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ENVIRONMENTAL CAPACITY-BUILDING: INDIA'S DEMOCRATIC POLITICS AND ENVIRONMENTAL MANAGEMENT

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The question of environmental capacity building and environmental movements in India cannot be separated from larger issues of India's democratic political framework and its recent political history. The stability and endurance of India's democratic government, it may be argued, present many observers with an intellectual puzzle: a multi-ethnic, caste-ridden, agrarian society with a rigid hierarchical structure, coupled with constitutional government, periodic elections, increasingly resilient political institutions, and freedom of expression. An ascendant regionalism, an unstable central government but still intrusive state, and international globalization pressures continue to raise doubts about the smooth functioning of Indian democracy. In the face of such threats, two aspects of the Indian nation state are perhaps the strongest guarantee of environmental rights and democratic freedoms in India. The first is a politically conscious citizenry whose literacy and awareness levels are constantly on the rise and which has proven itself capable of "throwing the rascals out" on at least four occasions in the past two decades. The second is the presence and development of a range of balancing institutional arrangements capable of engaging arbitrary actions of an intrusive state and an assertive market.

Politically conscious and increasingly participant Indian citizens have chosen to assert their demands on several occasions through mass movements that forcefully express farmers', women's, and civil rights, and in the past two decades, also the right to a safe environment and environmental products. These movements are significant because, although in part facilitated by the presence of a democratic political setup, their presence also simultaneously strengthens democracy by bringing to the fore a range of previously silent voices. In addition, the emergence of a vocal and independent media, the development of a vibrant NGO sector, and an activist judiciary have created a larger range and density of institutional avenues through which new actors can lobby for environmental protection, often by acting within the system. The presence of a vibrant community of non-governmental organizations concerned with citizens rights and subsistence has acted as a mechanism that can help focus the demands being made on the Indian polity. This paper argues that participatory and representative democratic political arrangements provide the best available option to address India's current environmental ills and secure sound protection of India's environmental future. This implies that at the grassroots levels, there should be a stronger network of participatory, semi-autonomous organizations that control local resources (pastures, forests, water bodies, irrigation facilities, village commons, or coastal fisheries), and that are

effectively linked to exert political pressure at the macro level. In comparative terms, the lesson of India's efforts to protect its environment is that curbing arbitrary exercise of power in the interests of small minorities of privilege is most likely when citizens are mobilized against corrupt practices that threaten the environmental future of a nation.

1 India's Current Environmental Crisis

This paper, in assessing the capacity for environmental management in India, concedes that population and policy measures from central governments can be significant constraints on how humans live in their environments.¹ But it adopts a framework of analysis that emphasizes local capacities as the ultimate measure of the extent to which factors such as overpopulation and market pressures pose problems for the environment, and national policies and international environmental regimes can translate into actual capacities to manage natural resources (Agrawal and Yadama, 1997). Taking seriously Marx's admonition that humans make their own history, it examines those features of the Indian polity that influence the ability of the Indian population to live with its environment and to influence the Indian state to change environmental policies. As Redclift suggests, it is important to know how "human purposes can be married to environmental objectives, at both a local and international level" (Redclift, 1994: 56). Successful environmental protection cannot be achieved by the control of a single factor, but must be invented through a complex interaction of influences that involve the life-style patterns, geography, class structure and gender stratification in a given area.

Since India's first development efforts, issues of environmental degradation coupled with development have increased pressure on the state, and have challenged the state to accommodate new environmental demands while simultaneously guaranteeing economic growth. After independence in 1947, the Indian economy grew at a compounded rate of 3.6% between 1947 and 1981, but since 1981 at the much faster pace of 5% to 6%. This growth has been accompanied by a change in the structure of the economy as well so that manufacturing and industry account for a much larger proportion of the national product in 1991 compared to 1947, and the share of agriculture has fallen from a half to a third. The need to continue to grow has not abated, and therefore, the existing environmental policy making in India is best understood as a "politics of reconciliation" between the goals of development and environmental preservation.

But environmental problems are emerging as potentially one of the most pressing sources of conflict and crisis in India. This is evident from even the most cursory examination. The problems of underdevelopment, such as inequality, poverty and unemployment, seem to be never ending while environmental pressures stemming from rapid industrialization and subsistence pressures reaches critical

1 A large literature has focused on limiting population as the most important single factor in addressing environmental problems (Abernathy, 1993; Meadows, Meadows, and Ehrenfeld, 1992; Wilson, 1988). There is a similarly large set of writings that focus on government policies and institutions both as the culprits and as the potential solutions for environmental problems (Haas, Keohane, and Levy, 1993; Lipschutz and Conca, 1993). For a critique of environmental management in general, see (Sachs, 1993).

levels (Agrawal and Narain, 1997: 24). Lower levels of development reduce the room for maneuver available to address problems of environmental degradation through policy change, especially if powerful industrial or political interests see environment and development as involving tradeoffs.

India's population has increased from 336 millions in 1947 to an estimated 953 million in 1997. Although the increase has slowed down in the past few years, the four populous northern BiMaRU states (Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh) continue to be characterized by high birth and population growth rates. In terms of urbanization, the five major cities of Bangalore, Bombay, Calcutta, Delhi, and Madras have witnessed more rapid population growth than the rural areas of smaller cities, but urbanization has also proceeded apace in other respects.²

Consider some basic indicators of environmental degradation and pollution in India.³ Although the share of agriculture in the Indian economy has fallen, more than 60% of the Indian population continues to rely on agriculture, and income from land-based resources. As a result of the increasing population, each Indian today has less than 3500 sq. meters of space as compared to 9700 sq. meters in 1951. The total area of India is 328.6 million hectares of which the National Bureau of Soil Survey and Land Use Planning estimates that 187 million hectares suffers from some form of soil degradation. Soil erosion in India is 16.35 tons/hectare by some recent estimates (Goel and Prasad, 1993). The area under water logging has increased from 6 million hectares in 1976 to 11.6 million hectares in 1994. Among the causes of waterlogging are higher levels of canal irrigation that also contributes to increased salinity of soils. As canal irrigation has increased from 8 million hectares in 1951 to 17 million hectares in 1991, large tracts of land have become waterlogged. Table 1 provides information on the estimated costs of soil degradation.

