In our times, environmental protests overwhelmingly become a new sight of discourse in the disciplinary shells of scientific paradigms, as and when, the collective efforts of activists exert environmental consciousness among the fellow citizens adopting different strategies of communicative action. However, our engagement with ecological sensibilities in India cannot be reduced into the outgrowth of environmental protest with our own specific cultural identity. Instead a large amount of local and global academic and political engagements have undergone and have equally been contributed to face the new challenges. It is true that although the adverse impact of environmental problems were not implicated all sections across of societies equally, it will provoke critical responses from all (Rangarajan, 2007).
It is in this context of criticality and reflexivity, no social movements or protests are seen in isolation since the exigencies such as interconnectivity and brand imaging have been operating at broader levels of theorization and their subsequent practices. At times, when the local mobilization is not striking enough to get attention of the wider arena, the local activist and leaders tend to seek outside intervention to push their issues forward, knowing the fact that these interventions make its own complexities. As a result, movements would expand its space and rise voice, hitherto not been seriously concerned, with the help of specialist interlocutors who form a combined, but vibrant group of media, law, research, advocacy and so on. In other words, it is argued that, unlike in the past, these exigencies are actively getting involved in social movement practices with or without the invitation of involved actors (Sethi, 2001).

In this chapter, an attempt has been made to narrow down our analytical bit to unfold these underlying dynamism/engagements and their larger questions of how praxis of environmental movements in India are being negotiated between diverse, but discursive domains of ideology, value, power and knowledge. When, we try to locate cognitive praxis of the environmental protest, we are puzzled with problems of different actors squarely; the victims of the development, social activists, scientific communities and above all the repressive apparatuses of the state. Framing theoretical constitution of new social movement in to a complex properties of collective identities, activist communities and movement cultures from local to global, unfolds the sweeping cognitive structural formation foreground in form or discourse as alternative methods and practices.

Close observations of the environmental protests and their structuration, perhaps bridges the gap between the domains of local and global, practice and theory as they implicitly underlined in the constituencies of environmental question in the terrain of new social movements scholarship. As a matter of fact efforts were also made to combine academic and activist interest to link the relation between the
pursuit of environmental governance and the role of scientific enquiries, to make
sense of their intrinsic relationship. In this regard, environmental assessment for
proper regulation and control played a crucial role in knowledge production, policy
formation and possible action (Fritz, 2002). These politically charged perceptions of
the popular collective action that challenges the larger developmental projects are to
be signified not just to expose the limitations of the state agenda of change, instead
to see their larger visions and strategies to overcome from these very limitations
(Dwivedi, 2006).

It is in this context, our approach here is to narrow down the disciplinary
shells of sociology in to the structural linkages between the rise and maturity of
environmental movements and their discursive, but constant political pressure upon
the state and society to redesign perceptions, policies and programs as a part of green
governance in India. It is increasingly become significant when the earlier phase of
pioneering and prophecy of the environmental movements were attracted by the
recent phase of intellectual and academic space which establish a critical praxis of the
men-nature relationship. As a result, an important question is getting shaped, indeed,
is an enduring form of dialogue between the masses, political actors, social activists
and scientists over the broader issues of alternative strategies for the sustainable
development.

PRAXIS OF ENVIRONMENTAL MOVEMENTS IN INDIA
Quite for long time the environmental issues, to begin with, has been a western
discourse aroused under the shadow of advanced industrialization and its adverse
impact on eco-system. This approach tried to differentiate environment away from
and opposite to human society. Apparently, it was a result of the western way of
thinking under logical positivism that tried to conceptualize man away from nature.
This critical juncture led to the development of scientific way of reconstituting
nature as a physically sustaining global eco-system. This in turn facilitated for
generating world wide discourse and conscious action.
Although its theoretical implications are found in the third world countries, environmental issues for them, were found to be in the context of developmental paradigm of the nation state. As a result, they challenged developmental policies on two grounds. Firstly, they appeared against the preservation of ecology as it directly affecting the poor whose livelihood has heavily been depending upon it. This led to the second question of delivering justice to all as a result of weakening of political institutions. In response to these issues, for the past three decades, we are witnessing the emergence of new movements of several kinds. They, in fact, tried to articulate exploitative nature of the state structure and its developmental model which left out large section of subaltern masses. Democratic assertion in the form of these popular protests, in a sense, widened self-assertion and political participation of those who's voices hitherto be silenced.

Ecological questions in this context appeared to be affecting the livelihood of the ecological communities who were often the victims of developmental projects in one way or other. In its late arrival the discourses on sustainable development for new conceptual framework on ecological sensitivity particularly with the Report of Brundtland Commission ‘Our Common Future’ in 1987, led to realize the fact that the limits of existing developmental paradigm. However, those who articulated the issues of ecology within the constituency of development are targeted as anti-national and anti-people, agents of western imperialism wedded to block the industrial development in India, nonetheless the fact these claims do not proved to be merit in the long run. In a slightly different fashion, today with the advent of scientific expertise on ecology, a set of scholars are of the view that better techno-managerial strategies are crucial for the nexus between nature and human society as well.

However, a sociological imagination, in this context, reflects on the questions of how human thought and action affect the environment and, how in turn environment conditions the human behaviour. In this connection, sociological wisdom has basically revoked the old understanding of nature and society.
relationship by unfolding new possibilities of thinking and acting. For Marxian scholar, it is said that ‘once we begin to speak of men mixing their labour with the earth, we are in a whole world of new relations between man and nature’ (Williams, 1980: 76). Subsequently, scholarships by Dunlap and Catton (1978) brought about nature into the conceptual mappings of sociology that led to an epistemological shift in the nature-society relationship. It widened the theoretical spaces of social life such as population, organization, technology and environment. It underlines the fact that the social relationship becoming a centripetal force with a growing understanding of environment (Scoones, 1999). This ultimately gave rise to multi-dimensional perspective for environmental question to define life conditions in-tune with nature.

