HUMAN RESOURCES DEVELOPMENT FOR ENVIRONMENTAL CONSERVATION

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ABBREVIATIONS USED IN THE REPORT

AD	Adults
ADV	Advertisements
AV	Audio-visual
BK	Books
CEE	Centre for Environment Education
CG	Citizens' Group
CHL	Children
CLG	College/students/youth
CLS	Classroom exercises
CPREEC	CPR Environment Education Centre
CRD	Cards
DAM	Dams
EE	Environmental Education
EERC	Environmental Education Resource Centre
ENVIS	Environmental Information Systems
EPG	Educational Planning Group
EVS	Environmental Studies
EXH	Exhibits/demonstrations
FLM	Films
HRD	Human Resource Development
IEEP	International Environmental Education Programme
ILL	Illiterates
INF	Information dissemination
KSSP	Kerala Sastra Sahitya Parishad
LEC	Lecture
MHRD	Ministry of Human Resource Development
NCTE	National Council of Teacher Education
NCC	National Cadet Corps
NCERT	National Council of Educational Research and Training
NEAC	National Environmental Awareness Campaign
NIEPA	National Institute of Educational Planning and Administration
NLM	National Literacy Mission
NMNH	National Museum of Natural History
NPE	National Policy on Education
NSS	National Service Scheme
MoEF	Ministry of Environment and Forests
PMP	Pamphlets
PRD	Periodical
PRO	Professionals
PSM	People's Science Movement
PST	Posters
PUB	General Public
SCERT	State Council of Educational Research and Training
SIE	State Institute of Education
STK	Stickers
SUPW	Socially Useful Productive Work
TEE	Training in Environmental Education
TRB	Tribals
TRP	Field trip
UGC	University Grants Commission
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
WE	Work Experience
WII	Wildlife Institute of India
WKS	Workshop
WOM	Women
WWF-I	World Wide Fund for Nature - India

Preface

This section attempts to describe the current status and identify gaps in efforts and activities related to human resources development for environmental conservation.

The section deals with formal and non-formal education, and with training activities aimed at human resource development, and covers all these under the broad head of environmental education (EE).

The segment on formal and non-formal education, as also the introduction, is based almost totally on an earlier report prepared by Meera Warrier and Ashish Kothari. The section on training is based on an earlier report prepared by Shekhar Singh, Raman Mehta and Vishaish Uppal. The recommendations have been developed especially for this report but are based on these two reports.

Chapter 1

ENVIRONMENTAL EDUCATION: AN INTRODUCTION

A way out of the current ecological crisis facing humanity can only come from the informed action of a wide range of people. Informed action, in turn, requires that people be ecologically aware. Thus the critical need for environmental awareness. It also means that people have the ability to act, and the values and attitudes that motivate them to act.

In traditional societies, ecological awareness came from everyday interaction with natural surroundings, from just being a part of a culture which was so closely intertwined with nature. Environmental education (EE), comprising of awareness, skills and attitudes, was not a distinct exercise, but an integral and undistinguished part of the learning that adults handed down to their children. In modern societies, and in traditional communities which have undergone recent transformation, alienation from the natural environment and changes in social relationships have increasingly reduced the possibility of such a learning process. Hence the need for special efforts at imparting environmental education.

A Brief History of Contemporary EE

Though contemporary environmental action, including EE activities, have been undertaken by groups and communities for several decades, the greatest boost towards systematising it and making it universally acceptable came from the United Nations Conference on Environment, in 1972. The Stockholm Declaration, as it came to be known, stated that "... to defend and improve the environment for the present and future generations has become an imperative goal for mankind." [UNESCO 1986]. EE was considered a critical part of this effort. Recommendation No. 96 of the Stockholm Conference called for the establishment of

"an international programme in environmental education, inter-disciplinary in approach, in school and out of school, encompassing all levels of education and directed towards the general public, in particular the ordinary citizen living in rural and urban areas, youth and adults alike, with a view to educating people as to simple steps they might take within their means, to manage and control their environment." [Sapra and Sharma 1988].

Subsequently was established the UNESCO-UNEP International Environmental Education Programme (IEEP), which organised the International Workshop on Environmental Education in Belgrade in 1975. The Belgrade Charter on Environmental Education, adopted here, defined the ultimate objective of EE as being:

"To develop a world population that is aware of and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones." [Young and McElhone 1986].

The workshop at Belgrade also laid down the following objectives of environmental education:

"(1) **Awareness:** to help individuals and social groups acquire an awareness of and sensitivity to the total environment and its allied problems.

(2) **Knowledge:** to help individuals and social groups acquire a basic understanding of the total environment, its associated problems and humanity's critically responsible presence and role in it.

(3) **Attitude:** to help individuals and social groups acquire social values, strong feelings of concern for the environment and the motivation for actively participating in its protection and improvement.

(4) **Skills:** to help individuals and social groups evaluate environmental measures and education programmes in terms of ecological, political, economic, social, aesthetic and educational factors.

(5) **Participation:** to help individuals and social groups develop a sense of responsibility and urgency regarding environmental problems so as to ensure appropriate action to solve these problems." [UNESCO 1986]

It was hoped that environmental education would help evolve a harmonious relationship between the maintenance of ecological balances, the human quality of life, and the requirements of future generations. Enough enthusiasm was generated to conceive of an education that went beyond formal structures and touched everyone in the community. The

content was to be structured to suit different target groups, and its efficacy to be measured by its ability to address locale-specific environmental problems.

The role, objectives and guiding principles were given a final form in the Inter-governmental Conference on Environmental Education organised by UNESCO-UNEP at Tbilisi in Georgia in 1977 [UNESCO 1990]. Here, the guiding principles of EE were that it :

>> Considers the environment in its totality - natural and built, technological and social;

>> Is a continuous lifelong process;

>> Is inter-disciplinary in its approach;

>> Examines major environmental issues from local, national, regional and international points of view;

>> Focuses on current and potential environmental situations;

>> Promotes the value and necessity of local, national and international cooperation;

>> Explicitly considers environmental aspects in plans for development and growth;

>> Enables learners to have a role in planning their learning experiences and making decisions;

>> Relates environmental sensitivity, knowledge, problem-solving skills and values clarification (sic) with special emphasis on environmental sensitivity to the young learner's own community;

>> Helps learners discover the real causes of environmental problems;

>> Emphasises the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;

>> Utilizes diverse learning environments and educational approaches to teaching/learning in, about and from the environment.

The final report said:

> "Environmental education is an integral part of the education process. It should be centred on practical problems and be of an inter-disciplinary character. It should aim at building up a sense of values, contribute to well-being and concern itself with the survival of the human species. Its force should reside mainly in the initiative of the learners and their involvement in action and it should be guided by both immediate and future subjects of concern." [Sinha and Premi 1988].

For the purposes of this report, environmental education includes the systematic study of the natural environment and its fundamental principles (education), creating an awareness of environmental issues, and disseminating specific information on environment (awareness), and developing skills to assess and tackle environmental problems (training). 'Environment' is taken to be the physical and biological surrounds of human beings, though it should be stressed that the management of these surrounds has social (including economic, political, and cultural) implications which go far beyond the physical and biological.

The nature of environmental education required in any country depends on its social and ecological ethos. In a country like India, where the adverse effects of environmental degradation have been felt far more by the poor than the rich, the rich and 'educated' seem to have given little thought to the environmental implications of their high-consumption life styles. This itself is a failure of the contemporary education system. Amongst the poor, the battle for survival sometimes force them to use local resources unsustainably, though they may not wish to. Under the circumstances it is imperative that EE becomes a tool for informed action to tackle both types of problems.

From the aims and objectives set out in both the Belgrade and Tbilisi conferences mentioned above, it is clear that EE today has a much wider connotations than simply being the study of a physical, biological or chemical problem. It is not just a 'science' subject in that sense, nor is it a set of data or a compilation of information to be appended to every subject taught. Rather, it defines an attitude, and is an ethical and life-sustaining issue that must find representation in any subject, be it in the formal, natural, physical or the social sciences, in or outside the formal curriculum. Awareness of environmental problems, the ability to articulate these problems and to make concerted

efforts to deal with them must be possessed by every citizen of the world. Moreover, these abilities and skills must be informed by certain values, which EE should inculcate, including those of respect for all life, respect for the rights of fellow humans, and a spirit of openness and questioning [Kothari 1986].

Status of EE

It has been recognised that EE must be "an ever present dimension and function of education in the broadest sense" [Gill and Nayar 1988]. But the problem has been to decide whether EE (at a formal level) should be treated as a separate 'discipline' or as an 'approach' cutting across all disciplines. In other words, should it become yet another subject for study in itself, or should EE values be infused into every subject already taught? Both these options appear to have their advantages and limitations. In narrowing EE down to a discipline, its all-encompassing quality might be lost. In addition, the current system of education being what it is, this may (at least at the school level) become yet another imposition on the child, to be crammed for examinations and then gladly forgotten. On the other hand, treating EE as an approach cutting across subjects, leaves it lacking "the identification of a substantive structure which is so necessary for effective curriculum development, implementation and evaluation" [NCERT 1981]. With such pros and cons, and with the great diversity of local situations in a country such as ours, no single, uniform EE programme can be prepared. Only some broad objectives can be laid down, which then have to be fashioned to suit the diverse needs of different target groups living in different environmental settings.

Some Issues

Can such efforts be coordinated at all? How can EE programmes be evaluated for efficacy? Can there be a common denominator for evaluation when, for instance, one has to measure the impact of EE on an engineer, a housewife, a school-going child and an illiterate tribal? In value

education, the role of the teacher is pivotal. How can the teachers themselves be enthused to appreciate the values involved and convey concern for environmental problems without relapsing into a mere enunciation of theory or a rattling off of data?

The conceptual framework

The search for an answer to these and other major questions must start with a clear framework in which EE efforts currently underway in India can be placed and evaluated. One way of understanding EE is in terms of:

- The aims and objectives of EE
- The target groups which are to be imparted EE
- The kinds and methods of EE to be imparted
- The institutional mechanisms needed for EE

1.1 Aim and Objectives of EE: The objectives of EE as set forth in the Belgrade conference, viz. Awareness, Knowledge, Attitude, Skills, and Participation, seem to provide an adequate framework from which to proceed.

1.2 Target Groups: While the most obvious target group for EE is students (both school and college) and other youth, it would be a mistake to restrict it to this. If, as was enunciated at the Tbilisi conference, EE is to be a "lifelong" process, as also an "inter-disciplinary" one, then it is clear that several other target groups need to be addressed. These include, adults and the general public, and as special target groups, non-literates, women, professionals, government officials and politicians.

1.3 Kinds and Methods of EE: Diverse target groups and environmental situations demand a diversity of EE approaches and methods. Three broad kinds of EE are distinguished here: formal, semi-formal and non-formal. By formal education is meant here a systematic, institutionalised pattern of education, involving a study of fundamental principles, and leading to a degree, awarded on the basis of an evaluation or assessment.

Such a or degree is "recognised" in the sense that it is a pre-condition to a higher level of education, or to certain jobs or professions. Non-formal education is defined as learning outside of the school/college/institutional curricula, which may or may not be structured. As UNESCO states, non-formal education "theoretically at least, is more capable of responding to local environmental issues which have more social meaning and usefulness to the community and is less dominated by academic requirements" [UNESCO 1986]. Training, on the other hand is specifically aimed at developing skills, changing attitudes and imparting information through a semi-formal system. It has almost all the characteristics of 'formal education' except that it does not lead to a degree and concentrates more on practical skills and knowledge rather than a study of fundamental principles. The three kinds of EE can, and do, overlap: it is becoming increasingly common, for instance, to use methods of non-formal EE within a semi formal or formal EE set-up.

As for specific methods, again it is clear that no single method would be effective across all target groups and local environmental situations. Classroom teaching, mostly in the form of lectures and textbooks, is still overwhelmingly common in formal and semi-formal EE. But even formal EE needs to be infused with other methods which are commonly used in non-formal EE, such as audio-visual techniques, exhibits and demonstrations, workshops, field trips, drama, practical work, and print material of various kinds.

4.1 Institutional Structures: Institutional arrangements are required for planning, implementing, and monitoring EE programmes. While national level agencies can lay down broad guidelines and conduct monitoring exercises, the diverse localised needs of EE in India also require a decentralised system of structures: planning, implementation, and monitoring agencies which radiate up from the local village or block levels to the state, and in which the participation of those to be

affected by or involved in EE programmes must be assured. The agencies most suited to impart formal EE are obviously schools, universities, and vocational and technical institutes. Semi-formal EE can best be handled by training institutions or as a special programme of universities and technical institutions, while non-formal EE appears to be best handled by citizens' groups and local communities. But these are not hard and fast 'territories'; as we shall see below, there is beginning to be considerable intermeshing and overlap, with actors from formal, semi-formal and non-formal EE set-ups taking part in each others programmes. What is perhaps important in this institutional framework, is the need to keep both vertical ('local' to 'national' agencies) and horizontal (parallel governmental and citizens' agencies) structures non-hierarchical and complementary. This follows from the principles enunciated at Tbilisi, especially those of enabling learners a role in planning, and of developing critical thinking among them.