India has had one of the most professional and scientific forest services in the world that dates back to the colonial period (Fairfax and Fortmann, 1990). The Forest Department is in charge of nearly 77 million hectares of India's official forests, of which only 50% has a high density (40% or more crown cover). The total biomass on the forested lands is estimated to be around 90% of its level in

Table 1. Annual Costs of Soil Degradation in India (1 US Dollar = approximately Rs. 45.00)

Type of degradation	Cost (in millions of US Dollars)
Erosion	1,300 - 5,000
Salinity	480
Water Logging	200
Nutrient Depletion	120

Source: Based on TERI, 1998.

2 For example, the proportion of population living in cities with more than 500,000 people has grown from 55% in 1951 to 76% in 1991. Similarly, the number of cities that have more than a million people has grown to 23 in 1991 from 7 in 1951.

3 The figures on environmental degradation and pollution are taken, unless otherwise mentioned, from TERI (1998, 1999).

1947, or 4.7 cubic billion meters with an annual increment of around 88 million cubic meters. Part of the reason for the decline in forests has to do with domestic demand as the Indian population has grown by a factor of 3 over the same period. Even more important is the demand from livestock (increasing by a factor of 4), and industry (a 14-fold increase). Compared to many other countries such as Indonesia, Burma, Brazil, or Thailand, however, relatively little of the forested land has been diverted to other uses (about 7% since independence). One of the more significant converts of protection through community action, the Indian Forest Department is using the Joint Forest Management Program to build partnerships with the very people that it regarded earlier as the enemies of forests.

The statistics are somewhat more depressing where water resources are concerned. The availability of renewable fresh water fell from 6000 cubic meters per person per year in 1947 when India became independent to about 2300 cubic meters in 1997.⁴ By 2017, no more than 1600 cubic meters will be the average amount of water available to a person.⁵ Groundwater is overexploited so that the water table in cities such as Ahmedabad fell by 200 to 250 centimeters annually in the 1980s. The Central Groundwater Board estimates that in more than 90% of all observation wells that it monitored in the 1980s, the water table fell by more than 50 centimeters. The increasing scarcity of water lowers its quality and increases salinity, forces the time spent by households, mainly women, to collect water, and increases the expenditure necessary to raise the necessary amounts.

The 113 river basins that are another major source of water in India are becoming increasingly polluted as well. The quality of river water is monitored at 480 stations throughout the country under different programs such as MINARS (Monitoring of Indian National Aquatic Resources). The water in most of the rivers falls in use category C which means it is fit for drinking only after treatment for bacteria since the total coliform count has risen steeply since independence. The major sources of water pollution are flows from city sewage. Urban sewage flows have increased from 6 billion liters in 1947 to an estimated 30 billion liters today. Industrial waste and nutrient runoff from agriculture is now finding a place as an important source of water pollution. Finally, the industrial demand for water with increasing growth is becoming harder to meet.

Air pollution is fast emerging as a problem without easy solutions, especially in urban areas. A number of toxic waste disasters, the most prominent among them being the Bhopal disaster of 1984, focused the attention of the state on the need to create effective preventive legislation. But the everyday tragedy of air pollution is equally grim. The burden of many of the different types of air pollution, especially of domestic pollution, falls primarily on women and infants. Poverty and inadequate access to clean fuels has perpetuated the use of biomass-based fuels in rural as well as urban areas so that more than 90% of rural and 35% of urban households have high levels of unsafe indoor air pollution. But the problem of external

4 Regions where the per capita water availability is less than 1600 cubic meters annually are seen as water stressed. Although the figure of 2200 cubic meters is well above water-stress levels, there are wide regional variations, and many parts of India are already water stressed. The situation will only worsen in the years to come (TERI, 1998)

5 (Chitale, 1992; GOI, 1992). These projections have led some scholars to conclude that the effective constraint on agricultural production will be water, not land, in the years to come, especially as groundwater wells are deepened and attendant costs increase (Shah, 1993).

air pollution is far more severe in the urban areas. Indian cities suffer from high levels of major pollutants such as sulfur dioxide, nitrogen oxide, carbon monoxide, hydrocarbons, photochemical oxidants, metals, and other gases and vapors. The Central Pollution Control Board founded in 1975 launched the National Ambient Air Quality Monitoring Program in 1984 with 28 stations in 7 cities. Today, the program exists in 92 cities with more than 290 stations. An analysis of the data by TERI (Tata Energy Research Institute) for 62 cities reveals that the safe limits for particulate matter, sulfur dioxide, and nitrogen oxide were exceeded in 62, 3, and 3 cities. The air quality index established by the Board finds 20 cities in the "dangerous" and 14 in the "bad" zone.

Air pollution is a result of emissions from point sources as well as more dispersed locations. Industrial pollution in terms of particulate matter has increased enormously since independence. For example, emissions from power plants have increased nearly 50-fold, and those from major industries such as iron and steel, cement, fertilizers, and paper have increased more than 15 times. Similarly, motorized vehicles which are the largest source of non-point pollution have increased from 0.2 million at the time of independence to more than 36.3 millions in 1997.⁶ Most of these vehicles are registered in the larger metropolitan cities so that Bombay, Calcutta and Delhi have 48% of all vehicles clogging the city roads, emitting noxious chemicals into the atmosphere.