Ever since, Indian discourse on the quest for man and nature relationship has been organismic\(^1\) and it was evoked time and again even in the nationalist ideologies\(^2\). It eclipsed in imaginaries of the nationalist movement as resistant against the indigo plantation in eastern India, introduction of cotton plantation in western and southern and the Deccan movement in southern part of India in the 19th century. These critical reflections, somehow, were sidelined in the historiography of post-independent India, despite the fact that these questions have been debated globally in

\(^1\) Indian spiritual traditions of almost all religious pursuits describe in metaphorical language the all-enveloping and indwelling presence of Divine Spirit in the universe and particularly in our own planet and its Nature. In the vision of Universe, human life is understood as a sacred one which perpetually engaged in the life of the Divine in close affinity with Nature, the living environment of human kind (Manickam, 1998:104-111).

\(^2\) In different parts of India, forest dwellers and rural peasantry intensified their protest in the second part of 19th century were against forest policies and shifting cultivation introduced by the British Raj resulted into direct conflict over the use and abuse of nature resources. As a result, colonial administration destroyed their relative autonomy over the natural resources and brought them fully within the ambit of colonialism as a process of civilization (Chandra, 1987:45). Mumaon Satyagraha, for instance, launched by the forest dwellers spur the historiography of India’s Freedom Struggle when Govind Ballabh Pant extended his support. There are individuals who took initiative in mobilizing forest dwellers as well, for example, Alluru Sitaram Raju who spearheaded a struggle of Koyas against the exploitation and oppression of forest administrators. Similarly, by the inspiration from Gandhi, Rani Gaidailu led another protest in Manipur (Burman, 2000: 321).

147
different vantage point. Similarly, the dissenting voices of the subalterns in the margins and their articulation of grievances through local means were not brought into the critical reflections in the academic domains for quite a long time as the intellectual genre saw them as isolated entities. Perhaps, it was due to two reasons: (a) at the outset they were subalterns at the margin of history and (b) those represented on behalf of subaltern were consciously worked for their own productive existence and visibility (Sethi, 1993:127).

At times when the issues of environmentalism cornered into the wider academic discourse world over, in India it was situated with a set of protests waged by the subaltern groups. In other words, it can be argued that the very articulation of the environmental movement in India, were basically, at the outset, questioning the numerous existential conditions of the subaltern groups on the issues such as forest-destruction for plantation, ownership of land and control of natural resources for landless and poor peasants.

The adverse impact of industrialization, under the grand project of development and modernization, such as agricultural revolution through the application of fertilizers and genetically modified seeds, over exploitation of scarce natural resources through mining and large development projects like big dams, pollution, marine resources etc. were also pressing concerns of these struggles. Having understood the developmental implications on Indian social structure and its

\[3\] It is viewed that the emergence of environmental and social movements contributed to a radical change in people's mindset. Certainly it was a result of overwhelming discourse at the global level specifically by the United Nations Convention on Human Environment in Stockholm in 1992. Followed by, there was a series of similar conferences held on different shades of human life such as population in Bucharest, food in Rome, women in Mexico, human settlements in Vancouver, water in Mar del Plata, desertification in Nairobi, science and technology for development in Vietnam and new and renewable resources of energy in Nairobi from 1970 to 1981. As a result of these deliberations on one way or other, tremendous pressures were generated to build up in the United Nations to institute environmental program to make environmental consciousness world over.
exploitative conditions over the eco-system of the subaltern group, social activists articulated environmental questions in the context of social justice. Coupled with scholarship generated in the backdrop of environmental movements, in fact, led to a radical change in our cognitive structure as an unprecedented way of thinking which spread across all primordial social groups. It also created a new imaginary to synthesis local structures and draw diverse set of allies among the subaltern group to create another set of universality for eco-sensibility in India.

As we earlier discussed, development programs of post-independent India has apparently been proved to be adversely affecting the environment as one looks into the details of the series of protests waged by the subaltern masses. Although these movements were spearheaded under the rubric of different ideological preoccupations, their evolution and subsequent forecasting with one another appeared to be a sequential episode of collective struggle that created distinctive ecological consciousness by questioning the very paradigm of developmental models propagated by the state.

The environmental protest in India begun with the continuing conflict over forest resources which are the critical reflections of the dissenting voices against the state sponsored commercialization of these natural resources on the one hand and right to preserve and use these scarce resources for the livelihood of the marginalized majority without harming the eco-system on the other. The scholarship geared to theorize on environment and its social cost of development planning by the activists and social scientists were in variably being burdened by the poor in the name of development (Munshi, 2003:169). It is to be noticed that, from the beginning these struggles were spearheaded by forest dwellers mostly tribal communities in order to

---

continue their social relationship with eco-system (Karnik, 2005). The key players in these struggles, in fact, have been spearheaded by the tribals themselves proved a fact that their life-systems have closely been linked with a strong sense of community consciousness with eco-sensitivity (Omvedt, 1984: 1865, Xaxa, 2008: 55 and Shah, 2008:78).