It is keeping in mind the ultimate objectives of EE, the diversity of target groups and the limitations of each particular teaching method, that we must look at governmental and citizens' efforts at environmental education in the country, with the aim of identifying major gaps and suggesting ways to make it more effective.

Chapter 2

STATUS OF ENVIRONMENTAL EDUCATION IN INDIA

The environmental education scenario in India is highly complex and dynamic, with the involvement of a large and diverse number of agencies and individuals. The last few years have, indeed, seen a veritable explosion of EE activities all over India.

Policy

The need to provide environmental education finds expression in policy documents of both the Ministry of Environment and Forests (MoEF), Government of India, and the Department of Education, Ministry of Human Resources Development (MHRD), Government of India. The environmental component is seen by both as an essential part of education at both formal and non-formal levels, across every section of society.

Protection of the environment has been named in the National Policy on Education (1986) as a value to be promoted in the "common core" of education in the country. The modified version of the Policy, finalised in 1992, states that :

> "The National System of Education will be based on a national curricular framework which contains a common core along with other components which are flexible. The common core will include the history of India's freedom movement, the constitutional obligations and other content essential to nurture national identity. These elements will cut across subject areas and will be designed to promote values such as India's common cultural heritage, egalitarianism, democracy and secularism, equality of the sexes, protection of the environment, removal of social barriers, observance of the small family norm and inculcation of the scientific temper" [MHRD 1992]. (emphasis added)

Part VIII of this Policy, dealing with the re-orientation of the content and process of education, recognises the "paramount need to create a consciousness of the environment", which must "permeate all ages and all sections of society, beginning with the child" [MHRD 1992]. Further, it states that "environmental consciousness should inform teaching in schools and colleges", and should be integrated in the entire education process.

Implementation

Pronouncements in national policies are all very well, but what is the state of actual EE implementation in the country? To assess this, we take a look at formal, semi-formal and non-formal EE separately.

EE COMPONENT IN FORMAL EDUCATION

Under the head of formal education are clubbed primary, secondary, and higher secondary education (or school education), higher (university) education, teacher education, and technical and vocational education.

1. School Education

The National Policy on Education (1986) has reiterated the need for EE at the school level. As quoted above, it called for environmental protection to be a value in the "common core" of education. But even before this policy statement, EE at the school level was beginning to get attention of agencies concerned with curricula development.

At the level of schools, central guidance and direction is given by the National Council of Educational Research and Training (NCERT). NCERT is an apex body in the field of school and teacher education, advising and helping the Ministry of Human Resources Development formulate and implement their educational programmes. The idea of giving an environmental thrust to the formal school syllabus dates back to 1963 when NCERT brought out an experimental edition of a syllabus in general science for classes I-VIII, which was organised into units referring to specific environmental areas like matters and materials, living things, etc. "The instructional materials developed on the basis of this syllabus laid emphasis on acquisition of knowledge through science processes, using the local environment or environment-based kits" [Bhattacharya 1988]. Unfortunately, the bias towards science in discussing environmental subjects has continued to this day and is reflected at all stages in formal education (discussed in detail below).

Following this, a thorough re-orientation and re-organisation of the school syllabus was undertaken by NCERT as far back as 1975, reportedly to make it environment based and relevant to the life, needs and aspirations of the people. [Bhattacharya 1988]

As far as teaching-learning strategies go, it was felt that an integrated approach to imparting EE should be based on topics and themes within each subject, rather than on creating separate subjects. Also,

> "children should be provided with opportunities to learn from familiar situations in their environment. The teacher can enjoy greater autonomy in organising such experiments. The curriculum should clearly indicate the kind of knowledge, understanding, interests, values, attitudes and commitments that should be developed in the children" [NCERT 1981].

As for instructional material, it was felt that it is not possible nor desirable to prescribe a uniform syllabus for all the schools in the country. Prescription was to be limited to identifying some environmental issues of regional, national and international importance.

NCERT has developed a National Curriculum Framework which provides, among other things, for an environment component in the science, social science, and Work Experience (earlier called Socially Useful Productive Work; see below) of higher education [GOI 1988].

At the primary level, a learner-centered, activity-based approach for exploring the environment was recommended. This 'integrated' model approach, given the generic name of "environmental studies" (EVS), includes learning about the environment, and learning different disciplines through the environment. The term 'environment' is very broadly defined here and includes the social, cultural, economic and natural surroundings. As the Educational Planning Group, a Delhi-based group working for several years on education puts it, EVS is "an app ach based upon the child's organised investigation of his own immediate surroundings, leading to a progressive development of skill,attitudes and concepts. It aims at arousing and developing the child's desire to know more about the world", and includes:

"Education through the environment - the use of the environment to develop specific skills in the child;

Education about the environment - i.e. acquisition of knowledge (facts) about the world; and

Education for the environment - i.e. the development of sound attitudes aimed at the protection and preservation of the environment" [EPG undated].

In classes I and II, only the broad topics are selected by NCERT, with the teacher having complete freedom to plan the subject matter. Here, an inter-disciplinary approach is followed, with no compartmentalization of subject matter. A series of imaginative handbooks have been prepared to aid teachers in their choice of themes and activities. Though no comprehensive evaluation of the efficacy of this programme has been conducted, our conversations with various education planners and teachers indicated that, EVS as an approach is a far more effective way of imparting EE than was previously the case.

In classes III to V, EVS is broken into the science and social science streams, with prescribed textbooks to be used more as guides in learning. The science stream includes physical geography, physics, biology, agriculture, health education, nutrition and population education. The social studies stream includes history, civics, geography and economics.

In 1981, the lead paper on EE at school level presented by NCERT at the International Conference on Environmental Education, New Delhi, laid down the following ideals:

"the curriculum should take into consideration the social, intellectual, emotional and physical maturity of the children as well as the socio-economic needs of their community. The curriculum should prescribe a basic minimum to be achieved in respect of each and every child and should also have enough scope for flexibility and local adjustments to permit each school to go as far beyond the basic minimum as its circumstances permit" [NCERT 1981].

At the secondary level, the 'infusion' approach has been favoured by the NCERT, such that all subjects (i.e. all science subjects) are viewed from an environmental perspective. This has been preferred to introducing a new discipline exclusively on environment, which would

have made it another subject to be crammed and examined on. For classes VI-VIII,

> "an integrated science curriculum has been developed which is environment based and is directed towards developing abilities for living in a changing environment. Science is related to life with nutrition, health, population and environmental education. Environmental topics integrated into science are man's dependence on plants and animals, balance of nature, population and pollution" [Ghaznawi 1988].

For classes IX-X, the objective is to inculcate in the students the potential for informed opinion and action. The secondary school science curriculum includes environmental topics such as ecosystems, biosphere, ecological crisis, conservation of natural resources, and national and international efforts in conservation.

The bias of EE towards science subjects is broken only at a token level here. In the social sciences, children are to be prepared to become 'good citizens', and hence there is some discussion on issues like problems of human intervention in the natural ecosystem. The objective appears to be 'proper' attitude formation, but not much change has been brought about in the actual content of social science subjects, as it is hoped that the teacher will make the effort to relate subject matter to the environment. With this in mind, NCERT in association with UNESCO has produced an EE module for pre-service training of social science teachers and supervisors of secondary schools (see below, section on 'Teacher Education'). However, in the absence of drastic changes in the teaching environment, far more comprehensive and in-depth changes in teacher education (discussed below), and changes in curricula, the incorporation of environmental concerns in social sciences is likely to be slow.

For the secondary stage, curricular materials developed at the national level by NCERT are made available to the states. The states have the freedom to make modifications in the subject matter, though not in the choice of the subjects themselves, to bring in more locale-specific references.

Though the 'core curriculum' of the National Curriculum Framework defines the broad framework for the content of school education throughout the country, a recently developed scheme of the Ministry of Human Resources Development makes possible learning defined by the learner's own specific context. The Environmental Orientation to School Education scheme was launched because it was felt that

> "since environmental concerns are locale-specific and, therefore, do not admit of global solutions, it is desirable to supplement the effort at the national and state level by a more intensive locale-specific effort".

It was, therefore, decided

> "to take up a centrally sponsored scheme of Environmental Orientation to School Education which will allow educational programmes in the schools to be fully harmonised with the local environment situation and concerns". [GOI 1988]

This centrally sponsored scheme was to be implemented through the Education Departments in the states and union territories, with assistance from voluntary agencies having expertise and interest in EE. The scheme was based on the perception that a compact area having a uniform ecosystem would have similar environmental concerns and that, therefore, such an area would constitute an ideal unit for implementing environment related programmes in that area with the participation of the local school and the entire community. The syllabi and textbooks were to be examined by project authorities in consultation with environment experts, SCERTs, state textbook agencies, teacher training institutions, teachers and voluntary agencies. Suggested activities under this scheme may be found in Appendix 1. Following the "cafeteria approach", each school could choose one programme for implementation. To keep the project active, periodic seminars and orientation programmes for those involved were to be undertaken.

Efforts are on to fine-tune the details for making this scheme more effective. The draft report on education for the eighth five-year plan envisages "a project approach with each project covering an ecologically homogenous area. Within this area, the textbooks have to be revised to make illustrations and examples conform to local environmental concerns

and work experience activities in school...Schools having some land and assured availability of water are also to be assigned for setting up a plant nursery. The scheme also assists NGOs for taking up programmes in compact areas, for improving environmental awareness and involving students in improvement/protection of environment" [Planning Commission undated].

The Working Group on Secondary and Higher Secondary Education for the Eighth Five-year Plan feels that the programme should be extended into the secondary sector during this plan period, "with continuing emphasis on the programme through NGOs which are particularly well-placed for such a role." A hundred projects were to be covered in the seventh plan, while 500 are to be covered in the eighth.

Two of the nodal agencies identified for implementing this scheme are the Centre for Environment Education, Ahmedabad and the Uttarakhand Seva Nidhi in Almora, Uttar Pradesh. The nodal agency tries to reach out to CGs in different parts of the country. A network is formed as these groups in turn set to work with 20-30 schools in their area. The schools, along with the CGs, thus form a 'cluster'. CEE alone is working with 52 such clusters.

The functions of the nodal agency include preparing and making available locale-specific and nationally relevant EE material to CGs, coordinating training in EE for volunteers from the CGs, and providing guidelines on how to sustain such EE programmes. Funds for EE programmes are channeled through the nodal agency.

The nodal agency facilitates interaction between CGs and the State Departments of Education. EE training of volunteers is a joint effort between the State Department of Education and the nodal agency. These volunteers then go out and train teachers in their own cluster.

CEE identifies material produced by CGs in particular areas which could be used more widely, making translations wherever necessary. Once locale-specific material is available, activity manuals are prepared for

teachers in that. One school in each cluster is identified as a resource centre, where EE material is placed for use by other schools.

As a result of such a scheme, contact is established between the nodal agency, the State Departments of Education, CGs and teachers of local schools. CEE alone has clusters in all except 4 or 5 states in the country. It is hoped that this system will make the implementation of EE more effective and also offer opportunities for monitoring and evaluating programmes.

Unfortunately, no evaluation of the effectivity of this networking programme has been made. Moreover, even this programme ultimately caters only to students in the age group of 10-14 years, i.e. the middle school level of secondary education. CEE, for instance, has been unable to break through the rigid schedule defined by examinations at the class IX-X and higher secondary levels.

There is little in the content of education at the higher secondary level (the plus-two stage) to build up a rounded picture of the environment and related issues and problems. The emphasis by this stage is on specialization and examinations so that EE activities, if they exist at all, are confined to non-formal sessions within the school structure, like Work Experience. There is some hope of change in this, however, following a significant ruling of the Supreme Court in the M.C. Mehta vs. the Union of India case. The Court has asked "every State Government and every Education Board concerned with education upto the matriculation of stage (sic) even intermediate colleges to immediately take steps to enforce compulsory education on environment in a graded way" [Writ 1991]. Compliance of this order was required by 1992; a revision of curriculum is accordingly underway.

In 1988, NCERT brought out a series of instructional material in EVS (science) for classes III-V. These can be used very effectively to make science interesting and relevant to the learner's environment. However, similar handbooks do not appear to have been prepared for the

social studies stream. As we shall see below, this 'science' bias to EE is carried through at all further levels of education, upto university.

The experimental edition of the Handbook of Activities brought out by NCERT's Department of Education in Science and Mathematics is an excellent example of practical ways of introducing the child of 6-16 years to various aspects of life around him. The easy-to-do experiments outlined here concern diverse areas including agriculture, energy and industry. It could become an ideal base for inculcating environmental ethics in the child.

School-level EE in India has seen increasing support from international agencies. UNESCO, for instance, supported a massive programme for implementing population education covering the entire range of school education. NCERT's population education unit has developed a syllabus for population education, of which environment is an essential component. A source book for teachers has also been prepared entitled Nutrition and Population Education.

