PARADIGM

Presently in the face of the rising demands for faster and more rapid economic development, the pressure to jettison the even existing framework is growing. Citing the above failure of protecting the environment, the state is using this as a reason to, almost literally, do away with the regulatory framework and replace it solely with a system of voluntary actions and other instruments such as economic and market based incentives. This is best reflected in the recently announced draft National Environmental Policy of August 2004,⁷ which reads more like an environmental economics document, using cost-benefit as main *raison d'être* rather than what has been the trend until now, of environmental protection as an objective in itself. In the recent past, several key legislations have been coming up for review, and being watched by the 'environmental community' with horror. These include fundamental laws such as the Coastal Regulation Zonal Act (CRZ), and the Environmental Impact Assessment (EIA) notifications, both of which restrict the land on which industrial activities are banned, severely controlled, or that need to go through elaborate environmental justifications and procedures for clearance. In mid 2003, the Central Pollution Control Board also drew up a new Charter of Social Responsibility, in an attempt to woo industry to take up environmental measures more 'voluntarily', since regulation was 'impossible'. Taken as a whole such moves reflect a shift in the view of the state about industry, environmental protection, and its own role in this interaction. In short this is being read as a dismantling of the existing regulatory framework.

It must be argued that though regulatory instruments may not be effective in isolation, they do serve as key drivers to augment other approaches, both by putting a 'cap' on the level of

degradation which is socially acceptable, as well as creating 'space' for other cleaner and more acceptable alternatives to be 'viable'. They need to be augmented with other instruments and approaches, not discarded. On the contrary, however, now more than ever before, there is a need to both strengthen regulation as an important component and simultaneously enhance an environmental governance capacity in the system at multiple tiers to ensure a sustainable environmental and economic future for the country. This would imply integrating environmental policies in other sectoral and development policies, as well as moving towards more grassroots level inputs and guidance into decision-making. For example if vegetables being consumed have a high level of pesticides then the remedy lies in influencing pesticide spraying practices in agriculture, improving food marketing, making hygienic retailing outlets, as well as raising consumer awareness, and not in a stand alone environmental policy. Also if local *panchayats* (village level elected bodies) have a say in such practices, then the farmer can be more effectively addressed. The following three case studies, briefly stated, argue the case.

Making Hospital Cleaner: Multi-pronged Actions

History: In 1995, the Government of India issued a Draft Notification on bio-medical waste management. The notification was highly regulatory in nature. It had no mechanisms for public participation or for involving other stakeholders at large of the differentiated and widely disbursed medical community, the health products industry, or even people in general as partners to this process. It did not reflect the public health concern about such waste, which such a law was to help mitigate. Besides, the proposed regulation was irrational. For example it called for 14 categories of waste segregation and insisted that all waste be incinerated finally, defying its own logic for segregation. A few individuals in the ministry put the draft itself together and at no stage was there any public consultation or inputs taken for its development. There had been no process, which helped a broader 'buy' into its logic, critical for effective implementation. Not only processes issues, even technically there was no evidence that the problem had been analyzed, options researched, state-of-the-art knowledge tapped into and a contextual way ahead rationally explored and discussed. It proposed archaic and rejected technologies such as incineration as a way of dealing with the problem.

Highly 'technology-centric' both in its intent as well as its framing, the draft did not place the issue in the human and institutional world it was seeking to impact. In fact it was quite oblivious to it. Needless to add, this was the general mode in which environmental legislation was being notified⁸ at that time (and often still is) showing a complete disconnect of the Environmental Ministry from other actors in the real world. In all fairness it must be added that this was more than the Ministry of Environment's problem, but a general way of making such laws across the government.