Chipko, being a pioneer environmental movement in the post-independent India has been emerged as a peaceful protest against commercial forestry. In the initial stage grassroots perspective of Chipko movement was not been given serious attention either by politicians or scientific communities. However, emergence of mass protest with strong ideological roots criticized the violation of customary rights of the forests dwellers. Commercial timber operations, in fact, unmasked the inherent contradictions and exploitative nature of forest policy of the nation too. This in turn generated a serious debate over environment question at first time in India (Gadgil and Guha, 2007:84). Coupled with these debates, and among other things, a discourse was evolved to protect the forest and natural resources from commercial exploitation. As a classical example of non-violent resistance, Chipko was not only confirmed in the Himalayan regions, but also inspired to spearhead similar struggles in other parts of India immediately, for instance, protest in Reni forest in the Chamoli district of Uttar Pradesh. As a result, an ideological shift was found in the popular discourses on development and more conscious efforts were brought about on the quest for protecting our natural resources.

Getting inspiration from the Chipko, Appiko movement, for instance, started protesting against Bedthi Dam in south India. A similar protest was also begun against the Silent Valley project in Kerala in south India spearheaded by the Kerala Sastra Sahitya Parishad (People's Science Movement). The Silent Valley issue, in fact,

---

Needless to say, many of the ongoing movements such as Koel Karo struggle in Jharkhand started three decades ago, Kashipur, Lanjigarh and Kalinga (Orissa), Nagamar and Mehendikheda (Chattisgarh) are the struggles waged by the tribal people.
was qualitatively different from Chipko, as it has been a network of rural school teachers and local citizens to promote alternative scientific approaches in the developmental phase of the state. However, the controversy over the Silent Valley project on the question of environmental dispute in India, in the backdrop of withdrawing from commissioning of the project by the state of India, created an imaginary shift of the state towards eco-sensitivity.

This episode, indeed, resulted into inspire other environmental groups in all over India. It culminated into the popular protest began in the bank of Narmada valley against multi-purpose dam constructions, spearheaded as Narmada Bachao Andolan (NBA). NBA mobilized the activists and rural populace in the central part of India, to fight against big dams projects being constructed in the River Narmada. Subsequently, in the central part of India, one would see, for instance, Jharkhand and Bastar movement against the government policies to convert mixed natural resources for plantation and fisher-folk fighting against the commercialization of shrimp in Chilika. In addition to that, there was another movement in the north-eastern part of India against hydel project in Gangtok and students upsurge in Meghalaya against the mining in the Western Khasi Hill. Similarly, in south India, Munthanga Land struggle by the adivasis and Quit-Cola- Plachimada in Kerala triggered the ecological problems and displacement threat (Sethi, 1993; Karan, 1994; Zachariah and Sooryamoorthy, 1994; Swain, 1997; Bijoy and Raman, 2003; Pattanaik, 2006; Raman, 2007; Arora, 2008 and Sirnate, 2009). As a result of the pervasive environmental destruction, the emergence of micro-level localized protest in different parts of India begun to get shape new theoretical paradigm of development at the macro level, with the support of mass media, activists groups and intellectuals.

There are two theoretical implications within the discourses on environmental protests in India. First, indigenous intellectual reflections on the quest for ecological sensibilities with a broader framework of alternative paradigm of development, has been sidelined as the state apparatus hegemonise over everything.
Secondly, disproportionate impact of development project of the nation state, specifically environmental degradation through deforestation, large dam construction, industrialization in the forest areas, the traditional ecological communities, largely tribal groups, increasingly become the victims of the given developmental paradigm. As a result, it is viewed that the issues of poverty and powerlessness is directly liked with the ecological imbalances. In other words, organic link with the ecology renders vulnerable groups to dislocate their habitats caused by the developmental projects in India (Baviskar, 1995:90). In such a context, collective struggle against over exploitation of natural resources, through times, begun from the protest against micro-projects were moved towards a more general critique of the state's engineered developmental projects.

These instances, in fact, unfolded several dimensions of alternative views of development and ecological sensibilities (Swain, 1997: 828). When these dimensions get crystallized from organizing to protect access to local forest to the world renowned movements like Narmada Bachao Andolan against Sardar Sarovar Dam, a new kind of conceptualization has been under way. And very importantly, praxis of the Narmada Valley protest, being pioneer to get attention worldwide, to be seen as 'the ability to mobilize across these different, yet connected, levels of action can be understood in terms of the relationship between communities, activists and intellectuals-groups united in common cause, yet embodied in different social context and moved by different ideologies' (Baviskar, 2006: 243). Needless to say, social movements and their constant engagement with social problems of these kinds in fact are tried to expand democratic space more inclusive in both the ways of public accountability and self-development. This unprecedented ontological and epistemological path brings home of both learning as well as self-regulation, as Ananta Kumar Giri (2005) argues, a critical domain in the movement studies and a paradigm for mobilization today.
It is in this context of today's interconnected world, major decisions of environmental issues were largely influenced by a wide range of stakeholders such as Non-Governmental organizations, academics, students, citizens group etc. instead of mere policy formulations by the state. This unusual trajectory of environmental interest led to conceptualize some of the fundamental features of culturally framed historical paradigms, process, instrumentalities and organizational forms. While drawing lessons of the new people's initiatives, it is assumed that the civilisational rhythm and its historical value of the Southern context become a guiding principle to understand their intrinsic relationship between human beings and, human beings and nature. Thus, it does not mean that one has to get back to the past; instead a new re-reading of indigenous value systems and traditions shed light on the process of democracy being placed for human development. To that extent, our effort perhaps to understand people's initiative from a historical process, as Ponna Wignaraja argues, historical understanding:-

...is not to go back to the past, viewed with romanticism, but to understand the contradictions and the praxis, and then to observe the seeds of change that reflect some of the democratic and wider development values...such an extent, the old can be reversed by means of the new people's movement and experiments and the peoples creativity they release, by multiplying them, linking them further, building the capacity for sustainability and giving them coherence (italics added, Wignaraja, 1993: 22).