UNESCO also sponsored a project entitled "Environmental Education: Pilot Project in India - Experimentally Based Modules" under which twelve modules exemplifying scientific concepts as derived from real life situations in the rural environment, were tried out in a limited number of primary schools in four states of the country [Bhattacharya, 1988]. This project has apparently been successful, though we did not come across greater details.

While national level planning of EE is in government hands, a multitude of private institutions offering educational courses at school level are also getting into EE implementation all over India. This aspect of formal EE is a vast and decentralised phenomenon, and needs a separate detailed exercise which has not been attempted here.

2. University Education

Though time-series data on this are hard to come by, there has been an obvious, dramatic rise in the incidence of EE at the tertiary level.

By the end of 1991, there were 42 institutions under the University Grants Commission (UGC) offering post-graduate programmes, five institutions offering short-term courses, 27 research programmes, and 22 disciplines with an environmental component [Tiwari, pers. comm. 1992]. Another recent survey revealed the presence of environment-related courses in over 60 universities and academic institutions (including technical institutes) [Rahul and Rao 1992]. The most common subject offered is "environmental sciences". Others frequently offered include broadly defined subjects such as "ecology", "environmental biology", and "environmental or public health engineering". Some subjects are rarely offered, but hopefully indicate the future potential of EE at university level; these include "ecological genetics", "environmental planning", "field ornithology", "field mammology", and "non-conventional energy".

A recent Supreme Court ruling, in the M.C. Mehta vs. Union of India case cited above, is likely to greatly boost this increase in environment-related courses. The Court ruled that "....the UGC will take appropriate steps immediately to give effect to what we have said, i.e., requiring the universities to prescribe a course on environment. They would consider the feasibility of making this a compulsory subject at every level in college education" [Writ 1991]. Following this, the UGC has advised all universities under its purview to introduce environment as a popular subject in under-graduate courses. In an interesting decision, environment is also to be made a compulsory subsidiary subject, in addition to the two that students are required to clear at the under-graduate level. Whether this will serve its purpose, or become counter-productive if students treat it as cursorily as they treat the conventional subsidiary subjects, will depend a lot on the course content and the teaching methods adopted. The curriculum was, to be ready by January 1993, and is aimed to be inter-disciplinary [Tiwari, pers. comm. 1992].

The rise in EE at university level notwithstanding, two of its features are immediately apparent. By this stage, any attempt to use the 'infusion' method appears to have been completely given up, so that environment becomes a separate subject and is almost totally neglected in other subjects. This promotes a highly fragmented learning, producing graduates who have little inkling of the connections of their subjects with environmental issues.

Secondly, the above-mentioned survey also found that environment-related courses are highly technical in nature, ignoring broader social connections, and remaining accessible almost exclusively to students with a natural or physical science background [Rahul and Rao 1992]. The few exceptions are fairly specialised and for a variety of reasons not readily accessible to most students, such as the course on "environmental planning" at the School of Planning and Architecture at New Delhi, or are very restricted in the number of students they can take, such as the course on "ecology" at the Salim Ali School of Ecology and Environmental Sciences, Pondicherry University.

The UGC, in fact, has been actively discouraging the adoption of an inter-disciplinary course at post-graduate level for two reasons. First, it feels that such a course would be difficult to organise and coordinate; secondly, it thinks that few employment opportunities exist for students of such a subject. However, with an increasing number of environmental groups and experts available all over the country, as also a rapidly increasing professional environmental sector, both these concerns may not remain valid for long.

Private institutions only recently appear to have got into tertiary level EE. The Indian Institute of Ecology and Environment, New Delhi, for instance, offers a correspondence course resulting in a diploma in 'Ecology and Environment'.

In the case of both school and university education, the widespread experience appears to be that while environmental information has increased dramatically, not so rapid has been the rise in appropriate

environmental attitudes leading to responsible behaviour. The anecdote of a school student confidently speaking of global warming and ozone depletion, but at the same time junking a plastic bag carelessly or leaving unattended a running water tap, is by no means a myth. The unambiguous statement of the New Education Policy, that environmental consciousness must inform all teaching in schools and colleges, has not seen widespread application. One apparent reason is the failure of both curriculum planners as well as school/college managements to adopt the 'infusion' approach at secondary, higher secondary, and tertiary levels, as brought out above. In addition, the environmental approach to education has been slow to make its mark in a firmly entrenched system where teachers prefer to stick to conventional classroom teaching methods. In this examination-oriented system information alone has very high premium, and values and ethics take second place. Moreover, there is minimum curriculum flexibility or organisational leeway, and thus little scope for introducing non-formal education activities or experimentation.

There seems to be an unwillingness among teachers to put in that little extra effort to link the information provided in a text book to the student's life or the local context. Nor is any effort made to link local problems to larger environmental problems. The learners, therefore, get no feel of the local and global perspectives which could have made them see their role as active agents in the processes taking place around them. There is also a lack of discussion on inter-relations between different subjects.

Lastly, there is still no formal course on EE itself, which could teach the basics of EE, and discuss its aims and objectives, its target groups, its methods, its relationship with other environmental topics and non-environment subjects, and other related aspects. Graduates wishing to specialise on EE still need to go outside India for a formal course, or take up the non-formal course offered by the Centre for

Environment Education, Ahmedabad (see below, under EE COMPONENT IN NON-FORMAL EDUCATION).

3. Teacher Education

Since EE implementation is ultimately dependent on teachers at all levels, an environmental orientation to teacher education is essential. Pre- and in-service teacher education is organised by various government agencies like the NCERT, the Regional Colleges of Education, and the State Institutes of Education (SIEs), as also by citizens' groups and institutes like the Centre for Environment Education, Ahmedabad.

Environmental training of teachers should include, at the very minimum:

a. Basic training in ecology
b. Field and/or laboratory experience for teachers in the area of environmental sciences
c. Knowledge of environmental issues and problems of resource management
d. Competence in environmental problem identification, investigation, evaluation and citizens' action
e. Opportunities to develop value clarification skills and knowledge of the role of human values in environmental issues [NCERT 1981]

NCERT has laid down the inputs required for training teachers in EE [NCERT 1981]. These include:

a. Pre- and in-service training of teachers
b. Contact programmes
c. Development of teachers' guides and manuals
d. In-service environmental training through correspondence courses
e. Use of mass media

The Programme of Mass Orientation for School Teachers was begun as a centrally sponsored scheme through NCERT, in which teaching of environmental studies at the primary level is supposed to be an

essential component. The teacher's role at the primary stage is conceived as that of being an activity facilitator, co-investigator and a guide to identify the learning resources, instead of acting merely as a communicator or disseminator of scientific information [NCERT, 1988].

However, intentions have yet to be matched by reality. At the basic training level (B.Ed.), there is no independent course or training related to environmental education in most institutions. Recently the National Council of Teacher Education (NCTE) has emphasised the need to "develop in students qualities of democratic citizenship and promote environmental consciousness as one of the objectives of teacher education". Due to this, some universities like Jamia Millia Islamia in Delhi, University of Rajasthan, and the Dayal Bagh Institute of Education (Agra) have recently introduced environmental education as one-of the selective papers at the B.Ed. level [NIEPA 1990]. Almost none of them have environmental concerns integrated into the conventional subjects, thus largely neglecting the 'infusion' method.

The four regional education colleges for teacher education, at Bhubaneshwar, Ajmer, Mysore, and Bhopal, also offer innovative courses with a strong EE component. For instance, the college at Bhubaneshwar offers a four-year course (B.Sc./B.Ed.) with a marked environmental thrust. The two-year course (M.Sc. Life Science/Ed.) offers a general paper on environment, including topics such as pollution and conservation, and a separate paper on environment in which the learners could specialise. Here too, however, there is a science bias, with little effort to integrate other disciplines.

One limited effort to fill this gap has been the environmental module developed for pre-service teachers by NCERT in collaboration with UNESCO [Sinha et.al 1985]. Fundamental scientific concepts are introduced, and the subject matter is arranged such that teachers become equipped to identify and investigate environmental problems, and evaluate possible solutions and strategies for social action.

Also of some help in building up an inter-disciplinary approach has been the organisation of several inter-country workshops, seminars and study visits by NCERT and NIEPA, on environmental themes. Among them has been the 'Consultative Meeting on the Training of Curriculum Developers, Teacher Educators and Educational Planners in Environmental Education', at NIEPA, in 1985, and the meeting on 'Evaluation and Developing Guidelines for Environmental Education Training Activities of UNESCO-UNEP International Environmental Education Programme (IEEP)', at NCERT. NIEPA has also organised international training programmes on EE, and national programmes on training of planners and administrators. NIEPA's training programmes have usually been organised in collaboration with UNESCO's IEEP. The University Grants Commission has also collaborated in EE training programmes with universities and colleges, details of which are being obtained.

To conclude, it would be pertinent to quote from a recent document of NIEPA, which identified five factors hindering EE training for teachers [NIEPA 1988]:

1. Lack of resource persons and educators for the training courses.
2. Lack of relevant, authenticated, localised information on environmental issues.
3. Lack of flexibility in the training course, due to rigidities of the school and teacher training curriculum.
4. Lack of evaluation tools to assess the outcome of training programmes, for their further improvement.
5. Inadequate attempts by trainers, to create an appreciation of new areas of knowledge (environment in the present case).

These problems, according to NIEPA, are compounded by:

1. The rigid specialization of teacher educators in their respective subjects, leaving them incompetent to handle an inter-disciplinary approach, so vital to environmental education.
2. A high pupil - teacher ratio, making it difficult to organise pupil participatory activities.

Though efforts have been made by NCERT, together with SCERTs and the State Institutes of Education, they have not reached all teacher educators, let alone every teacher in the 600,000 primary schools or 50,000 secondary schools [Gill and Nayar 1988]. The isolation of the school system and teacher education from systems of higher education have made for a lack of coordination in the dissemination of novel approaches like EE. There is also little coordination between various teacher training institutes, which might have led to an exchange of ideas and resource persons.

4. Vocational and Technical Education

As mentioned above under University Education, the number of institutions offering environment-related courses appears to be rising quickly. Some of the Indian Institutes of Technology have been offering courses like environmental engineering for several years, and are now being joined by specialised bodies like the Indian Institute of Forest Management [Rahul and Rao 1992]. Once again, however, permeation of the environmental approach into conventional subjects is yet to take place.

EE COMPONENT IN NON-FORMAL EDUCATION

By its very nature, non-formal EE is a much more complex and decentralised phenomenon than formal EE, particularly because a large number of citizens' groups and communities are involved, and are using highly diverse methods. Such groups have in fact been communicating environmental messages in their work for decades, much before the advent of governmental policies and programmes on education.

1. Governmental Efforts

With the realisation within the government of the importance of non-formal education, there have of late been a number of schemes and programmes by which this aspect has either been initiated into the formal system, or supported outside of it.

Work Experience.

An example of the former, for school students, is the Work Experience (WE) sessions. This programme was recommended by the Education Commission in 1964-66, and was initiated as the Socially Useful Productive Work (SUPW). Periods under this, allotted during school hours, are to be utilised to impart vocational and practical learning. While there don't seem to be any evaluation studies of the WE scheme, our own experience from its implementation in Delhi, and the experience of several EE experts and teachers we talked to, indicated at least two shortcomings. One, environmental topics appear not to be considered "socially useful" by most school managements, possibly because the component of "productive, practical" work is not necessarily visible in EE. Many of the schools which did consider EE as part of WE appear to restrict it to gardening and tree-planting. Indeed, when the programme's name was changed to Work Experience in the National Policy on Education, environmental concern was stressed as one of the attitudes to be developed, but the only connected activities that were recommended were "environmental sanitation" and "tree plantation"! Secondly, most schools appear to treat the WE period as peripheral, and often utilise it for covering syllabi topics which have not been covered in the normal periods. An important initiative which could have helped to partially cover the gap in EE at the secondary school level, is thus being inadequately utilised.

School Science clubs programme

A related attempt, which has only partially been used for EE activities, is the School Science Clubs Programme. Started by the then Ministry of Education way back in 1957, it is only recently that introduction of environmental issues has been more systematically tried out in this programme. By 1981 (no recent figure seems to be available), there were an estimated 10,000 science clubs in existence in India, but most appeared to be limiting their activities to the more conventional

science topics. Those which are taking up an active environmental programme, have in many places been renamed 'nature clubs'.

Environmental Information System

In 1983-84, the MoEF launched a scheme called 'Environmental Education and Awareness'. Its Education and Information Division promotes a number of activities in the non-formal sector, including seminars, workshops, refresher courses, group discussions, multi-media campaigns, and poster and essay competitions. The MoEF is also helping the MHRD in developing formal EE, and has developed the Environmental Information System (ENVIS), a network of 11 centres which have been established to collect, collate, store, retrieve, and disseminate relevant information [MoEF 1991].