These activities have a substantial economic cost. The economic loss owing to soil erosion alone is close to 11% to 26% of the agricultural output. According to a World Bank report, India loses close to USD 80 billion as a result of resource degradation and sickness and deaths owing to pollution.⁷ The report attributes these losses to the familiar problems of poor sanitation, industrial effluents and chemical runoffs, lack of clean water, poor solid waste management, and air pollution (PTI, 1998). Considered at a more aggregate level, Table 2 provides an estimate of the major sources of economic losses to the country as a result of environmental pollution and degradation.

Current levels of environmental degradation and depletion are costly enough. But projection of current trends into the future is nothing short of frightening.

Table 2. Estimating Economic Losses owing to Environmental Degradation

Source	Annual Cost (in Millions of US Dollars)
Health Impact of Poor Drinking Water	2,711
Crop Production losses owing to soil losses	1,977 - 5,155
Forest wood and other non-timber losses	1,267
Air Pollution	19,666 - 94,444

Source: Based on TERI, 1998.

6 According to TERI, these figures represent all motorized vehicles. However, other sources estimate the total number of cars to reach 53 million by the year 2000 (CSE, 1998).

7 The figure of US dollars 80 billions is based on purchasing power parity exchange rates. Conventional exchange rate leads to a figure of US dollars 20 billions. For perspective, consider India's GNP in 1997 which was US Dollars 375 billions (Sirichanya, Robboy, and Mitchell, 1996).

According to TERI, if the Indian economy continues to grow at a rate of 5% (somewhat lower than current rates of growth), with the industrial sector moving much faster, the changes in the next 50 years will be staggering. Industry will account for nearly 40% of the national output and agriculture for just 5%. More than 50% of the population will be located in urban areas (compared to 25% in 1990), and city municipalities will produce 300 million tons of solid waste (compared to 48 million tons today). Emissions polluting the air will increase by 6 times unless new technologies are found and used to ensure cleaner fuels inside and outside the household. In trying to produce the necessary grains for the economy, Indian farmers will not only be faced with all the existing problems of soils, but also need to address the problem of nutrient replacement which will become far more severe. Indian forests will need much more careful management which would be harder to provide except through decentralization.

2 Environmental Issues and the Role of Democratic Politics

India's future ability to address problems related to the environment depend not only on the creation of the right information systems⁸ and the adoption of better material and energy saving technologies (TERI, 1998), but also on the type of politics that emerges in relation to the environment. Politics always plays a central role in policy formation (Chatterjee, 1994). To understand environmental policy and capacity building, therefore, it is necessary to assess the forces that impact political negotiations in any context. Environmental politics in India is distinctive among developing countries precisely because of the availability of a longstanding democratic framework of decision-making that allows a variety of different interests to influence outcomes. India has already managed fifty years of competitive electoral politics, and has blended Western and modern forms of bureaucratic organization and participatory politics with indigenous practices and institutions. A number of factors lend a distinctive character to the Indian political scene, factors that also in turn impact environmental policy making and outcomes.

Owing to the diverse and socially fragmented nature of the Indian society, regional and other political parties have been imperfectly integrated into a "national party system" (Brass, 1995: 67). The presence of multiple competing interests, who are now often mobilized into electoral politics through populist, or regionally specific agendas (Bose and Jalal, 1997) implies grave difficulties in ignoring a mobilized group of people, whether they are mobilized around idioms of caste or region, or around development and environment. The high level of politicization pressures the state to accommodate groups, and forces it to open new avenues of participation. (Khator, 1991: 21). Specific groups of the Indian population are increasingly able to realize the potential of a democratic political system to represent demands and produce policies that reflect some aspects of demands that are forcefully expressed.

8 A number of efforts are under way to create better compliance and monitoring systems regarding environmental management and detection of pollution (Sirichanya, Robboy, and Mitchell, 1996).

This is because the normal accouterments of a democracy – elections, voting, lobbying, checks and balances through institutional arrangements – are not always available to the most disadvantaged groups in the population. Common men and women are seldom able to participate fully or equally in the decision-making processes that would help improve their socio-economic position, or safeguard their environment. As a result, popular demands are often expressed through the extra-constitutional methods of direct actions such as protest and mass mobilization. Although the ideas of Gandhi have receded into the background as India has moved further along its own developmental path, resonance of his methods are still to be found in the political practices adopted by those striving to give expression to their demands through direct actions. The existence of a democratic framework for the exercise of power makes it more difficult to brutally repress non-violent protesters, unlike the situation, for example, in Indonesia.

It can be argued that direct action is as vital a practice of participatory democracy as is voting on election day. In India, mass movements among the scheduled castes and tribes, agricultural laborers and poor peasants have increased considerably since the dominant Congress party has collapsed. The hierarchical social structure is gradually giving way to a more horizontal integration of class and caste groups. Such increasing political participation and popular protests may appear at first blush to result in greater problems of governance, but they also ultimately make Indian policymakers and leaders more accountable and the political system more representative.

Mass demonstrations, protests, strikes and other forms of mobilization are thus an important aspect of democracy, because they offer alternative means of articulating environmental issues. As Goodin argues, if we are committed to the notion of democracy at the very basic level, we must also understand the need for equal consideration of interests (Goodin, 1996). Naturally occurring objects have an objective value and we must equally consider nature's interests. Democracy is not just about "one person, one vote." If we assume that each citizen honestly reveals his/her preferences, and trust that the aggregation process (such as voting) is not being manipulated, then environmental interests can be represented in a democracy only if they are internalized by a large number of people with sufficient leverage in the political system. Environmental protest movements, expression of environmental interests through mobilization of people, and the emergence of leaders who can articulate environmentally-friendly positions is necessary, then, for long-term policies to be chosen.

Participatory democracy with direct action can thus provide the most efficient way to internalize environmental preferences, and to induce the political system to maximize responsiveness to the expression of environmental interests. In addition, participatory democracy breaks down concentrations of power, and the franchise is extended more widely and exercised more vigorously. Power cannot be insulated, and political actors need to assume responsibility for their actions (Goodin, 1996: 842). The political system will increasingly become sensitized to values of the environment, and the more others there are who are concerned about environmental issues, the more nature's interests will be expressed in policy programs.