Having a critical, but complex terrain of social problems addressed by the social movements today are recreating a space for opening dialogue and social change, instead of tinkering with the system and ultimately, leading to crisis. To Wignaraja, the long revolution would always stand for structural change, but they were neither guided by violence nor by marginal tinkering with the system. It is true, to some extent, in the environmental movements in India today too. While studying developmental projects and its wider socio-ecological implications, Jyotsna Bapat (2005) of the view that the movements were born out from people resentments, are
less likely to be called for return to nature, instead they appealed for a meaningful dialogue at different domains of social life. According Bapat, these protests were:-

.... not an indication of some primordial call for "return to nature", but a strategic action as part of the participants to negotiate with the agencies of state with which the new movements have to deal. The possibility of using the environmental protest movement to ensure economic growth and social justice within the sustainable development paradigm is a new way of underlining these movements (ibid.: 22).

It is true that the new environmental politics are different from the established forms of political activity as public participation drawn from various quarters. As a result, an indirect form of pressure and informal type of social action has been underway as a symbolic representation of various aspects of environmental issues. The inherent conflict generated between the existing political system and the new environmental agencies led to dispute over the construction and design of policy reforms and organizational formations. But it is largely because of the disagreements with both the life-world and the expert world, on the question how best to develop and implement through practical-technical measures. This critical reflection left out for dialectical process between institutional mechanism and practices as a continuum (Jamison, 2001: 19). However, it is to be noticed that only through practicing science, we could understand modern environmental problems ranging from global warming to bacterial water contamination. This led to recapitulate ecological modernization within the disciplinary domains of social sciences so as to produce socially relevant knowledge domain. In other words, at a time when we discuss the question of sustainability, the linkage between research-based knowledge and action, across board are to be seen synthesis of disciplinary institutions, governance systems and integration of civil society organization.

Once we unpack the history of environmental protest, it not only appeals a new theoretical paradigm, but also for institutionalization of these paradigms. Through times, a new kind of innovation and new forms of dialogue and cooperation are underway among the academic communities, institutions of nation-
state, and environmental organization to frame these problems and their legal, economic and political ramification (Goldman and Schurman, 2000:575). In fact, transnational network of expert knowledge systems on global environmental assessment in the west shaped and sharpened developing courtiers like India to conceptualize these issues with empirical groundings. But, innovative models unfolded in this process, as self-adapting mechanism, have directed for pragmatic solutions to these problems. While drawing lessons from Gramscian notion of counter hegemony, one could infer that how discursive, but radically pluralistic, institutional structures form civil society- such as schools, universities, community based organizations- creating organic intellectuals and organize reforms based social movements as counter hegemonic political practices (Holst, 2002:67).

GREENING INDIA6: Knowledge for Governance

Translation of Green knowledge domains into the process of green governance is appeared to be radicalizing democratic system as an enduring form of participatory, inclusive and open-ended with eco-sensitivity and scientific spirit. The presence and intervention of Environmental NGOs group up at the global level has been vital to realize this new knowledge system into the everyday practices. This resulted into the presence of hitherto social movements to be less significant. In the global south, for instance, it was estimated that 200000 grassroots NGOs working, among them over 3000 received foreign aid, expertise and assistance for grassroots mobilizations of different kind, including environmental issues (Fisher, 1994).

However, in India number of NGOs, were estimated to be in between 20,000 to 30,000 (Seth, 2004). This growing trend, perhaps, shows a transitory stage of movements into organizational formation. A historical understanding of movements in India in the post-independent period, to begin with, were deeply engaged in the political dimensions of environmental concerns through the art of

6 Greening here means, by following Nadkari (2005), a broad spectrum of knowledge domains and reflections of environmental issues; environmental related activities, eco-development, appropriate technology, regulatory mechanism etc.
their local mobilization, civil society networking, media attention, and courts intervention (Agarwal, 1998). However, in the later stage, these issues were brought into limelight with the support of NGOs, academics and transnational agencies. It is proved the fact that new configurations bearing upon the world over with rational and scientific exploration on environmental issues. In India, apparently, cognitive mappings in the form of institutional structures and practices on the quest for environmental protection were also been seen in this direction.

The state intervention is assumed to be very crucial to internalize the externalities of environmental question, so as to balance the social coherence in the entire process of production and consumption decisions of citizens and agencies (Sankar, 2006). Although environmental issues were first raised in the in seventies by the planners of India, these very issues got crystallized in institutionalized form in 1980 as the Department of Environment. Followed by it, a new Ministry for Environment, Forests and Wildlife was setup in 1985 with the recommendations of N.D Tiwari Committee. In response to the regulation and protection of environment, the ministry found out seven thrust areas. They are (a) preparation of environmental laws and policies, (b) regulation and monitor for pollution control, (c) survey and conservation of natural resources, (d) forests management and wildlife conservation, (e) promotion of research, (f) environmental education, awareness and information and (g) international cooperation. Coupled with the ramification in the United Nations Conference on the Human Environment and Bhopal tragedy, the state of India enacted Environment (Protection) Act of 1986 (EPA) under Article 253 of the Constitution. As a result, National Environmental Protection Agency was constituted and it started functioning as a governing body under the Ministry of Environment and Forest. Similarly, for the first time in India, the National Policy of Education in 1986 acknowledged the need for making appropriate curricula and syllabi in the schools and higher educational institutions in order to create mass awareness about environmental protection.
These initiatives, among other things, eventually articulated the environmental question as a new centre of power ranging from knowledge production, appropriate policy and rules for proper regulation and monitoring. It was, then and there, environmental issues were seriously incorporated into the overall developmental questions, instead of their narrow economic returns and technical feasibility (Roy and Tisdell, 1995:37). In other words, environmental questions steered the planning process to be linked with the consequences of development and later on with sustainable development as a result of mass protests and criticism against the logic of large scale developmental projects leading huge displacement and ecological imbalance. To make people eco-sensitive, several measures have been brought about with the support of civil society organizations as it created new infrastructure for communicative action.