National Environment Awareness Campaign

The largest single governmental effort at promoting non-formal EE is the National Environment Awareness Campaign (NEAC), initiated by the Ministry of Environment and Forests in 1986. The Campaign involves central funding to citizens' groups all over India, on the basis of proposals received from them. Every year, November 19 to December 18 is observed as National Environment Month, when the campaign is expected to pick up momentum. A special theme is selected each year (List at Appendix 2). though groups can take up activities unrelated to this theme also. The number of groups availing of this opportunity has steadily grown over the last few years, from 115 in 1986 to 555 in 1991. The list of funded agencies comprises not just citizens' groups, but also schools, colleges and universities, research institutes, professional bodies, women's and youth organisations, and government departments from various states and union territories. Programmes conducted as part of NEAC include seminars, workshops, training camps, public meetings, rallies, padayatras, jathas, audio-visuals, film shows, poster displays, drama, folk dances, street theatre, tree plantation drives, competitions for children including essays, debates and painting

competitions, and preparation and distribution of resource material. The target groups covered are extremely diverse, and include students, youth, women, tribals, administrators, professionals, legislators, industrial workers, voluntary agency members, armed forces, and the general public.

Centres of Excellence

The Ministry has also identified and sponsored various Centres of Excellence in the country, two of which are for environmental education with the objective of producing high quality EE resource material, and formulating appropriate EE curricula. The Centre for Environment Education (CEE), Ahmedabad, has been taking up a variety of programmes. These include EE in schools, generation of EE materials, interpretation programmes in zoos, national parks, and museums, teacher training, and EE through the media. CEE is one of the few groups to be working on interpretation, fast emerging as an effective EE tool. Interpretation techniques help to increase the understanding and appreciation of the visitor to a natural or historical site. The National Wildlife Action Plan and other documents have recommended the establishment of model interpretation programmes at various kinds of sites, including protected areas, historical sites, museums, and zoological/botanical gardens. At present, at least three such programmes are running, at Kanha National Park (Madhya Pradesh), Melghat Tiger Reserve (Maharashtra), and the National Zoological Park (New Delhi).

A unique feature of CEE's activities is their 8-month long Training in Environmental Education (TEE), open to any member of a CG or any post-graduate. The TEE aims at creating a broad understanding of environmental issues, and of relevant communication techniques, with the ultimate objective of producing a cadre of individuals who can meet the local and regional needs of EE [CEE 1991].

The second Centre of Excellence, the CPR Environment Education Centre (CPREEC), located at Madras, is also active in the field of EE in schools, resource material generation, preparation of exhibitions, and

other related work. Both these centres have also functioned as Regional Resource Agencies for the NEAC.

National Museum of Natural History

An interesting attempt to impart non-formal EE by the Government of India is the National Museum of Natural History (NMNH). With its headquarters in Delhi, and now expanding its base into various other parts of the country, the NMNH is not only a museum to be visited, but also carries out a number of activities round the year such as holding exhibitions, summer camps, workshops, and painting, essay, and quiz competitions. It conducts both in-house and outreach programmes, the latter carried out with the help of mobile vans. NMNH also makes its exhibits available to schools on loan, thereby partially meting the need for educational display material felt by many institutions. Innovations such as participatory exhibits and computer based learning programmes have also been tried out.

National Literacy Mission

Some attempt has been made to imbibe the ambitious Total Literacy Campaigns with an environmental message. The National Policy on Education (1992 revised version) calls for the National Literacy Mission to be geared to national goals, which includes environmental education. The draft of the Programme of Action (1992) for the Policy says that

> "literacy camps would take up activities related to protection and conservation of the environment with a view to generating intensive awareness of such conservation, and formation of groups, wherever possible, which will provide the nuclei of all activities which go with conservation. Such activities will be integrated into the content of primers, content of materials for neo-literates, curriculum and course content of training and orientation of all functionaries, transaction of instructional lessons, evaluation, etc. This will enable the learners and neo-literates to assimilate, imbibe and internalize the messages related to conservation" [GOI 1992].

Conservation education is also promoted as part of the National Wildlife Action Plan, under which there is attempt to "bring about a change in people's attitude by including conservation in their developmental aspirations" in order to reduce human-wildlife conflicts

in and around protected areas [WII 1991]. Forest and wildlife authorities in all states, along with several other agencies, are engaged in this task.

State Government's Efforts

State government's efforts in EE have not been examined for this report. But information from the Kerala State Committee on Science, Technology, and Environment was obtained, and may give some indication of the scope and range of these efforts. Working through CGs* and research centres, as also through the district administration, it undertakes direct interaction EE programmes, and produces or sponsors a large amount of literature and audio-visual aids in Malayalam and English which is apparently being used by over 100 groups and educational institutions.

2. Citizens' Efforts

A large number of citizens' groups and individuals have been working towards imparting EE in various parts of the country. The range and diversity of these groups and their EE-related activities are too vast to represent adequately in a report of this length and scope. The groups range from grass-roots mass movements such as Chipko and the Narmada Bachao Andolan, whose message transcends their immediate local situations, to tiny, urban-based groups who are communicating on highly localised issues. There does not appear to be any comprehensive data-base on such groups, but the few limited efforts that have been made to list them [e.g. WWF 1992] seem to suggest that the number must run into thousands. As for the kind of EE activities they undertake, and the methods they use, the diversity is astonishing. Conventional lectures and talks are, of course, common, but also increasingly in use are

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*. Groups conventionally referred to as Non-Governmental Organisations (NGOs) have here been termed Citizens' Groups (CGs), to eliminate the bias towards a government-centred terminology.

highly innovative methods like traditional art and drama forms (e.g. the use of dramatised Bhagvad Katha by the Chipko Movement to spread consciousness about forest conservation, or of tribal theme songs by the Narmada Bachao Andolan to drive home their anti-dam message).

Popular Science Movement

One of the largest CG efforts in EE is that of the Popular Science Movement (PSM). PSM groups aim to demystify knowledge and popularise scientific issues. Environment is an essential component of the subjects and approaches dealt with. Activities range from involvement in the Total Literacy Campaign to nation-wide jathas, and the target group is extremely large and diverse. While the focus is mostly on non-formal education, some PSM groups have also attempted to influence curriculum development. Eklavya, a CG based in Madhya Pradesh, has worked on the local school curricula to make it environmentally more sensitive.

Kerala Sastra Sahitya Parishad

A particularly striking example of the use of EE activities at a mass level, oriented towards not merely spreading awareness and knowledge, but also towards environmental action, is that of the Kerala Sastra Sahitya Parishad (KSSP). A CG with among the largest memberships of CG in the country, KSSP has been undertaking EE programmes in various forms for the last two decades. Its basic attempt has been to demystify scientific concepts and present issues in as simple a form as possible. Environmental issues form one component of this attempt. What is perhaps unique is the involvement of large numbers of reputed scientists and academics in these village-level programmes. Oral and audio-visual sessions with target audiences are usually accompanied or followed up by the mass distribution of simple, locally relevant literature, and by the initiation of action programmes aimed at tackling local environmental and developmental problems. KSSP's popular science jathas and padayatras are reported to have been quite successful in creating large-scale awareness of various social issues.

Other Efforts

While PSM and some of the other groups carry out programmes at various levels, using different methods, and targeting all sections of society, most other EE related groups in India concentrate their efforts on specific target groups and use a few selected methods. These range from CGs like CENDIT, in Delhi, which specialises in producing audio-visual material, to groups like Socio-Legal Aid, Research, and Training Centre, West Bengal, which produces literature on legal issues relating to the environment.

EE Components in Training

Training activities related to the environment are basically of two types:

1. General training aimed at raising levels of understanding and sensitiviity to environmental issues. Such training activities are similar to the informal educational activities described earlier, except that they are more structured and formal.
2. Specialised training, which is meant to develop some specific skills and capabilities needed to perform specific tasks. These are similar to the formal education programmes described earlier, except that they do not lead to a degree based on an assessment or evaluation.

Given the nature of these two types of training, the first type (general training) lends itself well to infusion into other, broader or more general, training programmes.

On the other hand, the second type of training (specialised) seems to be more appropriately imparted through exclusive, focused, programmes.

Both types of training activities are prevalent in India.

Government Efforts

General Training

Since the early 80s, various training institutions around the country have started either offering full courses on general aspects of the environment, or introduced sessions on the environment into their various courses. Among the pioneers were the Administrative Staff College, in Hyderabad and the Indian Institute of Public Administration, in Delhi. Soon after, the various institutes of management, the State Academies of Administration and even specialised institutions like the Wildife Institute of India started offering training courses on general environment issues.

Most of these courses are sponsored either by the Ministry of Environment and Forests, or by the Department of Personnel and Training, Government of India. For example, during 1992-93, the Department of Personnel and Training alone sponsored nine training courses for middle to senior level officers, on the environment. In addition, in many of their other courses, like management development programmes, there were sessions dealing with environmental issues.

Unfortunately, these courses are for middle to senior level officers and there appears to be relatively less opportunity for junior officers to attend general courses on the environment. Also, the content of these courses has not been standardised and mostly depends on what faculty is available for which course.

Specialised courses

Various institutions in the country run specialised courses for professionals. The National Environmental Engineering Research Institute, Nagpur, the Tata Energy Research Institute, Delhi, the Wildlife Institute of India, Dehradun, the Indian Institute of Forest Management, Bhopal, the Indian Council of Forestry Research and Training, Dehradun, the Indira Gandhi National Forest Academy, Dehradun, and the Centre for Enviroment Education, Ahmedabad, are just a few. These courses cater to professionals from within and outside the

government who need to develop specific skills related to their profession or interest.

Unfortunately, there is still not adequate specialised training opportunities available in India, both in terms of the specialisations and sectors covered and the total number of seats available. Also, the uncertainty about job prospects inhibits trainees and thereby discourages training institutions from investing time and money in developing environmental training programmes.

The end result is that a lot of jobs that need to be done, do not have adequately trained people to do them. Yet, there is not adequate confidence that there will be a continued and growing demand for environmental specialists.

Citizens Efforts

Many citizen's groups have taken up training as a major activity, especially for training members of other citizen's groups. Generally, however, citizen groups concentrate on specialised training, leaving the general aspects to non-formal education activities.

The Bombay Natural History Society, the World Wide Fund for Nature, the Centre for Science and Environment, the Centre for Environmental Law, the Society for Promotion of Wastelands Development, the Bharat Agro Industrial Foundations, Action for Food Production, Development Alternatives, and many other such are prominent in this area. However, apart for a few big and well known citizen's groups, funds for training, and good and appropriate training material, seems to be a problem. There is also the problem of communication, where potential trainees do not know where they could get the training they want, while potential trainers are going around in search of trainees.

Listed below are some of the training courses required to be started or strengthened on a priority basis.

SELECT LIST OF PROPOSED TRAINING PROGRAMMES

1. Planning

Issues:

1. To integrate environmental concerns into national and sectoral plans.
2. To formulate national and sectoral plans which are environmentally and socially sustainable.
3. To initiate decentralised, integrated, Planning exercise at district and sub-district level for formulating local level, environmentally sustainable, plans in a participatory manner.
4. To assess all plans in terms of their environmental impact.

Objectives

1. To develop appropriate sustainable planning capabilities at relevant levels and across sectors.
2. To develop the ability to use appropriate models and modelling software.
3. To develop the ability to use information relating to the environment and other relevant sectors for planning and assessment of plans.
4. To develop the abilities for participatory planning, involving the concerned local communities, especially the women.

Target group:

1. Actual and potential planners at the Central, State, district and local levels.
2. Academics and researchers
3. Citizens Group representatives
4. Trainers

Format : Seminars/workshops/courses

Frequency:

2/year nationally

2/year for each region/state

2/year for select districts/blocks

1/year for each major sector

Size: 30 persons

2. Policy Formulation:

Issues:

1. To integrate environmental concerns into all relevant policies.
2. To formulate policies which promote environmental and social sustainability.

Objectives:

1. To develop appropriate policy formulating capabilities
2. To develop the ability to use appropriate models and modelling software
3. To use information relating to the environment and other relevant sectors for assessing and formulating policies.
4. To develop the capability for assessing policies in terms of their environmental impact.

Target group:

1. Decision and policy makers.
2. Members of Parliament and Legislative Assemblies.
3. Academics and Researchers
4. Citizen Group representatives.
5. Trainers

Format:

Seminars/workshops/courses

Frequency:

2/year nationally

2/year for each region

1/year for each major sector

Size: 30 persons

3. Formulation of laws

Issues:

1. To integrate environmental concerns into all relevant laws
2. To formulate laws which are supportive of environmental and social sustainability
3. To assess all laws in terms of their environmental impact
4. To identify gaps in the body of laws and their implementation and to design measures for filling up these gaps.

Objectives:

1. To develop appropriate capabilities for assessing and formulating laws
2. To develop the ability to use appropriate models and modelling software
3. To learn to use indicators relevant to the issue for judging the efficacy of laws and their implementation
4. To develop the ability for using data and case-studies as a basis for the improvement and formulation of laws.
5. To improve the abilities of concerned persons, especially legislators and parliamentarians, to more meaningfully participate in, and contribute to, the legislative process especially in terms of consultations with professionals and concerned citizen groups.