A democratic structure also permits demands for an unobstructed flow of information about environmental costs and benefits. Coordination of environmental policies internationally also depends on the availability of information about na-

tional costs and benefits for particular environmental policies, something that will be harder to locate for countries that do not allow the full costs of environmental protection to be revealed. Non-democratic states are often slow in responding to pressure from civil society organizations, and address environmental problems usually only after they cross some critical point. The democratic process may be the only way to aggregate, even if imperfectly, the valuation of environmental goods (Chadwick, 1995).

3 Centralization in the Indian Polity: Environmental Capacity until the Early 1980s

Although a democratic political arrangement provides citizens a number of alternatives for articulating their preferences and seeking redress through the political system, a number of features of the Indian polity make it hard for environmental issues to be addressed through normal bureaucratic politics. Although democratic, the Indian political system has for long been highly centralized. The type of centralizing tendencies that were visible in the 1970s and the 1980s have now begun to give way to a wider dispersion of decision-making powers. But it is useful to understand some of the factors that led to centralization, since it is through changes in these factors that a more inclusive style of environmental politics might emerge. Tendencies toward centralization became most evident during the reign of Mrs. Gandhi who used her own personal charisma to make a direct appeal to voters and thereby bypass the Congress party political organizational machinery. Populist policies were the instruments she found most useful to lead her party to electoral victory and this mode of political mobilization continued under successor governments, initially headed by her son Rajeev Gandhi. However, challenges to power from regional leaders, and a fiscal crisis that made it impossible to follow populist policies, has meant that India now might be witnessing a reversal of the centralization that had taken place under the leadership of the Gandhi family.⁹

While it existed, the top-down exercise of political authority created many environmental problems whose legacy still continues. Flood control in the Indo-Gangetic basin provides a good example. During floods, the demands on the land, increased agricultural activity and greater irrigation led to loss of life and property, and devastation of crops. The government of India, with its centralized planning system, administered flood control measures through a series of dams in the upper embankments. This provided only a temporary remedy – with increased siltation loads, reservoirs behind the dams began to fill up and dam capacities lessened. Dams had to discharge more water than designed, which led to further flooding. The silt began to settle in river beds, which slowly became higher than the surrounding area and finally, floods took on an even greater magnitude. The land beyond the embankments could no longer drain water into the river and thus became marshy and saline. The Gangetic basin example shows how the intervention of the government not only proved to be inefficient but also led to further degradation of the ecosystem (CSE, 1985).

9 See Kohli (1990, 1994) for a discussion of some of these trends in Indian politics.

Although there are many signs of decentralization in the Indian polity, a second factor that prevents rapid incorporation of environmental issues into the political arena is that the administrative structure remains quite centralized. The government owns, controls and develops all of the country's forests, dams, major irrigation systems, power stations and railways. The specific issues of the environment are left to the Department of Environment (DOE) created in 1980. Although this department is in charge of diverse activities related to the environment, such as preventing and controlling air and water pollution, conducting botanical and zoological surveys, monitoring and researching the environmental impact of new industrial units, its influence on other central governmental agencies and state governments remains minimal. There has been little change in the activities of the forest, industry, irrigation and public works departments as a result of the presence of the DOE (CSE, 1985: 328). Both horizontal and vertical diffusion of environmental awareness remains limited. Nor is it likely that the DOE would ever come to exercise the overriding authority needed to improve environmental conditions.

India's democratic machine, defined by Kohli as a "well defined network of distribution of spoils in exchange for support," however, has the potential to respond to pressures from important interest groups at different levels of the political system, and absorb dissent and co-opt leaders of the subordinate classes (Kohli, 1990: 219). As a result there are several venues in which social interests can be articulated and find representation in the policy process. Over the years, through the process of intense bargaining and apportionment of benefits among different partners of the dominant coalition, the Indian government has become increasingly resilient and open. It has also thereby created demands that seem to break the economic stalemate of the coalition of upper classes, and curb the power of a meddling bureaucracy.

In relation to the environment a large number of statutes seek to regulate resource use, pollution levels, emissions, and conservation of existing resources. Although even the Indian constitution recognizes the need for a safe environment, legislation since the 1970s has given teeth to the sentiments expressed in the constitution. The major statutes that empower the Indian state to take action in relation to the environment are the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Forest Conservation Act, 1980, the Wildlife (Protection) Act, 1982, and the Environment (Protection) Act, 1986 (Bansal and Gupta, 1987; Mathur 1987). The Environment Protection Act of 1986, passed in part to give effect to the decisions taken after the Stockholm Conference of 1972, is the most comprehensive step taken by the Indian government. Together with the founding of the Department of Environment (DoE) in 1980 headed by a cabinet minister, it represents the integration of a number of piecemeal institutions and legislation about the environment.

The Act establishes the procedures through which the government can set standards for air, water, and soil quality. It also allows the government to impose limits on pollutants and emissions from different sources, establish procedures for the handling of hazardous and toxic substances, prohibit particular types of industrial operations, and take remedial measures in case of environmental disasters. While the Department of Environment with its state counterparts has the overall control of environmental matters, a range of regulatory institutions seek to manage levels of pollution, chief among them being the central and state pollution control

boards. By 1986, the Central Pollution Control Board had identified more than 4,200 industries that caused high levels of pollution, but only 1400 of these had applied for ratification of the pollution they produced (Garg and Tiwana, 1987: 110). Few industries, however, have shown much willingness to comply with the limits imposed by the government. Indeed, industries at present see environmental regulation as an added complication in their operations. Many do not even attempt to apply for grants of consent from the Pollution Control Boards, preferring instead to remain undetected until government orders force them to cease operations. For instance, many industries continued to pollute the Ganges river until the Supreme Court issued closure orders in 1993 against 190 industrial units located along the banks of the river.¹⁰

The main environmental actors in the above discussion are the government and industry on the one hand, whose relationship is at best conflictual, and the citizenry on the other hand, who fall victim to environmental disasters. Action by the government itself was only limited until the early 1980s, after which a series of factors have combined to make the environment an important issue on the agenda. Until the mid-1980s, the government tried to manage the environment through command and control policies but without adequate enforcement. This strategy had a paradoxical effect. It emerged as a leader on environmental issues by taking the legislative initiative to pass new laws. At the same time, the lack of enforcement of these laws meant that economic activities continued to undermine the possibility of a clean environment. Further, institutional changes that could lead to environmental protection on a more decentralized basis were never pursued. The root causes lay in the low public awareness of environmental issues, the failure of the enforcement machinery of the government, and the unwillingness of major actors to comply with regulations.