To understand these changes, here we demonstrate four broad types of discursive institutional formation and their structuration. They are; (a) emergence of environmental science as separate discipline and, production and dissemination of scientific facts on environmental issues as specialized courses in higher educational institutions and introduction in the school curricula (2) proliferation of environmental departments and academic interventions in the form of producing research oriented papers, (3) policy formulations for better governing process and (4) growth of environmental organizations. This broad spectrum of institutional arrangement, alternative practices and conceptualizations pushed to reconfigure green knowledge and green governance to face the emerging crisis of ecology of our times.

Environmental science as a disciplinary domain first time in India got crystallized in the National Environmental Engineering Research Institute (NEERI), in Nagpur way back in 1974 although earlier it was known as Central Public Health Engineering Research Institute (CPHERI). Rechristening this centre itself, as its history unfolds, was in a quest for deep scientific exploration of environmental
issues. Sooner or later, the centre became prominent in providing adequate scientific facts to the judicial verdicts on environmental issues in India. Similarly Tata Energy Research Institute (TERI) and other voluntary organizations like National Institute of Environment and Ecology were established. It is reported in 2008 that there were 169 leading environmental research institutions found and out of them 42 (24.85 percent) are government institutions. However, 62 (36.68 percent) were in the private sector and 39 (23.07 percent) were remained as autonomous bodied. In addition, there were four internationally reputed research institutions along with 10 associations working in India (see table No.4.1). In other words, scientific facts produced by a community of scholars are being instrumental for proper regulation of ecosystem.

Table No. 4.1: Environmental research institutions in India

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Category</th>
<th>Nos.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Govt.</td>
<td>42</td>
</tr>
<tr>
<td>2</td>
<td>Private</td>
<td>62</td>
</tr>
<tr>
<td>3</td>
<td>Regulatory Bodies</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>Laboratories</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>internationally Reputed</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Associations</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>169</strong></td>
</tr>
</tbody>
</table>


Knowing the significance of the furtherance of scientific knowledge production, the state was encouraged to begin several institutions all over India particularly soon after the direction given by the Supreme Court for scientific advancement in environmental issues in 2003. This, apparently, reflected in school curriculum and new courses on environmental science were to be introduced in higher educational institutions.

---

7 For instance, for pollution related cases, the Supreme Court of India has frequently been consulting NEERI for scientific facts (Divan and Rosencranz, 2005:144)

8 In 1998, for higher learning TERI established School of Advanced Studies later on received the status of Deemed University in 1999.
### Table No. 4.2: Environmental institutions in India

<table>
<thead>
<tr>
<th>SL No.</th>
<th>State</th>
<th>Academic*</th>
<th>ENVIS**</th>
<th>Envt. NGOs ***</th>
<th>Grant total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BSc/BE PG</td>
<td>Total</td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
<td>diplomas</td>
<td>Govt. Dept.</td>
<td>University</td>
<td>NGOs Institution</td>
</tr>
<tr>
<td>1</td>
<td>Andaman &amp; Nicobar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>Andhra Pradesh</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Arunachal Pradesh</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Assam</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Bihar</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Chandigarh</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>Chhattisgarh</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Delhi</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Goa</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Gujarat</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>Haryana</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>Himachal Pradesh</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>Jammu &amp; Kashmir</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>Jharkhand</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>Karnataka</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>Kerala</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>Madhya Pradesh</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>Maharashtra</td>
<td>2</td>
<td>8</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>19</td>
<td>Manipur</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>Meghalaya</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>Mizoram</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>22</td>
<td>Nagaland</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23</td>
<td>Orissa</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>Pondicherry</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>Punjab</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>Rajasthan</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>27</td>
<td>Sikkim</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>28</td>
<td>Tamilnadu</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>29</td>
<td>Tripura</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30</td>
<td>Uttaranchal</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>31</td>
<td>Uttarakhand</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32</td>
<td>West Bengal</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
<td>42</td>
<td>57</td>
<td>1004</td>
</tr>
</tbody>
</table>

Source: * [www.scholarshipsindia.com](http://www.scholarshipsindia.com) (downloaded on April 15, 2008)

** [http://www.envis.nic.in/](http://www.envis.nic.in/) on 9th October 2008

*** Environmental NGOs in India, Indira Gandhi Conservation Monitoring Centre, of WWF-India, New Delhi (in 2008 it increased to 2342)

If the National Council for Educational Research and Training (NCERT) was instrumental in framing a model syllabus for schools, University Grants Commission (UGC) outlined courses in the higher educational institutions. Now, there are 57 institutions offering courses on environmental sciences in India.
including Post-Graduation (72 percent), BSc (15 percent) and Bachelor of Engineering (13 percent). Although the growth of environmental studies centres in India were very meager from 1971, academic interests towards socio-ecological issues were increasingly been phenomenal from 1980 onwards. Special efforts were also made to gather stock and disseminate relevant environmental information. In this connection, Environmental Information System (ENVIS) was instituted in 1982 to link with institutions/organizations in several departments of the government, academia, corporate and NGO sectors (see table No.4.2).