Target Group

1. MPs & MLAs
2. Judges
3. Lawyers
4. Academics
5. Members of the Central and State Law Departments
6. Police Officers
7. Regulatory officers of the government
8. Citizen Group representatives
9. Trainers.

Format:

Seminars/Workshop/Courses

Frequency:

5/year nationally

5/year regionally

Size: 30 persons

4. **Implementation of Laws**

Issues :

1. Inadequate and inappropriate use of the legal mechanisms for environmental conservation.
2. Lack of information about the nature, scope and applicability, of various laws and their specific provisions, in relevance to the environmental.
3. Lack of understanding of the specific and general ways in which the legal institutions can be used to promote environmentally sustainable development.

Objectives

1. To develop appropriate capabilities for assessing and formulating laws for using the legal system.
2. To develop the ability to use appropriate models and modelling software
3. To develop the skills for effective environmental litigation, especially in terms of background research procedural and technical details, and relevant provisions of laws and rules.

Target Groups

1. Judges
2. Lawyers
3. Academics
4. Members of the Central and State Law Departments
5. Police Officers
6. Regulatory officers of the government
7. Citizen Group representatives
8. Trainers.

5. Environmental Management

Issues:

1. To manage projects and activities in an environmentally sensitive manner.
2. To locate and plan projects and activities in a way that the damage to the environment is minimised.
3. To evolve and adopt management systems and technologies that are environment friendly.

Objectives

1. To develop appropriate managerial capabilities.
2. To develop the ability to use appropriate models and modelling software.
3. To develop capabilities for using information relating to the environment and other relevant sectors for planning, location and management of projects and activities.
4. To develop the ability for environmental damage control.
5. To develop capabilities relating to resource recycling, efficient use, and disposal.

Target group:

1. Administrators at the Central and State levels, and in local governments.
2. Managers in the corporate sector.
2. Academics and researchers
3. Citizen Group representatives
4. Trainers

Format

Seminars/workshops/courses

Frequency:

10/year nationally

5/year for each region

2/year for each major sector

Size: 30 persons

6. Environmental Economics

Issues:

1. To realistically value environmental degradation and regeneration.

2. To integrate environmental costs into the process of cost benefit analysis.

3. To locate and plan projects and activities in a way that there is an optimal trade off between financial and environmental costs and benefits.

Objectives

1. To develop the capability for costing the environment.

2. To learn methods of integrating environmental costs into the process of financial and economic appraisal.

3. To develop the ability to use appropriate models and modelling software.

4. To use information relating to the environment and other relevant sectors for developing optimal trade offs between environmental costs and short-term economic goals.

Target group:

1. Administrators at the Central and State levels, and in local governments.

2. Managers in the corporate sector.

2. Academics and researchers

3. Citizen Group representatives

4. Trainers

Format

Seminars/workshops/courses

Frequency:

5/year nationally

5/year for each region

2/year for each major sector

Size: 30 persons

7. Conservation of Biological Resources

Issues:

1. To conserve fauna and flora
2. To conserve ecosystems like forests, mangroves, grasslands, coral-reefs, islands, coasts, wetlands, etc.
3. To conserve biological diversity
4. To conserve biomass

Objectives:

1. To develop an understanding of traditional conservation methods, and the ability to integrate them with the best of modern technology.
2. To understand the ecology of species and the carrying capacity of ecosystems.
3. To develop an understanding of, and an ability to use, appropriate methods and technology for conservation

Target Groups:

1. Decision and policy makers.
2. Government and non-government professionals involved in activities having an impact of biological resources.
3. Academics and researchers
4. Trainers

Format:

Seminars of the workshops of the courses

Frequency:

10/year nationally

10/year regionally

Size: 30 persons

8. Land & Soil Conservation

Issues:

1. To develop sustainable patterns of land-use
2. To prevent soil erosion
3. To prevent soil degradation
4. To enhance land and soil productivity

Objectives:

1. To understand traditional methods of land and soil conservation and to integrate these with the best of modern technology.
2. To understand the carrying capacity of different types of land and varieties of soil.
3. To develop abilities to optimise land use and soil conservation.
4. To understand and use methods for enhancing the quality and productivity of land and soil.

Target groups:

1. Decision and policy makers
2. Government and non-government professionals involved with activities relating to the land and soil [agriculture, forestry, mining, horticulture, etc.]
3. Academics and researchers
4. Trainers

Format:

Seminars/workshops/courses

Frequency:

10/year nationally

10/year regionally

Size: 30 persons

9. **Water Conservation**

Issues:

1. To develop sustainable patterns of water-use.
2. To prevent wastage of water.
3. To conserve watersheds, water-bodies, acquifers and storage facilities

Objectives:

1. To develop the ability to integrate water conservation concerns into different sectors.
2. To understand and learn to apply methods, techniques and technologies for the conservation and sustainable use of water.
3. To understand and learn to apply methods of conserving and regenerating water sheds and various natural and artificial water bodies.
4. To develop an ability to assess the ecological carrying capacity of water based ecosystems.

Target Groups:

1. Decision and policy makers.
2. Government and non-government professionals involved in activities having an impact of biological resources.
3. Academics and researchers
4. Trainers

Format:

Seminars of the workshops of the courses

Frequency:

10/year nationally

10/year regionally

Size: 30 persons

10. Pollution and Hazard Control

Issues:

1. To prevent and control air, water, land & noise pollution
2. To minimise the impact of pollution on human health and the environment
3. To prevent hazards and control their impact.

Objectives:

1. To understand how to use regulatory and fiscal measures to minimise and control pollution and hazards
2. To develop the ability to integrate pollution prevention and control measures, and measures for the minimisation of hazards, within all sectors of activity.
3. To develop an ability to assess the impact of pollution on the environment and on human health.
4. To understand and develop the ability to adopt methods and technologies for controlling pollution and hazards.

Target Groups:

1. Decision and policy makers.
2. Government and non-government professionals involved in activities having an impact on air and water quality, and on land.
3. Academics and researchers
4. Trainers

Format:

Seminars of the workshops of the courses

Frequency:

10/year nationally

10/year regionally

Size: 30 persons

11. Environmental Regeneration

Issues:

1. To replenish fauna and flora populations
2. To replenish used or degraded ecosystems
3. To increase the productivity of utilised ecosystems

Objectives:

1. To develop an ability to assess the levels, trends and causes of ecological degradation.
2. To understand and develop an ability to use methods and technologies for reversing the process of degradation and replenishing the environment.
3. To develop an ability to understand and use methods and technologies for increasing the productivity of ecosystems.

Target Groups:

1. Decision and policy makers.
2. Government and non-government professionals involved in activities related to biomass regeneration.
3. Academics and researchers
4. Trainers

Format:

Seminars of the workshops of the courses

Frequency:

10/year nationally

10/year regionally

Size: 30 persons

12. Environmental Monitoring and Evaluation

Issues:

1. to continuously record and assess the status of various ecosystems and aspects of the environment.
2. To continuously record and assess the impact of various human and natural phenomena on the environment.
3. To assess the impact of environmental technologies and management strategies.
4. To predict short, medium and long term trends regarding nature and natural resources.

Objectives:

1. To develop monitoring and evaluation abilities using both high-technology outputs like remote-sensing imagery, and decentralised methodologies like participatory rural appraisal.
2. To develop the ability to use monitoring and evaluation models.
3. To develop the ability to carry out basic t rend-analysis, and prediction exercises.

Target Groups

1. Decision and policy makers.
2. Government and non-government professionals involved in activities related to biomass regeneration.
3. Academics and researchers
4. Trainers

Format:

Seminars of the workshops of the courses

Frequency

2/year Nationally

10/year regionally

10/year destruct level

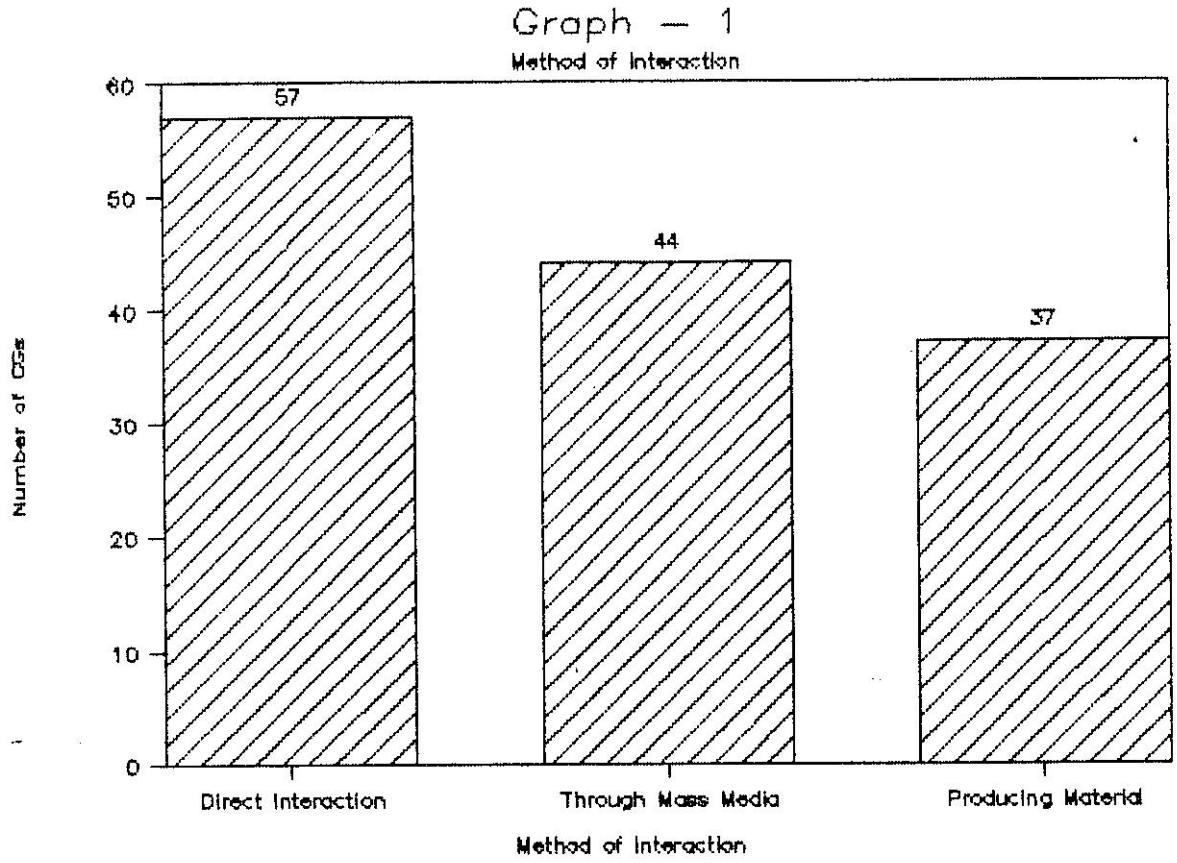
Note: These are only indicative outlines. Detailed proposals will have to be developed by the designated institutions.

Formal & Non-formal Education

For the purposes of this study, an empirical survey was done of CGs working in formal and non-formal EE. Questionnaires were sent out to 142 CGs scattered all over the country. The aim was to get an idea of their work in EE: the areas in which their work is concentrated - rural or urban; the special target areas they are addressing, such as tribal or industrial belts; the target groups addressed; and the kinds of EE methods used and material produced. Almost half of the CGs have responded; the broad results are summarised below, and reveal a number of interesting shortcomings and strengths in CG efforts at EE.

The 63 CGs which responded ranged from those who had been carrying out EE activities for the last three years to those who were veterans, having been in this field for 30 years.