THE HEALTH CARE SECTOR IN INDIA

As a background, it is important to understand the almost impossible extent of the constituency the proposed legislation was attempting to impact in one go. India has one of the largest health care delivery systems in the world. Though inadequate and of poor quality overall, it still attempts to service the over one billion population of the country. It has primary, secondary and tertiary

health facilities. The sector is large, scattered, under-funded and totally inadequate, especially for the poor who cannot afford the high end, extremely expensive private health delivery. In the urban centers, health care delivery is divided almost equally between the government and the private sector. Less than 50 per cent of hospital beds are located in government facilities, servicing mostly the urban poor, while the rest are in the private sector with a much higher cost attached to health delivery. These are both legal as well as illegal, with some estimates of illegal nursing homes being almost 30 per cent of those registered. Outside the cities, the Central Ministry of Health and the State Departments of Health provide both primary and secondary health and tertiary care. The geographical area is vast, as is the extent of services provided by a very inadequate facility and (as per need) number of doctors and nurses. As an example the country is covered by about 25,910 primary and community health centers,⁹ with further outreach through 137,271 sub centers¹⁰ with a coverage of almost 600,000¹¹ health care delivery points which are serviced by under-paid and under-trained ANMs (Auxiliary Nurse Midwives). The District Administration, and the District Hospitals, which come under the State Departments of Health, control these.

The services provided include routine and campaign-based immunizations, birth and death records and health services in general. In cities, not only are the hospitals and nursing homes located amongst residential colonies but also have a vastly different cost structure based on the type of facility. The facilities are mostly cramped for space and come under various local laws. For example in Delhi, the Delhi Nursing Home Act and the Municipal Acts deal with them. In the government sector, the Central Ministry of Health controls only a few premium hospitals nationally, such as the premium All India Institute of Medical Sciences in Delhi (AIIMS), but centrally through its Reproductive and Child Health Program (RCH) run the ANM outreach. For all other health delivery the State government is responsible both for administration as well as for providing budgets. In addition, there are several other recent initiatives. As part of an ongoing health care sector 'reform' initiative, the World Bank has partnered with six States for extended and funded partnerships. Also in cities a few corporate houses have initiated high-end healthcare chains providing standardized care to a mostly upper middle class patient or 'consumer.'¹² Other large users, such as the Indian Railways and the Indian Defense Forces, have their own healthcare facilities. Also charitable groups like the Christian Health Association of India (CHAI) have their own national network of health care for the poor. On the other hand the local medical products industry is not well developed, manufacturing mostly low-end devices (though this is now changing), depending on imports and multi-national producers for more sophisticated equipment and devices. In some basic areas such as in the manufacture of syringes made of glass, or disposable plastic, the industry is better developed and meets the massive in-country demands adequately (4.2 billion syringes annually nation-wide). For example, companies like Hindustan Syringes Ltd. and Becton and Dickinson have manufacturing facilities to meet the in-country demand for syringes. Bio-medical waste is generated at almost all these health delivery sites.

From the above, it would be evident that a non-participatory regulation which seeks to impact innumerable stakeholders, and several hundred thousand health delivery points in the country where health care delivery takes place on a daily basis and where health care waste is generated, is doomed to failure. A uniform prescription of technologies, complicated segregation procedures and predefined practices, which leave little or no scope for innovation and learning, showed that the drafters had no experience of the field, but were mostly driven by the urgency to 'regulate' and 'be done with it.'

INTERVENTION

Research Component

It was at this juncture that a joint medical community, NGO, and civil society intervention showed a new path. Commencing with a clear identification of the extent and nature of the problem and recognizing the very techno-centric nature of the solutions proposed, background research was conducted by an environmental NGO, Srishti.¹³ A background researched document was prepared to lay down the problem, and the options world-wide were evaluated and discussed with help from the international environmental community,¹⁴ scientists, and published literature. It had several new ideas, and in particular stated the linkages between dioxins and medical waste incineration, introducing this into the public realm for the first time in India.

PUBLIC INVOLVEMENT

The information was widely circulated.¹⁵ Simultaneously in association with several other civil society groups and using international experts, a national awareness campaign was launched. In an effort to raise the issue across the board, medical associations were invited and addressed, besides involving lawyers, media and the government. At the same time, in another case dealing with waste in Delhi, the Hon'ble Supreme Court of India had directed the Government of Delhi to install on-site incinerators in all 50 bedded and larger hospitals in the city. It was a decision which was seen to be environmentally disastrous since it would cause unchecked, multi-point, air pollution in the city and the release of new pollutants such as dioxins and furans which had precisely led to their phasing out in the US. Srishti in association with the Delhi Nursing Home association, intervened in the Supreme Court to seek a modification of the order, and to seek directions not only for safer technologies with standards but also for a more inclusive process for rule making and for its implementation. The Court agreed to both.