4 New Environmental Actors and Capacity Building

It can fairly be said that until the mid-1980s, the major civil society actors in India – industrial capitalists, large and medium farmers, and white collar workers¹¹ – had little interest in ensuring environmental protection. The costs of environmental protection would fall on them, but the benefits would be shared by a large, dispersed group of poor people who bear a substantial part of the total costs of continuing environmental degradation. Although urban rich and middle classes would prefer a cleaner environment and more comfortable public spaces, they are unwilling to pay the taxes or support regulations that would support such an out-

¹⁰ The case under which these orders were issued demonstrates the limited effectiveness of the Pollution Control Boards and the environment ministry which had made few efforts to enforce the provisions of the Environment Protection Act (Aggarwal, 1993; Anon., 1993). The Act empowers the government to impose fines up to Rs. 100,000 (US dollars 2,200) and prison sentences up to 5 years.

¹¹ (Bardhan, 1984). Because none of these were hegemonic, Bardhan also remarks that the Indian political scene remained one of constantly shifting alliances and mutual concessions. It is because of this characteristic of Indian politics that specific subsidies and concessions form such a large part of government policies. One estimate places them at nearly 15% of the GDP (Mundle and Rao, 1991).

come. Their willingness to act in the interests of the environment has changed only little since the mid-1980s except for greater awareness of looming environmental disasters.

But there are additional changes that have enhanced environmental capacity building in India. The role of international donor agencies and NGOs, Indian non-governmental organizations, and the news media has been critical. With increasing public awareness of the issue and several social movements related to the environment,¹² judicial activism has also come to play a very important role. It is clear that, in the coming years, the model of command and control that has characterized government policy must change. Government legislation on the environment itself had focused mainly on issues of industrial pollution until the 1980s, but this legislation and related institutions (for example, the pollution control boards) address only a limited set of environmental problems, not broaching issues of water, forests, pastures, land, and fisheries depletion. In India, environmental issues are inextricably tied up with livelihood questions. Whereas government action focused on control of pollution activities by the creation of new agencies, environmental problems in India also demand attention to equity and deeper institutional change that involves citizens more widely. One of the characteristics of a new regime of environmental protection must be to decentralize planning and enforcement.¹³ The case study on forests provides a sense of the kind of decentralized action that may give reason for hope.

In India, institutional agendas are not highly constrained. This has two effects. One, it allows any issue to be placed on the agenda once articulated societally. But the very multiplicity of issues that are placed on the social agenda means that not all of them can be addressed. As a result, only those that receive strong political backing from institutional or popular supporters gain public attention. Thus, although citizens are offered a wide range of issues, they must ably exploit methods of participation in a democratic setting, which include street demonstrations, protests and hunger strikes. These actions can alter the institutional agenda through a variety of factors. First, calamities and catastrophes augment the need for action and encourage the consolidation of political support. Examples of these catastrophes include India's serious pollution and erosion problems. Secondly, internal pressures created by public protests, such as in the Chipko movement, can encourage the government to take action, thus altering the agenda. Finally, popular literature suggests that agendas are altered through issue diffusion from one agenda to another.

¹² Recent years have witnessed a number of environmental movements against logging and new dams. Forest-related environmental movements include the Chipko movement in Uttar Pradesh, and the Appiko movement in Karnatak. The Narmada Bachao Andolan (Save the Narmada movement), the Koel Karo protests, the Silent Valley movement, and the protests against the Inchampally, Bhopalpatnam, and Tehri dams are some of the protest movements that have questioned government efforts to create development on the backs of the more marginal sections of the population (Agarwal, 1997: 42).

¹³ Even a recent World Bank assistance project for strengthening environmental management capacity accepts the need for decentralization of selected environmental functions (Sirichanya, 1996).

4.1 International Influences

A number of environmental issues involve the global population and require sophisticated technology if changes are to occur. As Indira Gandhi pointed out in her keynote address at the 1978 Toronto Conference, "if we are to effectively deal with global environmental problems, we have to forge a partnership which seeks simultaneously to protect and serve the environment, taking care, at the same time, of the special requirements of developing countries ..." (Ramakrishna, 1992: 146). The 1992 United Nations Conference on the Environment and Development (UNCED) prompted 5 accords which limited the emissions of greenhouse gases, protected the diversity of the planet's animal and plant life, provided guidelines for forest preservation and produced the Rio Declaration on Environmental Development. The summit also created Agenda 21, a detailed blueprint for environmental actions of the future. This document elaborates strategies and programs that will reverse environmental protection and promote sustainable development. Such environmental regimes provide developing nations such as India with forums in which to discuss environmental issues, but at the same time put pressure on developing nations to undertake environmental management. Equally importantly, international regimes can also give focus and recognition to the environmental problems of citizens in the developing world.

International aid agencies have played an important role in influencing the adoption of environmental policies in developing countries. India is no exception. One of the main forms through which international organizations have affected environmental awareness in India is through funding programs and environmental activities of local grassroots NGOs. But they have also helped in shifts in environmental policy. The adoption of the Joint Forest Management programs in various Indian states, and the declaration by the Indian government to involve local communities in the use and management policies around local village woodlots was aided by the actions of the Ford Foundation, which helped gain recognition for the activities of innovative forest department officials and supported some of the initial experiments that have finally led to a sea-change in forest protection policy in India (see below).