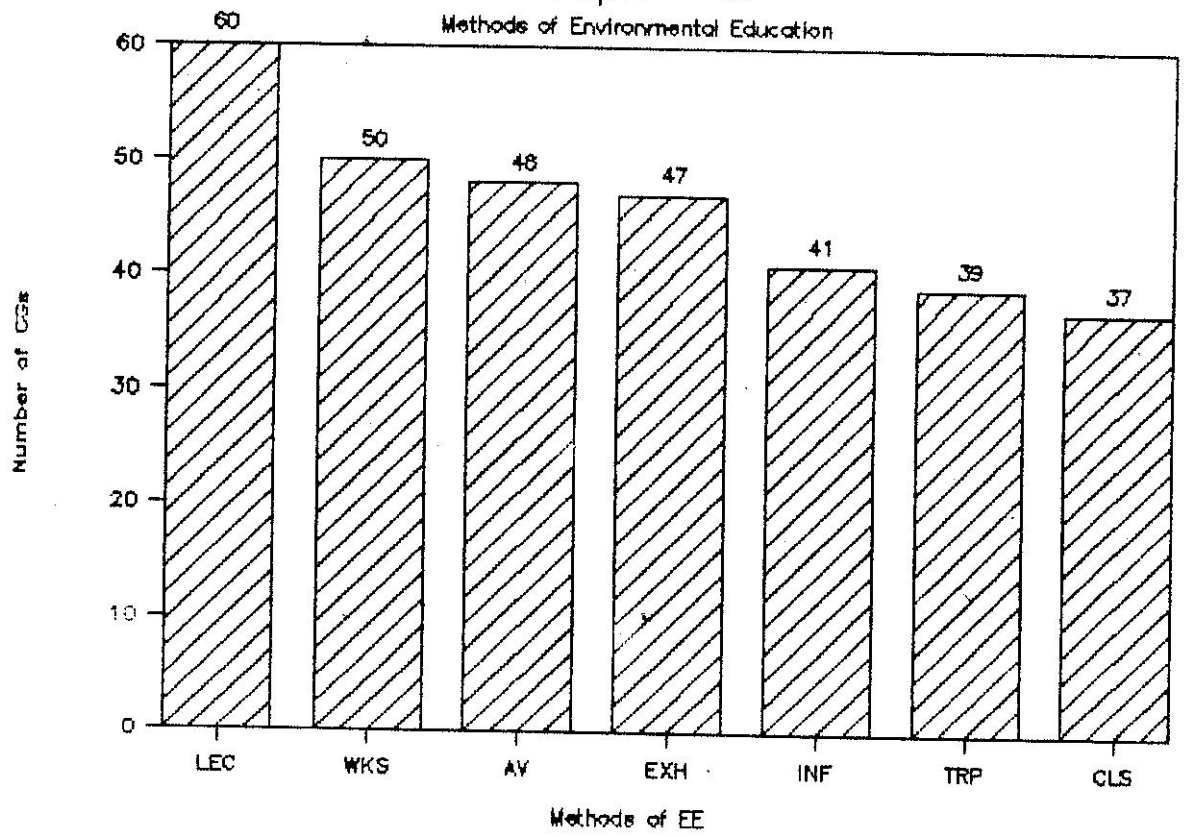
In their dealing with target groups, CGs are essentially of three kinds: those that directly interact with their targets, those using the mass media for EE, and those who produce material for, or facilitate the activities of, the first category. Of the groups which responded, as many as 57 or 90.4% used direct interaction methods[2] (See Graph 1). While this by itself sounds positive, not so encouraging were the results of the frequency of various methods used.[3]



Two sorts of results were obtained here: one, how many groups used each particular method, and second, how each group ranked each method in terms of the frequency of its use. Most CGs reported using a combination of various direct interaction methods. But the 'most common' or 'popular' method is one which has been ranked first or second by the maximum number of groups. Lectures turned out to be the most commonly used method, with as many as 95.2% (60) of the CGs using them (See Graph 2). The next most popular means of direct interaction was that of holding workshops, with almost 97.3% (50) CGs using this method. It appears that lectures, workshops, exhibits, & audio-visuals are the most common mode of imparting EE. On the other hand, field trips seem not to be very frequently employed. Audio-visuals were used in the course of

direct interaction by 48 or 75.1% of the CGs. However, not many CGs reported frequent use of audio-visuals. This reveals a disappointingly low level of use of what is universally acknowledged to be a far more effective means of communicating than mere lectures and talks. This could well be a result of a considerable lack of both A-V material as also A-V facilities in many parts of the country. But perhaps another reason is a lack of imagination, or of motivation, as is shown by the equally infrequent use of an equally (or even more) effective EE method, field trips. Though over 61.9% (39) of the groups used field trips, very few assigned a high rank of frequency of use to them.

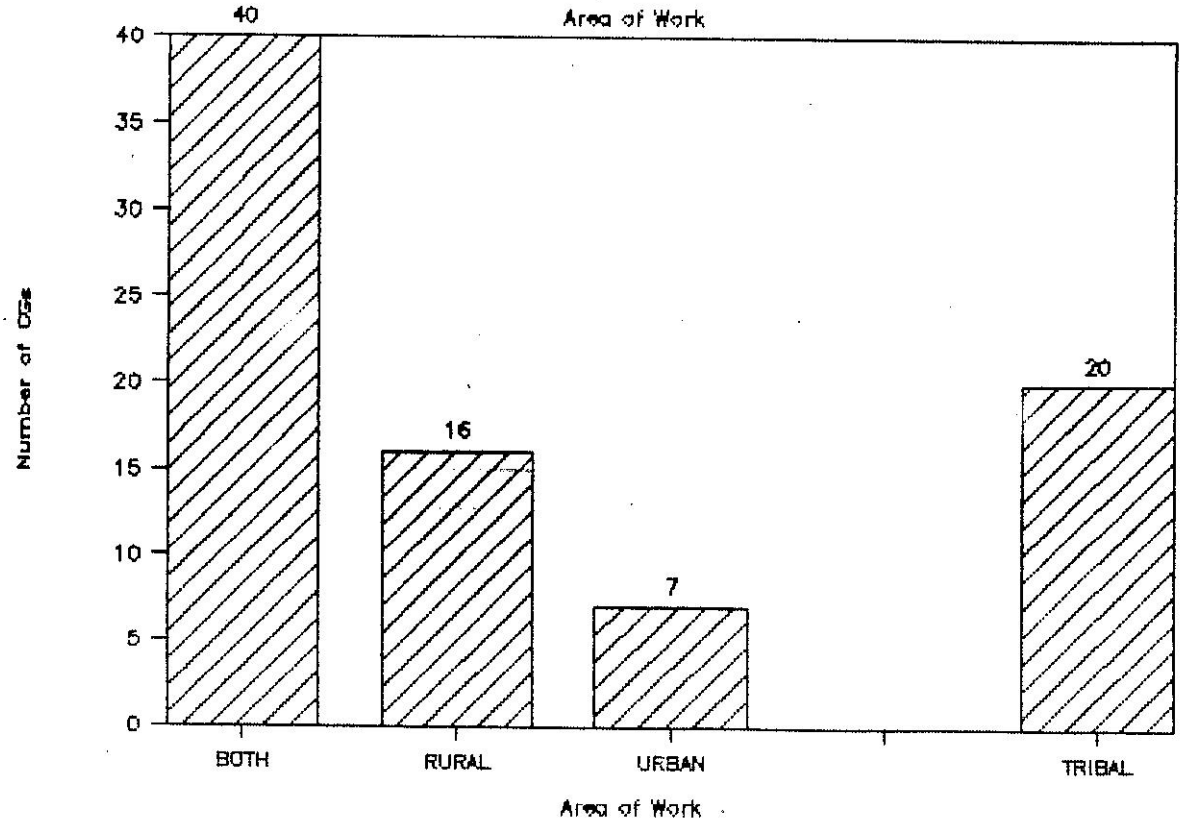
Graph – 2



KEY : LEC = Lecture; WKS = Workshop; AV = Audio-visual; EXH = Exhibits/demonstration; INF = Information dissemination; TRP = Field trip; CLS = Classroom exercises

In their coverage, as many as 63.4% (40) of the 63 groups claimed to be working in both rural and urban areas (See Graph 3). About 25.3% (16) said they worked exclusively in rural areas, while 11.1% (7) stated that their activities were restricted to urban centres. Not much can be generalised from this result, apart from stating that there appears to be a healthy balance of CG coverage of urban and rural areas (please. see list of CGs according to their areas of work, in Appendix 3). Among the specific, distinctive areas where EE is being imparted, tribal areas emerged as the most popular, with 31.7% (20) of the CGs working in such belts.

Graph — 3

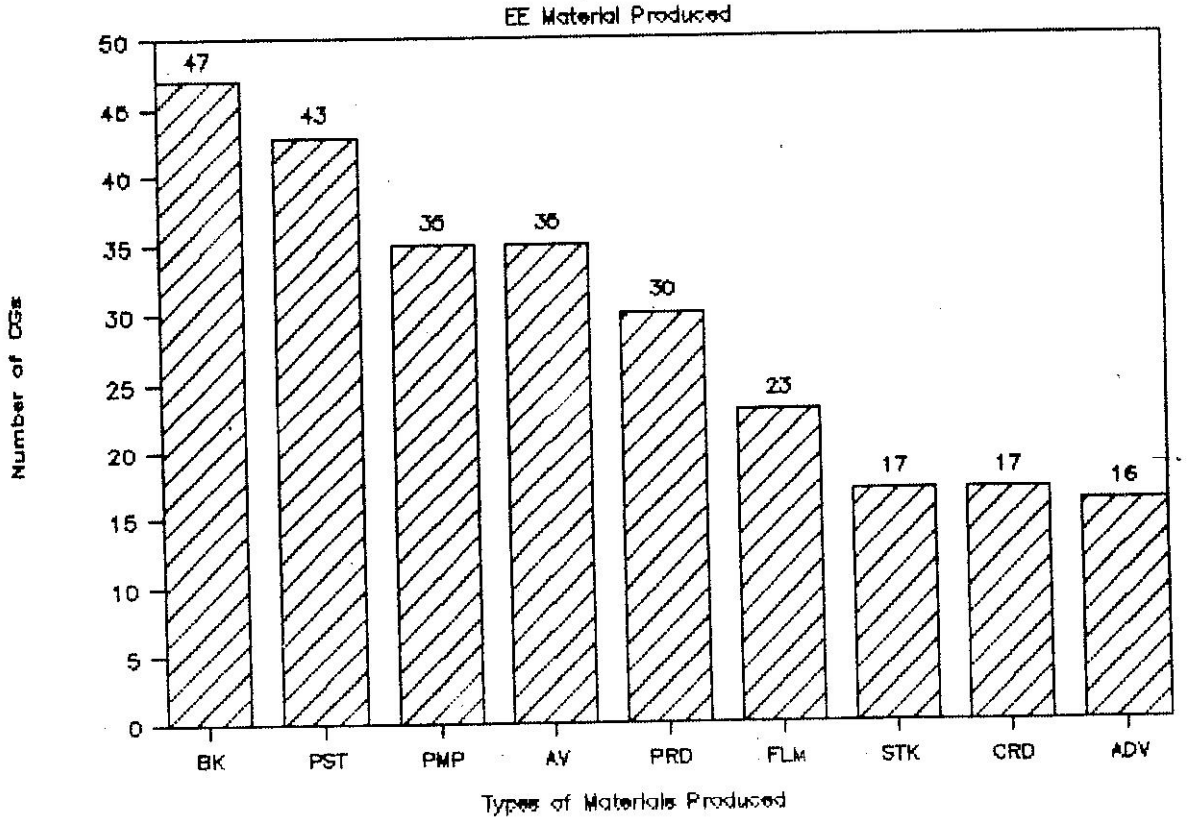


Non-formal EE appears at first sight not to lend itself to a highly structured, systematised curriculum. But this is not necessarily true; our study revealed 25% (16) of the 63 CGs using a set syllabus. A list of these is in Appendix 4.

The mass media was used, as a channel for imparting EE, by 59% (37) of the CGs who responded. Two of these, in fact, reported working exclusively with this method, these being Enviromedia (Delhi) and Consumer Education and Research Centre (Gujarat). A fairly sizable proportion of the CGs (44 out of 63, or 70%), produce educational material (both printed and audio-visual) for their own use, or for use by others who had direct interaction with target groups.

Of the groups producing educational material (see Appendix 10 for full listing), as many as 47 (74.6%) brought out books, booklets, and reports (See Graph 4). Printed material, by and large, constituted the bulk of EE material being produced, with 43 (68.2%) of the groups

Graph — 4



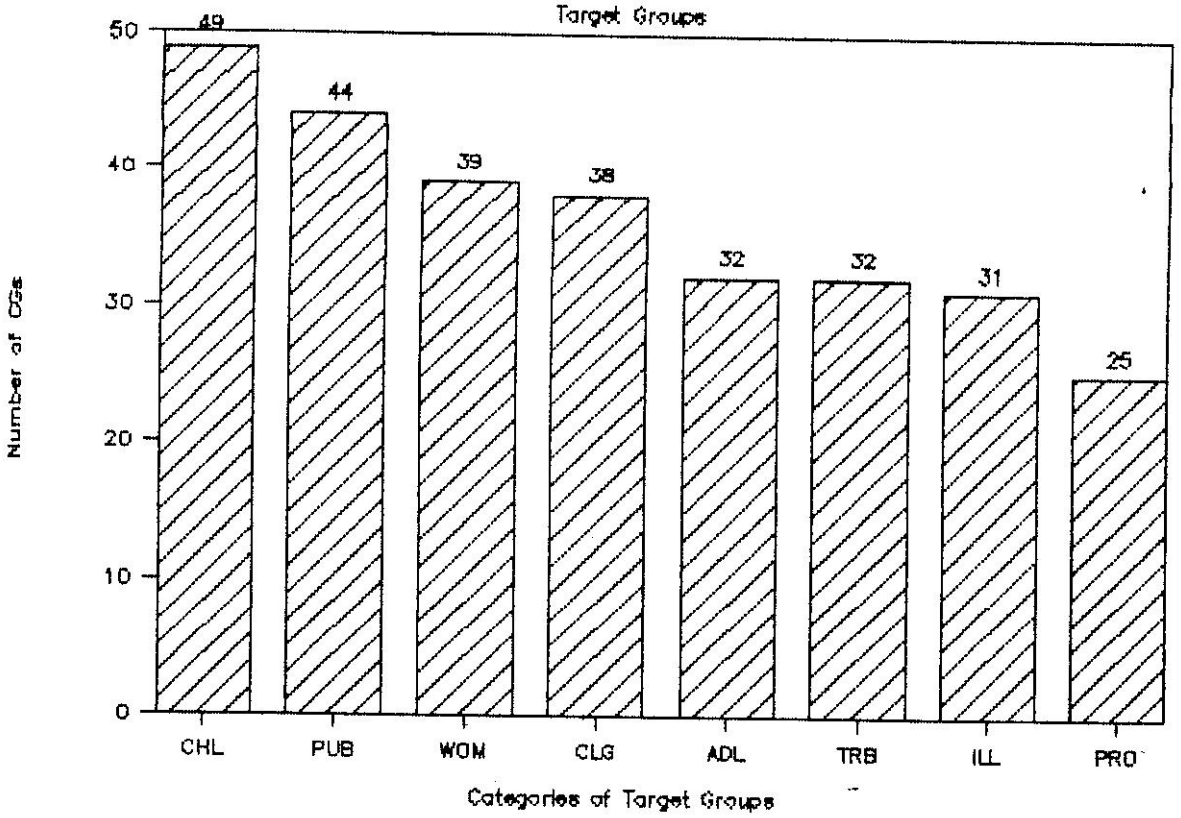
KEY : BK = Books; PST = Posters ; PMP = Pamphlets; AV = Audio-visual; PRD = Periodical; FLM = Films; STK = Stickers; CRD = Cards ; ADV = Advertisements

preparing posters, and 35 (55.5%) producing pamphlets. While 35 (55.5%) of the CGs reported preparing audio-visuals, only 23 (36.5%) made films. The use of a large number of languages in EE material was reported, including English and most of the major regional languages.