This led to a new type of involvement of civil society not only in helping draft a more inclusive and rationale legislation, but also to broaden the capacity of the system to deal with the important issue. The path from the Court's order to the national legislation in 1998 was, however, stormy. The Ministry of Environment and Forests, however, held back the technical recommendations of the nodal standards-making technical body in the country, the Central Pollution Control Board (CPCB), for over a year, still dogmatically trying to negotiate its earlier draft notification. However, persistent activism and pressure finally saw a new progressive draft in 1997. Simultaneously Srishti as well as other groups held multi-stakeholder consultations in several parts of the country, and also started persuading the products industry in an attempt to have them produce new devices and technologies, such as autoclaves and microwaves, which were more environmentally friendly. The new law was legislated finally in 1998 and came into effect progressively till 2000.¹⁶

ONGOING MULTIPLE CAPACITY BUILDING

In the several small and large interventions over the past six years, there has been an ongoing plethora of changes. Egged on by market projections the local industry geared up to manufacture cleaner technologies such as autoclaves and microwaves. Non-PVC plastic bags (PVC was

banned for incineration under the new law, a 'first' in the world) and needle cutters became locally available. A viable service industry has also come up with other 64 centralized waste management facilities being set up in the country through partnership with the local government and the private sector. Recently guided by a national document on CWTP developed by CPCB, they are being standardized. Several groups have come together to float HuMAN (Health and Us—Medical Waste Action Network) and have taken initiatives to develop 'model hospitals' which had a rollout effect. Training kits have been developed and training of nurses and ward boys undertaken in several parts of the country including Delhi, Hyderabad, Bhubaneswar, Shimla, Chennai and Trivandaram, in association with the State Pollution Boards and nursing associations. Training of trainers is also being planned. Alongside, various types of audio-visual material has been developed including course material for distance learning by the WHO. Large institutions such as the World Bank as well as the Defense Forces have taken on board environmental management as part of their health care activity and in fact have been very progressive in implementation, banning burn technologies and implementing segregation and training in-house. Though there is much to do, the broad inclusive approach has led to activity in all the sectors.

OCCUPATIONAL SAFETY AS A DRIVER

It must be mentioned that nurses are key to the successful implementation of health care waste systems in any health care setting. Apart from medical administration, nurses need to be addressed specifically, and doing this requires approaches separate from the classic regulatory ones. Special emphasis has been made to approach the issue from occupational safety viewpoints. A nurse is at particular high risk while administering an injection, cleaning up a mercury spill from a broken thermometer, preparing a mercury based dental filling by hand, or being exposed to cancer causing chemicals such as gluteraldehyde, and needle prick causing exposure to AIDS, Hepatitis B and C and a host of other pathogens, or to chemical exposures of all sorts. Nurses need to understand hospital waste management. Not doing so has led to failure. Occupational safety was not addressed at all in the first draft legislation, but has become a mainstay of interventions across the board in India, even though it is not part of the environmental legislation itself.

NEW ISSUES

As an indicator to the progressive nature of the change, recently the Government of India in its large 1.2 billion dollar Reproductive and Child Health (RCH) programs has included safe, non-burn waste management for its six hundred thousand immunization outreach points in the country. The way ahead now is to implement projects in several districts. The step involved a change in policy of the WHO and UNICEF, two large international players and key actors in immunization delivery world-wide.

GAPS

It should be recognized that there are still several gaps. These gaps are due to the state still not approaching the issue in its larger perspective, and the efforts made have been mostly outside government thinking and initiatives. For example, there are no financial incentives for installing

proper technologies. High customs duty create a barrier to items like digital thermometers or for even manufacturing them in the country, while Chinese-made mercury thermometers have started flooding the markets. There are no official training centers where training is imparted to health care officials. There has been a general reluctance on part of the Health Ministry to provide even minimum budgets for waste disposal by the State run health system and, till the issue of immunization came up, the issue of waste had not even been taken on board. In fact a draft document incorporating waste management in the Health Policy was prepared as early as 1999, but has not seen the light of day as yet. Regulation continues to be tardy, and time and again the courts have stepped in to ensure compliance. The Central Steering Committee on Hospital Waste Management has met only twice since 2000, and has not made any significant impact. Generally speaking the changes have happened despite the State's lack of initiative though this could have been magnified manifold had the State been more proactive and flexible on the issue.