4.2 Role of the Media in Environmental Issues

The Indian press has matured as a result of the democratic process. It is not only independent of the government, but holds a dominant position in the political game. The role of the media has been effective in the environmental policy arena, yet its efforts, like popular protests, have been local and limited in scope.

A content analysis of *The Hindustan Times* newspaper from 1976 to 1981, a period that is significant because of the numerous environmental laws passed, and new agencies and organizations established, reveals coverage of the disputes concerning the Silent Valley Hydroelectric Project and the Mathura Oil Refinery. The Silent Valley hydroelectric project was disputed owing to the danger of submerging hundreds of endemic species in the tropical rainforest that would have been covered by water behind the dam. A combination of coverage by the news media and the protests generated by an alliance of grassroots non-government organizations were responsible for the final decision to abandon this project. The Mathura

Oil Refinery came to national attention because the release of pollutants from the refinery was eroding the internationally famous marble monument to love, the Taj Mahal. Once again, although the refinery has not been closed down, a number of steps have been taken to reduce the impact of the pollution on the Taj. This was again partially a result of the attention the issue received in the media.

It can be argued that, over time, the "messenger" role of the media has evolved into the more aggressive role of "exposer" of government apathy and neglect. Once an environmental policy is in place, the media takes an active and aggressive role in criticizing the government's actions, providing suggestions in which people should react and behave toward these policy decisions. Today, environmental issues are covered in non-English local newspapers, and the tone of coverage is often critical of government policies, and increasingly critical of governmental interference.

The government itself also uses the media as a vehicle to promote interest in and approval of environmental issues. For example, the government, when publicizing its plan to clean the river Ganges, used the media as an important tool to arouse public interest. The Ministry of Environment and Forests makes efficient use of the media, and, in rural areas, environmentalists and government campaign agencies use other communication strategies more suited to the rural lifestyle, such as folk songs, slide shows, or open-air theaters, to promote their cause.

4.3 Non-Government Organizations and Judicial Activism

According to one estimate, there are more than 10,000 environmental NGOs active today in India (Dutt and Rao, 1996: 297). These NGOs operate from the International to the local grassroots levels, and are active in an enormous range of environment-related activities. Many of them, among them the Center for Science and Environment, the Tata Energy Research Institute, and WWF (India), and the Kerala Shastra Sahitya Parishad (KSSP) are active in urban areas and their main activities are in the form of research, networking, lobbying, and working as information clearing houses. Others undertake direct action such as mobilizing popular action against environmental ills, or afforestation. Overall, Indian environmental NGOs can be seen to fall into one of four categories: a) relief groups that concern themselves with environmental disasters such as famines or floods, b) sustainable development groups that focus on economic and environmental programs such as afforestation, or commons development, c) Environmental action groups who try to mobilize people into protests against environmentally unsound state or corporate policies such as large dam construction or nuclear testing, and d) support groups who try to network, disseminate information, or carry out research. The last are usually urban whereas the first three are overwhelmingly located in rural areas.

Mobilized groups in India have had long-standing concerns related to rural and urban poverty, social justice, inequality, civil liberties and rural development. They have only recently taken up environmental issues that involve deforestation or afforestation, dam construction, air and water pollution, and soil erosion. Because of their relatively recent adoption of the environmental agenda, their protests are often spontaneous, sporadic, and against perceived injustices of diverse types. They employ a range of methods, from peaceful strikes to struggles involv-

ing violence. Their causes vary from economic and ethnic to political and environmental. Another feature is the usual lack of cooperation between individual, localized movements. For example, protests arising from environmental issues do not necessarily unite the groups across regional boundaries. Indeed, a number of different efforts may be going on at the same time to protest against various environmental ills, without the forging of a common front (Shah, 1988: 298).

The growth of groups that have direct links to environmental movements within a developing country is important in establishing environmental concerns as a legitimate political concern as noted by Enloe (Khator, 1991: 174). Group activity in India is significant. In 1983, there were only 250 NGOs that declared themselves as having an environmental interest. If the number today has risen to more than 10,000, part of the reason of the growth is that many existing organizations have simply begun to include environment as one of their concerns. Nonetheless, such rapid growth of environmental NGOs, even when they are not highly organized or united, creates multiple points of local pressure on the political system to consider environmental issues.

Most environmental groups in India are locally based. As such their efforts are seldom directed at raising mass environmental consciousness. Their relationship with the government has tended to vary, but in recent years they have come to gain recognition as important agents of social change, and find mention in the 5-year plan documents. They have also begun to use public interest litigation to achieve their environmental demands. As a result, the judiciary has handed down a series of landmark decision in public interest litigation cases that have shown its willingness to step in where the executive arm of the government has failed in protecting the environment.

The courts have acted in a range of cases to compel the state to undertake action for the environment. In a case with far-reaching consequences in 1980, the Supreme Court ordered the Ratlam Municipal Council to treat sewage, create a drainage system, stop industry from spilling effluents, and implement health safely measures (Varandani, 1987). More recently, it was through a case filed in the Indian Supreme Court that the NGOs were able to stop the creation of any new aquaculture shrimp farms in coastal regions. These farms were destroying local fisheries and agriculture through the release of excessive nitrogen into the ecosystem. While even the piecemeal efforts of the NGOs are producing some effect, recently there have been some attempts to establish a network of NGOs and voluntary groups to pursue environmental conservation more effectively. The voluntary sector is bound to become a lead promoter in pushing environmental concerns as key issues on the national political and development agenda (CSE, 1985: 342).