It was, nevertheless, observed that there was a felt need for much more ready-made EE material than was currently available. Small, localised CGs working in rural areas or small towns especially feel this need. Unfortunately, neither government agencies nor large CGs which have the means of providing such material, or the knowledge of producing such material, appear to be extending this service in any extensive manner. The material offered is often not locale-specific, and largely irrelevant to the community in which the recipient CG is working.

Coverage of target groups was an especially important question asked. Among the 63 CGs who responded, by far the most favoured target group appeared to be school students and other children (See Graph 5). As many as 77.7% (49) of the CGs reported these as target groups, of which about half ranked them as their most frequent targets. A large number, about 61.9% (39) also identified women as target groups, of whom over a third ranked them first or second. Tribals, non-literates, and adults appeared to be the less preferred target audiences for EE. While 49% (31) of the CGs reported tribals as a target groups, only 32% (10) of these treated them as first or second priority target group. Significantly, while 50.7% (32) of the CGs claimed non-literates as a target group, less than a third of these ranked them as a favoured target. Similarly, though about 50.7% (32) stated that they addressed adults, only about a fourth of these 32 gave them high priority, a trend which is manifested in governmental EE programmes also. Since CGs, especially those that are community based, are often in the best position to impart EE to adults and non-literates, this result, <u>if</u> it even partially represents the general picture, is significant.

Graph — 5



KEY : CHL = Children; PUB = General Public; WOM = Women; CLG = College/students/youth; ADL = Adults; TRB = Tribals; ILL = Illiterates; PRO = Professionals

The broad results given above must be subjected to much further scrutiny and a much more representative sample, but within this limitation, can be taken to be roughly indicative of the strengths and weaknesses in the EE coverage of citizens' groups.

One general observation we have made as a part of this study, which is corroborated by a large number of our respondents, is the severe lack of meaningful, sustained interaction between various actors in the non-formal EE scene. Efforts like those under the Environmental Orientation to School Education Scheme (see above, EE COMPONENT IN FORMAL EDUCATION, 'School Education') are scattered exceptions. Government agencies, CGs, media, educational institutions, and others often function in isolation, duplicating efforts or even working at cross-purposes. Even as significant an effort as the NEAC is largely restricted to a one-time funding of CGs by the Government of India, though in some states the departments of education or science and technology have attempted to follow up on the projects funded. Compounding this is the 'secrecy'

syndrome of governments at all levels; government documents, barring those glossy ones which the public is readily flooded with, are amongst the most difficult objects to get hold of. Lastly, very few areas in the country seem to have any active EE networks, even between CGs themselves, let alone between all the actors in the picture. Some years back the Centre for Environment Education had attempted to start one such network, and though at an informal level networking is still done by it and other groups, this is neither systematic nor regular. The result is a severe restriction on the use of some excellent EE material and some path-breaking EE experience that exists in India.

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1. A questionnaire was sent to the Nidhi, but no response was obtained. Details of the work of this group are therefore not yet available.

2. The percentages given here are rounded off.

had to be discounted from the results. The data on methods used is therefore from 57 CGs.

TRAINING (SEMI-FORMAL EDUCATION)

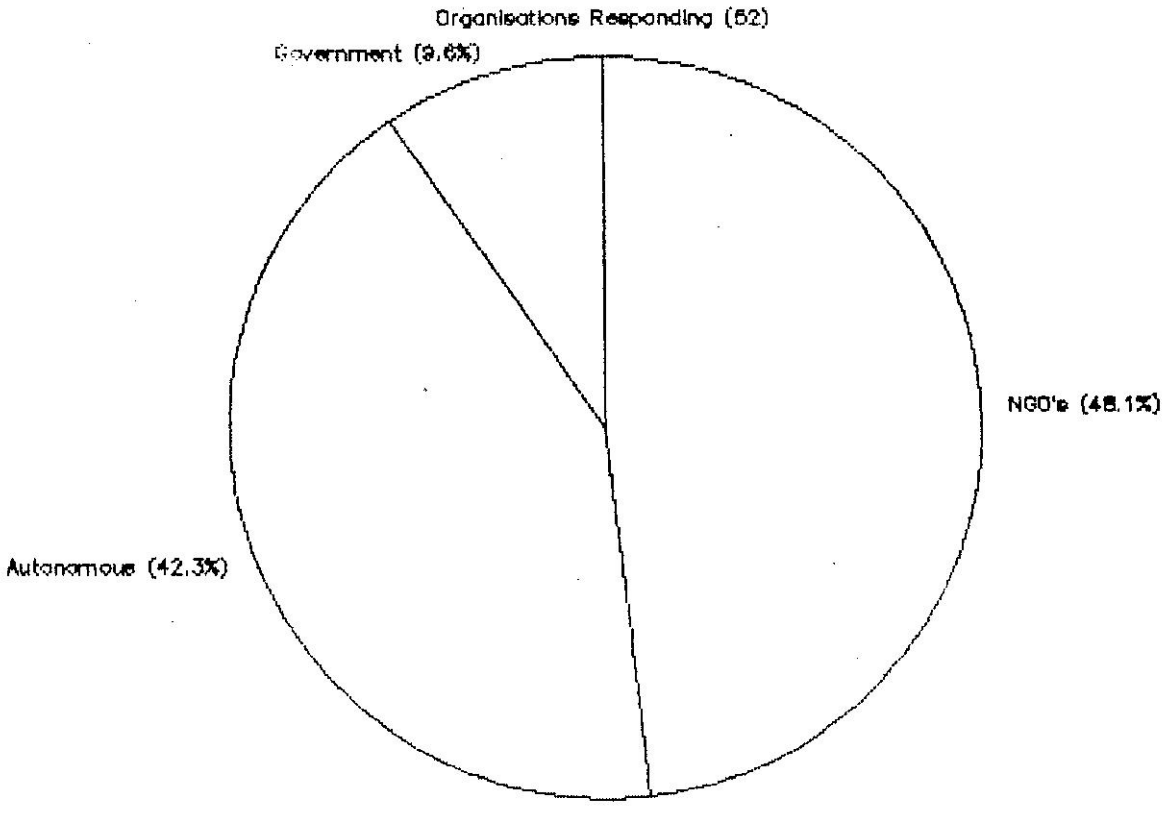
For the purpose of assessing the current training activities in India, a questionnaire was sent to 300 governmental and non-governmental organisations and institutions. Of these, 80 organisations responded, of which 52 filled in the questionnaire, the remaining indicating that they had no training activities related to the environment.

Though an analysis of the data is being given below, it must be kept in mind that the sample is too small to draw any general conclusions.

1. Types of Organisations involved in Training

Out of the 52 organisations who filled in the questionnaire, 25 (48.1%) were citizen's groups or non-governmental organisations (NGOs). Only 4 NGOs were not registered. The number of Autonomous Institutions which filled in the questionnaire were 22 (42.3%). Five (9.6%) were government institutions.[Chart-1]

Chart – 1



2. Facilities Available

Only 5 (9.6%) organisations reported the availability of all the facilities listed in the questionnaire, whereas 32(61.3%) institutions reported having their own faculty on environment. Out of these 32 institutions, 18 (56.2%) were NGOs, 11 (34.3%) autonomous institutions and 3 (9.3%) government institutions. Training films on environment are available with 25 (48.1%) organisations and 36 (69.2%) organisations have training materials. Of these 19 (52.7%) are NGOs, 15 (41.6%) are autonomous organisation. Case studies on environment are available with 25 (48.1%) organisations, whereas 30 (57.6%) organisations have computer facilities. [TABLE 1]

TABLE - 1 TYPES OF ORGANISATIONS WITH FACILITIES AVAILABLE

TOTAL NO OF ORGANI-SATIONS (52)	FACULTY ON ENVIRONMENT NO	%	TRAINING FILMS NO	%	TRAINING MATERIALS NO	%	CASE STUDIES NO	%	COMPUTERS NO	%	NO FACILITY NO	%
	32	(61.3)	25	(48.1)	36	(69.2)	25	(48.1)	30	(57.6)	0	(0)
NGO	18		13		19		13		8			
AUTONOMOUS	11		10		15		11		18			
GOVERNMENT	3		2		2		1		4			

3. Area and Region Covered

Most of the organisations were found to be covering rural areas under their environment training programmes. Both rural and urban areas were covered by 22 (42.3%) organisations. 11 (21.1%) organisations were involved only in rural areas, whereas one organisation was covering only urban areas. [TABLE 2]

TABLE - 2 AREA COVERED BY EACH ORGANISATION

AREAS	NO. OF ORGANISATIONS RESPONDING	PERCENTAGE OF TOTAL ORGANISATIONS RESPONDING
RURAL & URBAN	22	42.3
ONLY RURAL	11	21.1
ONLY URBAN	1	1.9
NOT INDICATED	18	34.6

Table 3 shows the break up of work area of organisations at different levels. Out of 22 organisations working at both rural and urban area, 5 (22.7%) organisations were found to be working at the national level whereas 7 (31.8%) were working at the district, block, taluka etc. levels. Out of 11 organisations working only in rural areas, 5 (45.4%) were found to be working in the district levels.

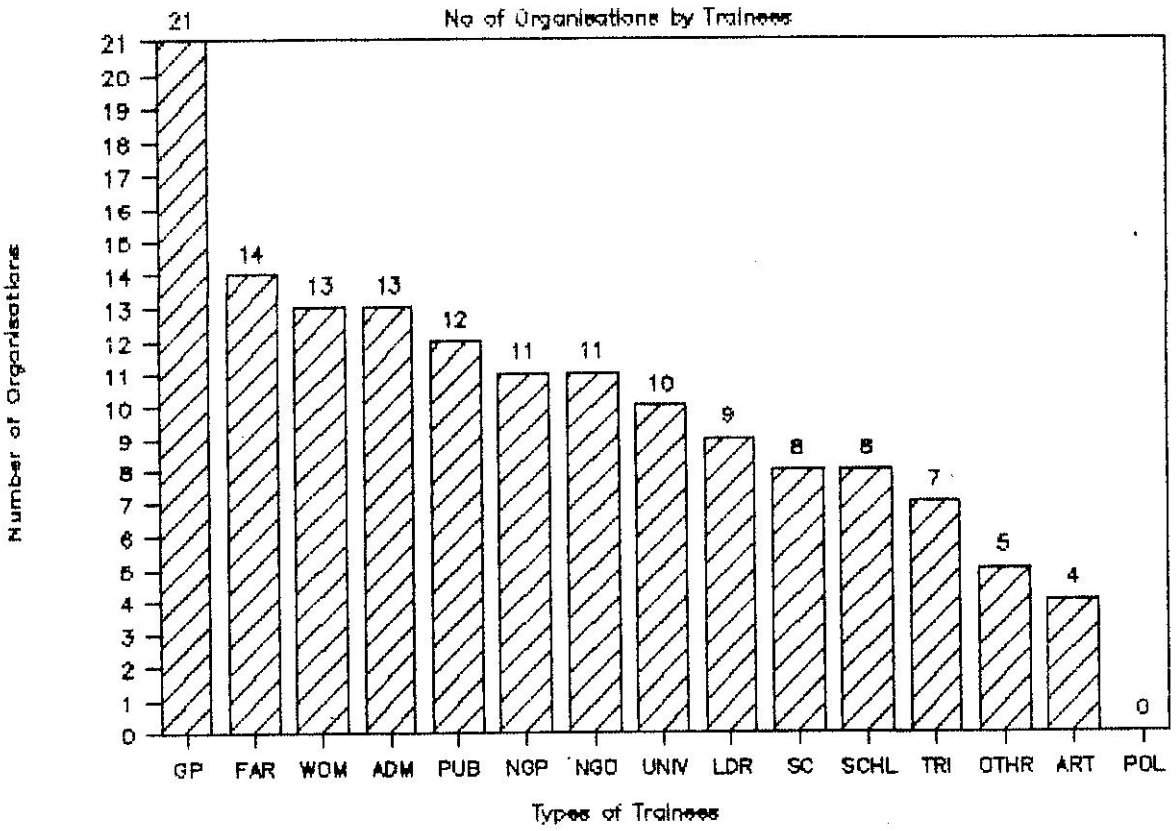
TABLE - 3 BREAK UP OF THE WORK AREA OF ORGANISATIONS

AREAS	RURAL & URBAN NO	% OF RURAL & URBAN AREAS	ONLY RURAL NO	% OF RURAL AREAS	ONLY URBAN NO	% OF URBAN AREAS	NOT INDI-CATED
	1	2	3	4	5	6	7
NATIONAL	5	22.7	1	9.0	0		
STATE	3	13.6	2	18.1	0		
DISTRICT ETC.	7	31.8	5	45.4	0		
NOT SPECIFIED	7	31.8	3	27.2	1		
TOTAL	22		11		1		18