DISCUSSION

Since the proposed draft of 1995 till today, there has been a dramatic shift in the approach to encompass a multi-stakeholder and a pragmatic environmental governance approach, which has shifted the model from the pure regulatory one. Not only has the cost been shared, they have become more efficiently distributed in the process, with the private sector and the health care sector sharing costs. New focuses like occupational safety have led to addressing new constituencies that are vital for a successful change. In fact, the tardiest and wanting still has been the issue of effective regulation by the State, and the initiative taken by the State itself has been narrow...

Challenging the Holy Cow: Electronic Waste and EPR

As is well accepted, computerization and new technology have been lauded as keys to economic development in the region, and are commonly referred to as part of the 'new economy'. In India, the current computer density of less than five per thousand is stated to rise to over 20 per thousand under the new IT policy.¹⁷ All measures to make this happen, including the import of second-hand computers, are being explored and are being allowed in legislation and policy. However, as has been observed there are several toxic and environmental concerns from end-of-life computers and electronic products, that contain several types of harmful toxics which when released cause severe harm to human health and the environment. This has resulted in several policy measures being adopted in Europe and other countries, which call for change in materials, and producer responsibility for recycling and final disposal.

Owing to a liberal policy of second-hand import, waste is being dumped, and in fact this phenomenon has been rising especially as regulation is becoming more demanding in developed countries. India, along with China, has become a key destination for electronic waste in the world, coupled with increasing local waste generation. Resulting from an extremely high obsolescence rate of computers, due to new technologies and software, falling prices and new features, old computers are often sold at the price of junk.

Situational reports and analysis done by Toxics Link,¹⁸ which first raised the issue in India in 2002, show that the ground situation is serious with high exposure of the poor urban workers engaged in backyard operations of hammer and tongs type of recycling. Having learnt from the experience of medical waste, Toxics Link (Srishti Toxics Free Health Care

Program) at the outset decided to adopt a two-pronged approach. Firstly, to raise the issue in strong terms to bring it to the table, and secondly to have an inclusive strategy simultaneously to take the issue forward in a problem-solving manner. The approach is not only to bring in an extended producer responsibility framework with the involvement of the 'informal' sector, but also to encourage conversation and ownership of the problem amongst government and industry stakeholders. The EPR approach too involves several actions²⁰ on the part of the industry, including information sharing, developing financial and pricing mechanisms, waste collection systems, integrating the existing systems at least in part, and ultimate recycling and disposal.

Currently, egged on by the public campaign,²¹ as well as the issue being alive internationally through the Basel Convention, European laws²² and various moves in some States of the US, the Government has set up a multi-stakeholder working group. International activity has also served to put pressure on multinational companies. The Indian working group includes NGOs, the industry, scientists and policy-makers. It, however, does not have any representation from the informal sector per se, and NGOs may be expected to play that role.

In any legislation, which should follow, the effort is to include both a regulatory framework as well as other objectives. There also need to be special emphasis on the inclusion of the existing recycling sector as another actor. Such legislation must go beyond mere standards. It must encompass management practices, take back targets which are progressively increasing, efficient collection system and norms and to involve the existing informal recycling sector.²³ Such a law may have to be augmented with financial advantages and disadvantages and information transparency mandates for it to be workable. Alongside, it must recognize that the role of the municipal is key in an efficient collection system, such as has been seen in several countries especially in Europe. No doubt, this process will take more time to evolve than a purely standard driven system, and also needs more negotiation, but as past experience demonstrates it would have a higher likelihood of success. The key will be to balance 'standards' with other approaches.

New Challenges: Moving from Food Standards to Food Safety?