It is to be noticed that post-independent India has enacted wide range of regulatory policies in order to preserve and protect natural resources through various acts, although no policy-making body was given responsibility of protecting environment till 1980. It was with the establishment of ministry of environment and forests in 1980, we had separate agency at the state level for planning, promoting and coordinating environmental programs. It is interesting to note that when the earlier laws in 1970's were enacted, there was hardly any distinction between the environmental laws and the general body of laws. However, in the later period of 1990s these laws were largely identical on how Indian judiciary responding to the complaints of its citizens against environmental degradation and administrative sloth (Divan and Rosencranz, 2005:1-2). Recently, the state proposes to set up a National Green Tribunal and four regional counterparts in light of the suggestions by the Supreme Court and law commission. This perhaps a welcome step in the sense that in would help petitioners to bring local environmental problems to the notice of the tribunal with little cost. Similarly, it would also get a space to question the impact of the state sponsored developmental projects. Apparently, such system can be

---

9 ENVIS started operating through these institutions in seven specialized areas such as (1) ecology and eco-system, (2) status of environment and related issues, (3) chemical, wastes and toxicology, (4) environment law and trade, (5) media, environment education and sustainable development, (6) flora, fauna and conservation and (7) environment and energy management.
extended to declare an illegal or invalid administrative action which undermines environmental law too (Rosencranz and Sahu, 2009).

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Year of establishment</th>
<th>Major legislations</th>
<th>No. of Amendments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1960</td>
<td>Animal Welfare</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>1972</td>
<td>Wildlife</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>1974</td>
<td>Water Pollution</td>
<td>22</td>
</tr>
<tr>
<td>4</td>
<td>1980</td>
<td>Forest Conservation</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>1981</td>
<td>Air Pollution</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>1986</td>
<td>Environment Pollution</td>
<td>26</td>
</tr>
<tr>
<td>7</td>
<td>1987</td>
<td>Delegation of Powers</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>1987</td>
<td>Environmental Labs</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>1989</td>
<td>Eco-sensitive Zone</td>
<td>11</td>
</tr>
<tr>
<td>10</td>
<td>1989</td>
<td>Hazardous Substances management</td>
<td>21</td>
</tr>
<tr>
<td>11</td>
<td>1991</td>
<td>Public Liability Insurance</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td>1991</td>
<td>Coastal Regulation Zone</td>
<td>43</td>
</tr>
<tr>
<td>13</td>
<td>1991</td>
<td>Eco-marks Scheme</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>1994</td>
<td>Environmental Clearance</td>
<td>16</td>
</tr>
<tr>
<td>15</td>
<td>1995</td>
<td>Environment Tribunal</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>1997</td>
<td>Environment Appellate Authority</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>1998</td>
<td>2-T Oil</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>2000</td>
<td>Noise Pollution</td>
<td>13</td>
</tr>
<tr>
<td>19</td>
<td>2000</td>
<td>Ozone Layer Depletion</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>2000</td>
<td>Indian Forest Services</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>2002</td>
<td>Biodiversity</td>
<td>7</td>
</tr>
<tr>
<td>22</td>
<td>2006</td>
<td>Loss of Ecology</td>
<td>6</td>
</tr>
</tbody>
</table>

Total legislation (till 17-10-2008) 281

There are instances to show that the judicial system has played a very active role in the enforcement of legislations and rules relating to environmental protection under judicial activism. This straight away interpreted the article 21 of the constitution which enshrines right to clear air and water by the Supreme Court and the High Courts to public litigation with the growing public awareness generated by the civil society agencies such as NGOs, media and welfare organizations (Sankar, 1998). In addition, while studying corporate social responsibilities on the quest for environmental ethics, it was noticed that, although India has not yet prepared for substantive law for the enforcements among these sectors, some of the judicial
pronouncements signals a road map to new set of rules as collective responsibility (Malik and Santhalia, 2007). The above table (table No.4.3) shows the major policies enacted by the government and the number of amendments as against each legislation from 1960 to till 2008.

Coupled with structural changes since 1980s, there has been people's protest growing remarkably against large scale developmental projects subjected to their unintended consequences such as huge displacement and ecological degradation. As a result of these protests, large number of projects vulnerable to eco-system, to be commenced; were challenged on many grounds. Similarly, there has been growing number of regulatory mechanism and stringent action through legislative measures to curtail/reduce human made environmental problems¹⁰ (CSE, 1999:134).

A sample analysis of the articles published in the leading scholarly journal Economic and Political Weekly (EPW) on the topics such as environment, ecology and pollution is drawn to understand the academic interest in this area. As the trend shows in response to the rise of environmental studies centres, there has been alarming trend of scholarly publications of environmental issues coupled with new legislations and their amendments from 1970 onwards (see graph No. 4.1).

¹⁰ It has been reported that between 1987 and 1998 there were 214 river valley and hydroelectric projects were rejected out of 264 proposals by the environmental ministry on the ground of environmental problems. However, as far as the developmental projects are concerned, new conflicts and controversies are emerging almost every week and surprisingly, developmental projects being submitted for environmental clearance at the rate of more than 150 per month (Lele et al. 2010:13)
**Graph No. 4.1:** Growing trend of environmental institutions, scholarship & policy in India

Regression analysis: as the numbers of institutions are growing, the result shows that it is positively affecting the number of published articles. In other words, published articles were largely dependent on number of institutions. That t-statistic given in the parenthesis and R value in the result are highly significant.