5 Environmental Capacity Case Study: Deforestation

To examine the above general statements in a more concrete context, the remainder of this paper is devoted to a discussion of a specific environmental policy arena: forest management. The shift in this sector, from protection by the forest department, to environmental movements and top-down efforts to involve citizens, to the recently created Joint Forest Management Program shows the capacity of the Indian state to address environmental issues by becoming more inclusive.

Forests provide vital resources to rural economies. Since the colonial period itself, Indian forests were managed on an exclusionary basis with the forest department asserting its control over more than 25% of Indian's land and the right to manage and control all Indian forests. The policies changed little with independence.¹⁴ In the process, local rights to forests received little attention from the state despite the fact that village forests are important sources of direct benefits, such as timber, wood and panels for construction, fuelwood, fodder, fruits, and medicinal plants.

In the early 1980s, as satellite imagery revealed that India's forest cover was a scant 11%-13% of the total land area, government targeted deforestation as the most important environmental issue on the national agenda. But its strategy to address deforestation was to undertake top-down tree plantation programs under the auspices of a new agency called the National Wasteland Development Board. Social forestry programs were launched by several states to promote afforestation. But most of the new trees were planted on private farms rather than community land, and large tracts of degraded forest lands were assigned to industrial firms. By planting trees, these programs aim to meet the needs of the industrial markets while ameliorating the fuel and fodder crisis among the poor. The species of trees chosen for planting (eucalyptus, teak and pine), seldom benefited the local ecology, and the new biomass from the plantations often ended up in the hands of rich farmers and industries.

5.1 Social Forestry Programs

The term social forestry was used by the National Commission on Agriculture to indicate tree-raising programs that supply firewood, fodder, small timber and minor forest produce to the rural population. These programs comprised three aspects: 1) farm forestry, where the farmers were supplied with free or subsidized seedlings, 2) community woodlots, where village communities were encouraged to plant trees on common lands and 3) forestry woodlots, where trees were planted for the community by the government forest department on public lands (Gupta, 1988: 12). These social forestry programs have been far from successful; the wood produced from social forestry programs often ending up in urban and industrial India instead of in the hands of the rural poor. They also reduced rural employment, land holding of the small farmers, and promoted absentee landlordism (Chandrashekhar, 1987). The failure of the programs reflects the absence of any important pressure groups that could force the government or the administration to apply mid-course corrections once it became evident that the benefits from the programs was not flowing toward either the environment or the poor.

Community forestry programs in Gujarat reflect the problems of India's social forestry programs. In 1980, the Gujarat social forestry program received a five year \$67 million project from the World Bank that targeted 37,000 hectares of strip plantations, 68,440 hectares of village woodlots and 100 million seedlings for

14 Rangan (forthcoming) provides a thoughtful analysis of colonial and postcolonial forestry policy changes. She argues that although forestry policies have changed over time, the nature of control exercised by the forest department did not change much with independence, but that the variations in forest policy can be traced to other causes.

distribution. Farm forestry programs were reported to be the most successful. Between 1980 and 1983, the farm forestry program achieved 202 per cent of its target and by the third planting year, 95 million seedlings were being distributed (CSE, 1985, 32). Yet, a report by the World Bank reveals that this success may not have achieved its ultimate goal of improving living situations of the poor. Many of the farmers converted irrigated land to farm forestry because of uncertain prices of agricultural cash crops. Also, the tree farming process was less labor intensive and failed to increase employment opportunities. These programs have benefited the rich farmers the most and failed to improve the circumstances of small farmers and the poor.

5.2 The Chipko Movement in the UP Himalayas

In stark contrast is the experience of the Chipko movement that sought to alter the government's position in relation to the management of forests in the hill regions of Uttarakhand in the Indian Middle Himalayas. The world famous movement, pioneered by the Dashohli Gram Swarjya Mandal in Gopeshwar, was among the groups to show concern for development and environmental issues. The roots of the movement can be found the coming together of a few residents of Chamoli as a cooperative labor society in the 1960s to prevent exploitation by public works contractors. At this point the organization's main interests were in generating economic benefits and better employment conditions rather than in protecting the environment.

In 1964, the hill residents in Chamoli formed the Dohsoli Gram Swarajya Sangh (DGSS) to start cottage industries based on natural resources from local forests. A collection of village cooperatives then set up a factory based on the use of pine resin from Chir trees (*Pinus roxburghii*), but the forest department refused to supply these factories with enough pine resin. The DGSS were soon to realize they had no rights of control over their local forest resources, while the rich contractors exploited these resources because they had established a long standing coalition with the government.

The extraction of resin and turpentine was commenced in 1965 in the area of Badyargarh, and in 1979, big contracts to fell chir trees was given out. This led to widespread destruction and the taking away of all the wood, including the branches of trees. The Chipko leader Sunderlal Bahuguna was entrusted to hear the villagers' grievances. Leading the villagers, Bahuguna went from village to village, informing people of the proposed felling of trees and the ecological consequences that would follow.

Over three thousand men and women from all social groups participated in the struggle in which women especially played a prominent role. The leader, Bahuguna was jailed on January 22nd, where he continued to fast. The determined resistance from the villagers even after their leader was removed lead contractor and forest officials to abandon tree felling activities (Guha, 1989, 178). In April of 1981, Bahuguna went on an indefinite fast to urge a total ban on tree felling in the Himalaya above 1000 meters. The government responded by creating a eight-member committee to prepare a comprehensive report on forest policies and agreed to follow a fifteen-year moratorium on commercial felling.

The Chipko movement brought commercial felling to a standstill, but state forestry is only one of the problems that threaten ecological stability. The intensification of resource exploitation is furthered by large dams and increasing mining operations. The Chipko movement has been meeting these challenges through ongoing struggles and widening the movement's horizons. At present the most active wing of the Chipko movement is that led by Chandi Prasad Bhatt. This wing organizes afforestation programs in the villages, encourages greater environmental consciousness, and believes in the use of local resources for local needs. In summary, the grassroots Chipko movement has helped define the linkages of rapid industrialization, technological modernization, and the environment. All the wings of the Chipko movement challenged Indian intellectuals and political elites on the environmental impacts of rapid industrialization. For example, Sunderlal Bahuguna holds commercial forestry and the close links that exist between contractors and forest officials to be responsible for environmental degradation.