The move from food standards to actually providing safe food to the consumer is a complex issue. However, the very important issue of safe food, the key to a healthy life, is very narrowly addressed in India. The main and only important place where it is dealt with is in the Indian Prevention of Food Adulteration Act (PFA). While the general focus of the law is to prevent and penalize the act of adulteration of food, there is very little emphasis on food 'contamination', a far more omnipresent and deep-rooted systemic problem. Only in one section of the Act is the issue outlined, and that too through defining the levels of various types of contaminants, such as heavy metals, some chemicals and pesticides. Hence as per the PFA, if milk is found to have DDT higher than a certain level, the retailer of the milk can be hauled up in court after going through an elaborate process of sampling and testing by the Health Inspector. Beyond the measurement of the level, the PFA has little prescription on dealing with the source of the contamination or the point where in the food production and supply chain better controls may be needed. The problem becomes more acute when fresh or unbranded food is considered. Who would one hold responsible for spinach loaded with lead, for example? If the spinach is packed and tinned, the Health Inspector could haul up the processor and penalize him, but for over 99 per cent of the food supply chain, in countries like India this is not an option, for it is sold fresh, and not processed.

A beginning must be made by recognizing that the production and supply of food is a part of a long chain. Food can be contaminated at several points. For example, excessive spraying of pesticides can leave a residue that can be unacceptably high. Storage and transport can lead to air depositions of heavy metals. Storage and wholesale markets can introduce bacteria, or other types of pollutants including preservatives or chemicals. Finally retailing, especially through hawkers, a common practice, can expose the food to urban pollution, as has been found in several studies, raising levels of heavy metals for example through deposits of urban air pollution.

Food then transits several distinct policy and administrative sectors. Agriculture, chemicals, transport, marketing, retailing, consumer awareness and safety are some obvious ones. Crosscutting sectors would include citing exposure to polluting industries like brick kilns; pesticide use and farmer information; sewage quality and irrigation linkages; or responsibilities of local governments and *panchayats* (local judicial systems). Food standards in isolation cannot be achieved unless a holistic framework is developed and capacities increased throughout the chain.

In a study carried out by Toxics Link, along with other partners,²² vegetables in Delhi and Varanasi were heavily contaminated with lead and zinc, several times beyond the PFA standards. However, there could be little resource to action since within the PFA there is no viable mechanism to deal with unbranded food, or food which cannot be traced back to a particular manufacturer or processor. Hence for all practical purposes, the only mechanism for food safety in India is totally non-effective, and needs deeper reforms.²³

DISCUSSION

The above three case studies outline three experiences. There are several areas of intervention that need to be explored and examined before effective regulation is put out.

Data and Options Analysis: Often, in the past, regulation has not been preceded by an overall situational analysis and objectives for the interventions. A good analysis will not only clear the extent of the problem, but will also determine gaps, both institutional as well as regulatory, and outline objectives.

Multiple Interventions: Alongside regulation, multiple types of capacities are needed. Some need to be triggered off by other types of instruments financial or information-based, while opportunities have to be created to involve civil society in the process. Information transparency is key to efficient and effective processes which stay on track, and this is critical to sustain an ongoing momentum in the system.

Pushing technology and standards: It is critical that regulation pushes the existing technological systems to leapfrog into current state of the art knowledge. If the regulations themselves are weak, it will lead to technology dumping, and will create long-term investment in outdated technologies. 'Learn from the best' and pushing the envelope will help in creating sustainable possibilities. Often the best is not necessarily the most hi-tech, but a combination of integrating existing systems with knowledge and technology that produces the present and future results.²⁴

Capacity Building: A genuine effort has to be made to help build multiple levels of capacities in the system to improve attainment of environmental goals. Industry will need to provide services

and products and this should be outlined and clearly spelt out. Local bodies will need to be made aware of the proposed change, and their difficulties taken on board and sorted out. The impacted sector will need opportunities for training and this knowledge needs to be made available.

Differential Impacts: Standards and legislation cannot discriminate between different constituencies in any major way. However, they need to be informed of the differential impacts the problem has on workers (e.g., nurses) as against the urban well-to-do. If the range of intervention is broad, then there is scope to address different impact on women, children or the poor better than if the approach is merely standard driven.

Feedback and Monitoring: Multiple levels of feedback and monitoring are needed. Data collection has to be an ongoing activity which needs to be conducted and effectively used and disseminated. Data generation is a major limitation for a developing country, and needs investment that is often difficult to come by. Alternate ways of gathering 'data' that is both more focused and can also be anecdotal needs to be taken into account in this situation and not dismissed.