1. Articles published = 5.867 + 1.477 institutions (cumul)
   \[ R^2 = 0.755 \]
2. Articles Published = 4.182 + 1.010 Legislations
   \[ R^2 = 0.441 \]
3. Legislation = 2.329 + 0.974 institutions (cumul)
   \[ R^2 = 0.636 \]

Source: Data on institutions abstracted from the websites of environmental science institutions in India and articles were published in the *EPW* from 1970-2008 (July)
Changes were also found at the ground level as a conscious effort of people to challenge the environmental crisis through institutionalization of protests. If the earlier stages of environmentalism began with protests and mobilization, the later stage was marked by institutionalization of the mobilization of these protests as organizations to find out larger question of sustainable development with eco-sensitivity. In fact, environmental nongovernmental organization and their spontaneous emergent associations as social movements today are seen to be the key actors to expand democratic civil society (Walter, 2007: 252). Although these institutional structures formed by their own to mobilize local communities to be part of developmental activities, they received state patronage as well.\(^{11}\)

When the National Wasteland Development Board in 1985 and subsequently Council for Advancement of People's Action and Rural Technology (CAPART) in 1986 were established, along with people's participation, role of the people's movement become apparent for the development cause. In corollary to this, a large number of voluntary agencies such as NGO were cropped up and most of them were undertaken environmental protection as an urgent issue. World Wild Fund-India reported that there were 879 environmental NGOs working in the country in 1989. Besides, to make mass awareness on eco-sensibility, Planning Commission of India envisaged for the formation of eco-clubs throughout India and as a result, in the 10th Plan Five Year Plan, there were 33778 clubs formed. Subsequently, in 2008 it went up to 91378 and out of it, 9784 eco-clubs were given financial-aid by the state.

By assuming new regulatory measures, such as the Environment Impact Assessment Regulation of 1994, interventions of NGOs become all the more significant and mushrooming growth in the last decades throughout in India was

\(^{11}\) Role of voluntary sectors for rural development were received wider recognition and legitimization through the establishment of Council for Advancement of People's Action and Rural Technology (CAPART) by the Ministry of Rural Development, Govt. of India in 1986
phenomenal. It is reported that there were 2342 registered NGOs in the year 2008 as against 1464 in the year 1994 and their growth rate was reported to be 91.51 percent in 14 years. Their distribution was varied from region to region. A large number of NGOs, for instance, were found in southern and middle part of India like Andhra Pradesh (205), Tamilnadu (201), Karnataka (75) and Kerala (74) Maharashtra (143). In the northern part of India, Delhi was reported to be high in number with 151. A phenomenal growth was also observed in the eastern parts such as West Bengal (165), Orissa (137). However relatively less NGOs were found in the North Western part of India namely Haryana (33) Himachal Pradesh (31) Jammu and Kashmir (11) and Chandigarh (3) [see figure-4.2].

Non-government organizations in India have been at the cutting edge to breakdown the conceptual and abstract categories into every-day realities and practices for the rural development\textsuperscript{12}. They tried to empower local communities to manage and protect the eco-systems and fair utilization of natural resources through participatory methods of governance (WWF-India, 1995: 45). As a result, it is assumed that these efforts later on help local communities to use their indigenous knowledge for preservation and utilization of natural resources\textsuperscript{13}.

\footnotesize
\textsuperscript{12} To ensure people’s participation and their indigenous knowledge systems in the developmental activities in India, 12,000 voluntary organizations have been associating with CAPART. (URL: http://www.capart.nic.in/orgn/index.html on 27th October 2008)

\textsuperscript{13} Alternative strategies have been adopted by these micro-initiatives such as water harvesting, irrigation systems, micro-power generation; organic farming, alternative health care systems, enhancement of cottage industries etc are the empirical realities of how participatory sustainable developmental activities are very effective in managing natural resources.
Graph 4.2: Environmental NGO's 1994-2004

West Bengal 165
Uttar Pradesh 131
Uttarakhand 71
Tripura 35
Tamil Nadu 201
Sikkim 97
Rajasthan 153
Punjab 26
Pondicherry 37
Orissa 137
Uttaranchal 98
Nagaland 11
Mizoram 4
Meghalaya 95
Manipur 93
Maharashtra 143
Madhya Pradesh 77
Kerala 74
Karnataka 75
Jharkhand 40
Jammu & Kashmir 11
Himachal Pradesh 17
Haryana 33
Gujarat 91
Goa 9
Delhi 151
Chattisgarh 14
Chandigarh 3
Bihar 102
Assam 36
Arunachal Pradesh 34
Andhra Pradesh 205
Andaman & Nicobar 35

Source: Environmental NGOs in India, Indira Gandhi Conservation Monitoring Centre, of WWF-India, New Delhi
Being a microcosm of epistemic communities, academics widely recognized the indigenous knowledge practiced by the local people, as it has been an important component to preserve natural resources for sustainable development (Subramanyam, 2008). It is in this context, these epistemic communities have potentials to link globally, so as to offer technical advice for political decisions and solutions for ecological problems (Hannigan, 2008:102). Such micro-level initiatives of local communities through their articulation of social problems and conscious effort to overcome from ecological crisis through their reflexive actions are to be seen as the elementary aspects of what epistemic communities try to endeavour globally.

Over the years, as against the west, the discourses on the environmental protests in India and its impact upon the so called eco-developers resulted into empowering the marginalized by advocating diverse environmental trajectories by the elite in India. In fact, it is sharpened a debate on the question of ecological sensibilities with the help of newly emerging environmental organizations. Of course, it has been an empirical reality today in our context. But at the same time, one cannot deny the significance of the global tendencies on the quest for environmental protection as well. For instance, some of the pertinent issues of India such as patent laws to protect our indigenous variety of seeds like Basmati, Plachimada struggle against Coco-cola and Singur struggle against Special Economic Zone etc. were received global attention are to be seen as the latest consequential effect of environmental protest in our times. In addition, there has been financial aid from abroad to support the organizations for environmental cause as well. As a result, emerging responses of ecological issues were easily been shaped largely by the civil society organization with the help of scholars, youth, popular media and so forth. For a common cause, movement of scholars and activists across their socio-

---

14 Annual report of the year 2004-05, Ministry of Home Affairs, Foreigners Division FCRA wing was reported that Netherlands, Germany, United Kingdom, United States of America and Italy were the major donors for environmental related issues.
demographic location extended solidarity to the struggles of the local people who are repeatedly becoming the victims of the new pattern of development models of the nation states.