Although the Chipko movement successfully curbed deforestation in one region of the country, its success hinged on the coming together of the local populace in a concerted effort to influence government policies regarding the use of forests. The change in policies meant that local forests could become available to local populations more freely, and the subsistence needs of the villagers could be met more easily. What the Chipko movement demonstrates in relation to the environment management capacities of the Indian government is its ability to respond to social movements without repression, to accept articulated demands into the policy-making agenda, and to diffuse a tense political situation by conceding the more reasonable demands that are articulated.

5.3 Co-Management in Forestry

In recent years, a different mechanism has been used to reorient forestry policy toward the needs of the poor. This is the Joint Forest Management Program which was initiated in the late 1980s through a central government initiative. Soon after, 16 states had passed government orders by 1992 directing their forest departments to initiate community-based programs to protect forests. At this point, Joint Forest Management is being implemented in 22 of the 25 Indian states.¹⁵ The Program seeks to involve local populations in the management and protection of local forest department held land in exchange for a modest level of regular benefits, plus a substantial payoff once timber from the protected trees is sold in the market. By 1992, more than 10,000 village level groups were active in the implementation of the JFM (Sarin, 1995) and by 1995, the number had increased to nearly 15,000 (Poffenberger and McGean, 1998).¹⁶ The institutionalization of benefits for the rural population through the sharing of products from forest lands belonging to the

15 The best recent study of the Joint Forest Management Program is (Sivaramakrishnan, 1996). See also (Poffenberger, 1994; Poffenberger and McGean, 1998)

16 The JFM is not without historical analogs in the Indian case. There are more than 3000 forest councils in Uttar Pradesh hills, and collectively they manage more than 3000 sq. kilometers of forest land in the region. They came into being as a result of the forest council rules of 1931, passed by the British government (Agrawal, 1994).

Table 3. Changes in Environmental Management in India: The Case of Forests

Aspects of Environmental Management	Until Mid-1970s	Late 1970s to late 1980s	1990s
Problem perception	People responsible for deforestation	Crisis of wood fuel, timber and other forest products; Conventional measures ineffective	Lack of people's participation responsible for ineffectiveness of forest policy
Policy measures	Centralized forest department control	Community and social forestry	Joint Forest Management to involve communities in forestry
Major actors	Forest Department, industrial development	Forest Department, NGOs, International donors, Industry	Forest Department, NGOs, Village communities,
Evaluation of Environmental Capacity	Technically capable, limited capacity to enforce	New directions, limited success	Promising new avenues, participatory management

forest department is a novel experiment in community-based conservation that is becoming a hallmark of forestry policies around the developing world.

The example of the forestry sector exemplifies the direction of environmental capacity building in India. Table 3 summarizes the lessons of the case study with a view to drawing some general lessons. It indicates that in the early years, the Indian state saw forests as its own responsibility. It tried to protect them by excluding people, especially rural residents. When better scientific information revealed the extent of deforestation that had taken place, the first responses of the state were to initiate forestry programs that attempted a technically oriented managerial solution through the social forestry programs. The adverse distributive impact of these programs and the inability of the effort finally to address deforestation prompted a search for alternative solutions. The involvement of NGOs and international donor agencies, and some grassroots experiments in the arena of forest protection and management found expression as a new direction in forestry in the shape of the Joint Forest Management Program. The JFM has sought to decentralize forest management by involving village groups, and witnessed regeneration of forests in several areas (Agarwal, 1997, 43).

6 Conclusion

India's democratic state is flexible in incorporating new social issues into the political agenda, and stable as a functioning democracy. In the 50 years since independence, there have been several shifts in its environmental management style. The democratic framework of the Indian state has led to new issues coming on the agenda as a result of environmental crises, and encouraged the formation of new coalitions to lobby for new policy management styles. The most important

new actors on the Indian environmental scene have been NGOs, and village level user groups in the issue areas of forestry and renewable resource management. The management capacity of the state has been enhanced by the inclusion of these new actors and their coalitions. At the same time, these actors have made environmental policy more participatory in at least some issue areas.

Among the problems from which environmental organizations and movements in India continue to suffer are that they are often locally based, lack coordination, and share an inability to cooperate over the long run. Their efforts at mobilization need to coalesce into large movements and they need to work more intensively and persistently with international actors to further influence the government in moving toward a participatory stance to an even greater extent.

As a result of developments that are already visible, it is likely that the Indian state will continue to seek greater involvement of grassroots groups, NGOs, and international donors in several environment-related policy arenas. In some areas, involvement is more characteristically advisory, or oriented toward research and information production. They include urban pollution, biodiversity protection, steps to ameliorate the emission of greenhouse gases, and ozone depletion. The research capacities of the official establishment in these arenas are usefully supplemented by public and private research carried out in educational institutions and non-governmental organizations. In other arenas, the newly emerging actors can play a more direct role, especially in planning and implementation. In forestry, protection of national parks, watershed management, grazing lands development, community-level groups, NGOs, have already been instrumental in helping achieve national objectives, and are likely to continue to be highly important. Research institutions such as the institutes of management, institutes of technology, and some other centers like the Indian Institute of Science in Bangalore and the Institute of Economic Growth in Delhi have produced research that has helped move public opinion more in the direction of the involvement of people and communities in achieving environmental goals.

At the same time, some of the actors, traditionally seen to be unfriendly to environmental goals, have remained set in their orientation. Industrial capital in India has scarcely become environmentally aware or active. For a shift to take place in the attitudes of industrial enterprises, the general populace will need to become far more vocal in its desire to protect the environment.

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