Local involvement and information transparency: To date environmental action has been the sole prerogative of the state and central pollution control board. Their ineptness and inefficiencies are touted as reasons for non-fulfillment of environmental objectives. However, even if they were totally efficient this would be inadequate for achieving the desired results. Empowering other sectors in a strategic and coordinated manner, is essential for change, and environmental governance and subsequent sustainability needs to be defined in these encompassing terms. Providing access to information and making the decision-making process more participatory is the key to the larger involvement of civil society takes into account suggestions and concerns. Often the issue is complex with varying realities. It needs approaches that can be changed to suit the situation. Information and participation enable problem solving.

CONCLUSION

India today is in a position to learn to improve its environmental management both from its own experience, and also from the experience of other countries. It is not necessary that it adopt the same practices used by other countries in similar stages of economic development, but to leapfrog both in terms of knowledge, learning and technology. Simultaneously, there must be a very keen ear to the ground to understand and respond to the specific and local situation that are to be addressed, and adoption and innovation are keys to success.

A pure standards-driven approach is not limited to only prescribing a technical norm, but has unfortunately become a way of viewing both the problem as well as the solution to it. This has proven to be disastrous, and also impacts weaker sections of society that are not taken into account. Rather, a problem solving approach, based in situational analysis, will help determine the range of issues involved and the interventions needed. Standards and technologies are of course a part of it, but cannot dominate it. Hence, there are no short cuts to improved environmental management in the country, except that this has to be based on an ongoing assessment and a multiplicity of interventions with the ultimate objective to improving the quality of people's lives in a fair, effective and equitable manner.

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NOTES

1. The first case on which the apex court had applied the doctrine of 'Sustainable Development' was Vellore Citizen Welfare Forum vs. Union of India. In the instant case, dispute arose over some tanneries in the state of Tamil Nadu. These tanneries were discharging effluents in the river Palar, which was the main source of drinking water in the state. The Hon'ble Supreme Court held that: 'We have no hesitation in holding that the precautionary principle and polluter pays principle are part of the environmental law of India'.
2. The 1974 Water (Prevention and Control of Pollution) Act establishes an institutional structure for preventing and abating water pollution. It establishes standards for water quality and effluent. Polluting industries must seek permission to discharge waste into effluent bodies. The Pollution Control Board (CPCB) was constituted under this act. The 1981 Air (Prevention and Control of Pollution) Act provides for the control and abatement of air pollution. It entrusts the power of enforcing this act to the Central Pollution Control Board. The 1986 Environment (Protection) Act authorizes the central government to protect and improve environmental quality, control and reduce pollution from all sources, and prohibit or restrict the setting and/or operation of any industrial facility on environmental grounds.
3. The Ministry of Environment and Forests announced a National Policy for Abatement of Pollution in 1992, according to which the key elements for pollution prevention are adoption of best available clean and feasible technologies rather than end-pipe treatment. This implied serious consideration of production process changes that involve significant improvement in energy and water conservation.
4. India signed the UNEP Basel Treaty in 1989, and was enthusiastic about supporting its Ban Amendment in 1995, yet to date though the Treaty has been ratified under pressure from the courts, the Amendment has not. Likewise both the Rotterdam Convention on PIC, and the Stockholm Convention on POPs (2000) have been signed but not ratified, often under pressure from industrial lobbies.
5. Note: Even conservative government reports acknowledge this as this quote from the government website shows. 'Excessive soil erosion with consequent high rate of sedimentation in the reservoirs and decreased land fertility have become serious environmental problems with disastrous economic consequences. Of the 16 rivers of the world that experience severe erosion and carry heavy sediment load, 3 rivers, namely, Ganges, Brahmaputra and Kosi occupy the 2nd, 3rd and 12th position respectively. Because these trends have not been reversed, many other catchments of the Indian rivers are also becoming equally problematic as is evident from the ever increasing Central assistance released to the States for floods, droughts and other natural calamities...' Source: Ministry of Environment and Forests website: <<http://envfor.nic.in/soer/1999/chap5.html>>.
6. Note: An example of this are tools like the Toxics Release Inventory in the US mandate making data on specified pollutants public.
7. This has led to a national protest. According to a news report appearing in the Times of India Network, dated Sunday, October 31, 2004, 'Around 92 environmental organizations from across the country have rejected the draft National Environment Policy (NEP) alleging "opaque and undemocratic procedures" and "a fundamentalist economist approach (instead of an environmentalist one)". In an open letter to the Ministry of Environment and Forests (MoEF), non-government organizations (NGOs) have accused it of deviating significantly from the common minimum program of the ruling coalition, especially with regard to giving priority to 'weaker sections of the economy'.
8. Another similar legislation, The Hazardous Waste Management and Handling Rules, framed in 1989, had similar problems, and has been the center of an ongoing major Supreme Court intervention since 1995 as such waste was found to be commonly imported and randomly disposed off despite the law.