METHODS AND PRACTICES: Future Possibilities

Praxis as a method and practice in the studies of new-social movement located into the issues of environmental protest in India is less likely to be explored. As the ground realities of environmental protest in India show certain indicators of praxis in the broader theoretical levels of cultural identity of practices at different layers made our effort to make sense of how these new social movements indulge into the complex state-society thesis. A close observation of micro-level protest as a symbol of the critique of development by the victims themselves transformed the very understanding of society-nature relationship by integrating similar kind of movements at the macro-level. At the same time its internal dynamics brought them into the pedagogic spaces by articulating these critical questions with the help of activist, academics, media and research institutions. Subsequently, there was an emergence of a group of scientific community with scholarship that led to a birth of separate discipline to understand development induced environmental consequences in India.15

Growing number of environmental studies critiqued the whole paradigm of development as it has been adversely affecting our environment and uprooting primordial ecological communities from their habitats. Moreover, there has been a

15 In the 10th Five Year Plan Ministry of Environment and Forest recognized and supported nine centres of excellence in research activities. Similarly, Indian Council for Forestry Research and Education (ICFRE) instituted and so far 4414 research projects and 23 universities were supported under this project. Specifically, research institutions like Centre for Sciences and Environment, New Delhi, Tata Institute of Social Sciences, Bombay, Centre for Social Studies, Surat, Madhya Pradesh Institute of Social Science Research, Dr. Hari Singh Gaur University, Sagar and Kerala Sastra Sahitya Parishath are the leading centres engaged in conducting extensive studies on the environmental problems related the developmental projects of government of India.
cognitive formation among the policy makers in order to protect our environment resulted into framing new legal measures and pragmatic solutions. Most importantly, the state initiated environmental education in schools from 1991 onwards to strengthen environmental cognizance in the formal school curricula through appropriate education material. It is also observed that the middle class in India has increasingly been conscious on the wider implications of development induced ecological degradation as a result of massive protest from the victims of the tribal and rural settings. In the second stage, mobilization of the environmental protest, support of middle class in India, assumed to be very significant. In corollary to this, role of the transnational organization as a global civil society to be appreciated equally in this regard in order to bring the micro-level issues in a wider social arena such as World Social Forum (Fisher and Ponniah: 2003). Environmental governing strategies are concerned, interest between local and commercial interests often get clashed as they expresses underlining unequal power structures in the system. An administrative procedure can only implement according to rule. However, it cannot result to change the rule that would, perhaps, protect the interest of the vulnerable section of society (Lele et al., 2010:14). The latter proposition is the great challenge before the environmental movement world over.

It is a fact that the macro new social initiatives in the era globalization have its impact upon the micro-level social formations and consolidation. For instance, to begin with, it is testimony that the World Bank's withdrawal from financing Narmada Project was done after international civil society and intellectual community worldwide vehemently objected the project. Similarly, once the Silent Valley in Kerala in the 70's was under thread of the developmental project, now the same valley has been declared as world heritage by UNESCO (Oommen, 2006: 271). Moreover, defeating the Patent Claim of the US government and US corporations to traditional knowledge and bio-diversity was made only through the support of international agencies and organizations (Shiva, 2006:146). It is because of laboratory test done by David Santillo, scientist, University of Exeter, United Kingdom; the
poor and innocent farmers of the Plachimada village in Kerala came to know that the Coca-cola factory's wastages were toxic and harmful to their health and eco-system (Pillai, 2008: 116).

These structural transformations with new sensitivity across the board are to be seen in the backdrop of the shift from the perception of anthropocentricism to more of eco-sensitivity. A critical understanding of nature-culture relations would endure to protect our nature and livelihoods of the poor, particularly Adivasis who are heavily rely on the nature over centuries. It is implicitly understood a fact that, in the era of globalization decisions and developments in the outside world affect the local use of resources. When the national governments and other international level organizations making commitments to manage international and global commons, it exactly obligates them to influence the actions of local resource users (Berkes, 2000). It does not undermine the micro-level protest and alternative practices in the rural areas. For instance, while criticizing the existing policies based on scientific knowledge and engineering skills, Barh Mukti Abhiyan organized communities and groups in the flood prone areas of Bihar to retrieve local, indigenous and decentralized ways of coping with the floods (Thakur, 2009).

Qualitative transformations are being found on the question of how to protect our environment through adopting alternative strategies and methods. The recent scholarship in this regard signifies it at both the ways of protecting the local level natural resources and bringing these issues into a larger global scenario. Above all, a normative path in social and political thinking to incorporate the limits of nature and moral standing of non-humans, as the proponents of post-colonialism always stand still.

Non-violent ecological movements in India with the ideological underpinnings of Gandhian philosophy on ecology, for instance, have been proved to be a non-western late modernity on the quest for sustainable development world
over. However, the present ecological crisis left behind the history of numerous unresolved questions across the board. As the environmental problems endangering worldwide as the result of human intervention in our times, one has to see the possible measures available to us both in terms of social and technological expertise. A sociological insight on the synergy between society and technological advancements as micro-alternative strategies in different parts of the world, perhaps, would explain their intrinsic relations in the frontiers of eco-sensitivity. Although their impact upon society is less predictable, one can make sure by locating the features of environmental protest that through times transcending the cognitive critical praxis conjoining with reflexivity and purposive action of different agencies.