9. GOVERNMENT OF INDIA, Tenth Five-Year Plan, 2002–2007: <<http://planningcommission.nic.in/plans/planrel/plansf.htm>>.
10. *Ibid.*
11. Personal communication by the Director Ministry of Health, Government of India.
12. For example Max Health Care in Delhi and Apollo Hospitals based in Chennai—both are being run by corporate houses on business models.
13. Presently Toxics Link, another environmental NGO operates the Srishti Toxics Free Health Care Program, dealing with medical waste amongst other in-hospital toxic issues such as mercury.
14. The international group later joined the network Health Care Without Harm (HCWH), <www.no-burn.org>, of which several groups from the global south, including India, are members.
15. An informational 'waste pack' with three documents was prepared. The main options document, 'Be Careful with the Cure' dealt with technology options and was key in changing opinion.
16. The Bio Medical Management and Handling Rules 1998, with a progressive implementation plan for types of cities and rural areas, to give time for capacities to be developed in the country.
17. Year 2008 target set by the Ministry of Information Technology, Government of India. Source: <<http://itfriend.mit.gov.in/adavantageindia/aboutmit.asp>>.
18. A summary report was first done along with the Basel Action Network <www.ban.org> and the Silicon Valley Toxics Coalition <www.svtc.org>: two international groups very active in waste trade and producer take back issues. Source: *Toxics Link*.
19. Three reports by Toxics Link <www.toxicslink.org>, a report by the Basel Action Network <www.ban.org> along with the Silicon Valley Toxics Coalition <www.svtc.org> have resulted in exposing the international practices of dumping in India and China. Subsequently a report jointly done by the Swiss EMPA and Toxics Link with the CPCB documented detailed recycling practices in India. Source: *Toxics Link*.
20. Note by author: The WEEE directives for the EU, along with the ROHS <<http://www.europa.eu.int>> directive to remove toxics from electronic products, various State directives in the US, as well as the Chinese ban on imports are examples. Basel Treaty also pitches in. <www.unep.ch>.
21. The existing recycling sector has to find a new place in the changing scenario where new higher investment and safer technology investments for recycling waste are being envisaged. For example, in the case of electronic waste, collection from households or businesses can be very costly. However, the existing waste-pickers can be offered monetary incentives by the recyclers to collect and bring the waste to a collection point for transportation to the plant. Here the role of waste-pickers can be seen as that of an independent economic actor but working in the overall framework of industry driven recycling as per extended producer responsibility principles but also linking 'informal' and 'formal' systems for livelihood protection.
22. Study carried out by the Imperial College London, Toxics Link, Indian Agricultural Research Institute, Banaras Hindu University and Delhi School of Economics in partnership, over three years (1999–2001) to study impact of air pollution on vegetables, and its linkage with consumption patterns and livelihood linkages with the poor involved in peri-urban agriculture. Source: *Toxics Link*.
23. Srishti has filed a Public Interest Litigation (PIL) in the Indian Supreme Court (March 1993) asking for a more holistic approach to food safety and citing inaction by the government, despite over twenty years of data that the food supply is heavily contaminated.
24. Technology solutions need to work in the relevant social system. Two Waste to Energy plants set up in India (Delhi, 1984 and Lucknow, 2004) failed since they could not receive the required quality and quantity of waste, as it was already picked clean by the waste-pickers before reaching the plant. If the plant managers had made an effort to include the waste-picking system as part of their operation in a collaborative rather than a competitive way, the plants could have worked in a synergetic manner within the system.

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