4. Category of Trainees

Government professionals were found to be the most common trainees in 21 (40.3%) organisations. 13 (25%) organisations trained women and farmers, whereas no organisation was found to train politicians. [GRAPH-1]

Graph — 1



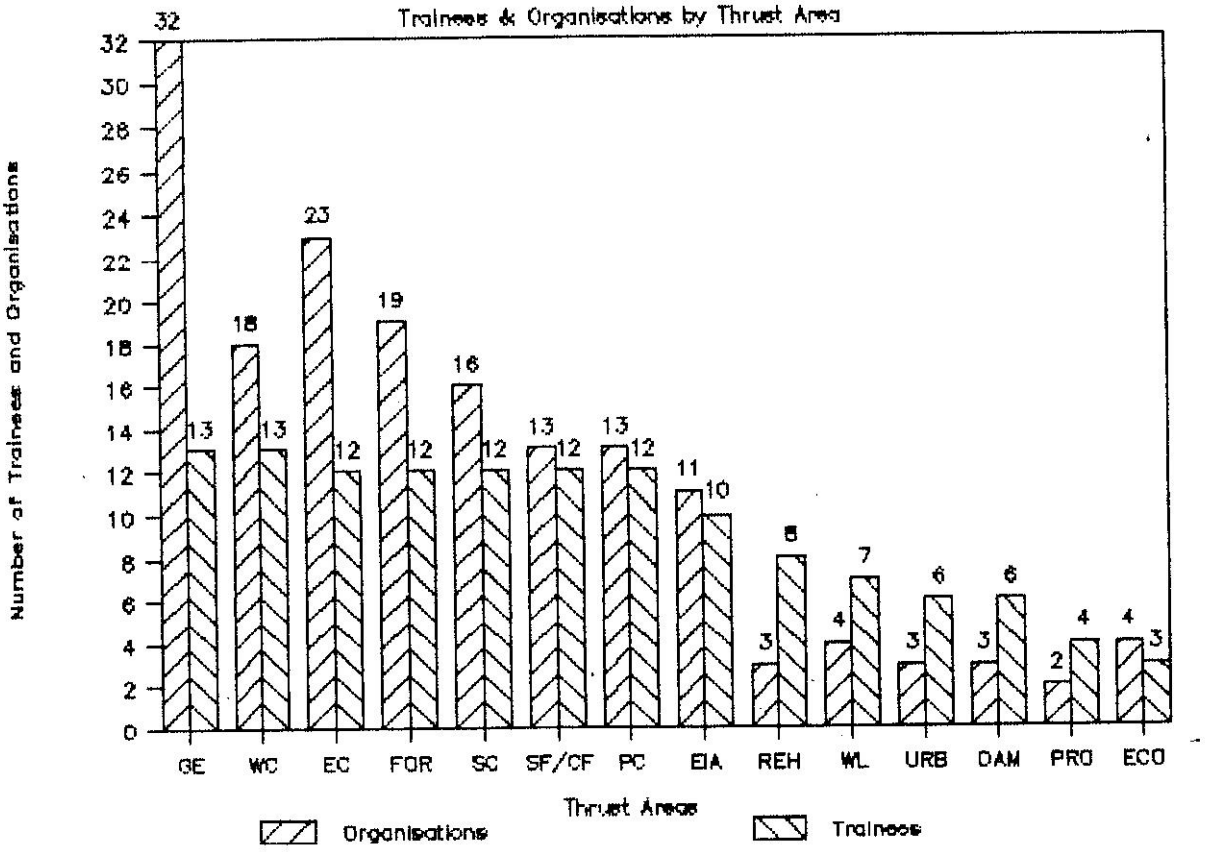
KEY: GP = Government Professionals; FAR = Farmers; WOM = Women; ADM = Administrators; PUB = General public; NGP = Non-government Professionals; NGO = Non-government organisations/Cooperatives; UNIV = College/ University students; LDR = Community leaders; SC = Schedule Castes; SCHL = School students; TRI = Tribals; OTHR = Others; ART = Artisans; POL = Politicians

5. Thrust Areas

Maximum number [32 (61.5%2)] organisations were found to specify their thrust area as general environment. Of the - types of trainees listed, 13 (86.6%) types of trainees were found to be trained in general environment. Energy conservation was second with 23 (44.2%) organisations and 12 (80%) types of trainees.

Very few organisations [3(5.7%)] were found to lay stress on urban environment, rehabilitation and dams. Wildlife and biodiversity conservation 4 (7.6%), project formulation 2 (3.8%) and environmental economics 4 (7.6%) were also found to be poorly covered. Similarly, the types of trainees for these thrust areas were also few. [GRAPH-2]

Graph – 2



KEY : GE = General Environment; WC = Water Conservation; EC = Energy Conservation; FOR = Forestry; SC = Schedule Castes; SF/CF = Social/ Community Forestry; PC = Pollution Control; EIA = Environmental Impact Assessment; REH = Rehabilitation; WL = Wildlife and Biodiversity Conservation; URB = Urban Environment; DAM = Dams; PRO = Project Formulation; ECO = Environmental Economics

Government professionals were found to be trained in all the thrust areas (100). Non government professionals and farmers were found to be the other trainees who covered 85.7% of all thrust areas. Women and NGO/cooperatives representative were also found to be trained in 78.5% of all thrust areas. [TABLE - 4]

TABLE - 4 TRAINEES IN DIFFERENT THRUST AREAS

THRUST AREAS TRAINEES	GE	FOR	SF/CF	WL	PC	EIA	URB	DAM	REH	EC	ECO	PRO	WC	SC	NO OF THRUST AREAS COVERED FOR EACH TYPE OF TRAINEES	PERCENTAGE OF TOTAL THRUST AREAS COVERED FOR EACH TYPE OF TRAINEES
ADM	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	10	71.4
GP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	14	100
NGP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	13	92.8
UNIV	Y	Y	Y	N	Y	Y	N	Y	Y	N	N	N	Y	Y	10	71.4
SCHL	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	10	71.4
WOM	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	11	78.5
TRI	Y	Y	Y	N	Y	N	N	Y	Y	Y	N	N	Y	Y	9	64.2
SC	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	11	78.5
NGO/COP	Y	Y	Y	N	Y	Y	N	N	N	Y	N	N	Y	Y	8	57.1
LDR	Y	Y	Y	N	N	Y	N	Y	N	Y	N	Y	Y	Y	9	64.2
POL	N	N	N	N	N	N	N	N	N	N	N	N	N	N	0	
FAR	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	12	85.7
ART	Y	N	Y	N	Y	N	N	N	N	Y	N	N	Y	Y	5	35.7
PUB	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N	N	Y	Y	9	64.2

KEY: GP = Government Professionals; FAR = Farmers; WOM = Women; ADM = Administrators; PUB = General public; NGP = Non-government Professionals; NGO = Non-government organisations/Cooperatives; UNIV = College/ University students; LDR = Community leaders; SC = Schedule Castes; SCHL = School students; TRI = Tribals; OTHR = Others; ART = Artisans; POL = Politicians; GE = General Environment; WC = Water Conservation; EC = Energy Conservation; FOR = Forestry; SC = Schedule Castes; SF/CF = Social/ Community Forestry; PC = Pollution Control; EIA = Environmental Impact Assessment; REH = Rehabilitation; WL = Wildlife and Biodiversity Conservation; URB = Urban Environment; DAM = Dams; PRO = Project Formulation; ECO = Environmental Economics

6. Profile of Training Courses

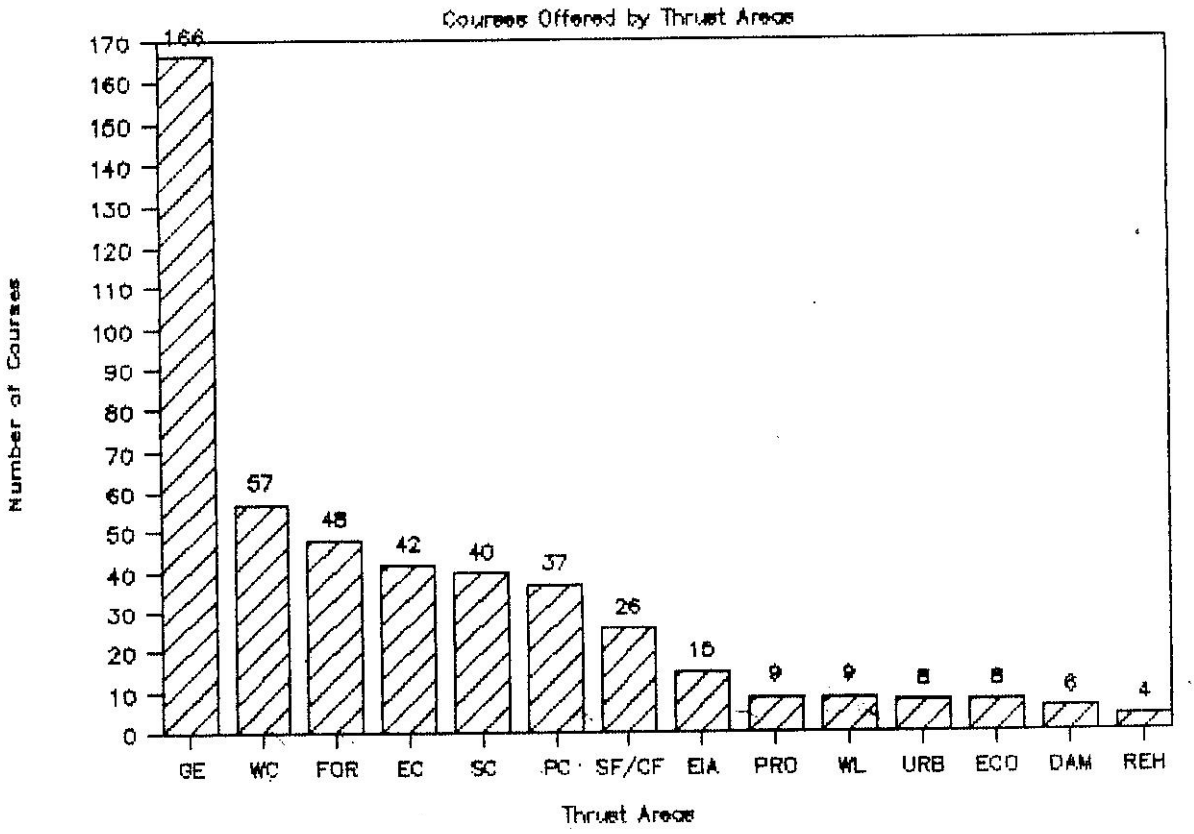
The total number of courses organised by the various organisations were found to be 448 over a periods of -----. 27 (51.9%) organisations were found to offer between 1-5 training courses per year. There were only 6 (11.5%) organisations which offered more than 10 training courses on environment, per year. 14 (26.9%) organisations did not specify the number of courses offered per year. [TABLE-5].

TABLE 5 COURSES OFFERED PER ORGANISATION

NO.OF COURSES/ PER YEAR	NO. OF ORGANISATIONS RESPONDING	PERCENTAGE OF TOTAL ORGANISATIONS RESPONDING
Not specified	14	26.9
1-5	27	51.9
5-10	5	09.6
10 and above	6	11.5
Total	52	

166 (37.0%) courses were found to have their major thrust area as general environment. Other thrust areas covered were: Water conservation (12.7%) and forestry (10.7%). 8(1.7%) courses were carried out for urban environment and environmental economics.[GRAPH-3]

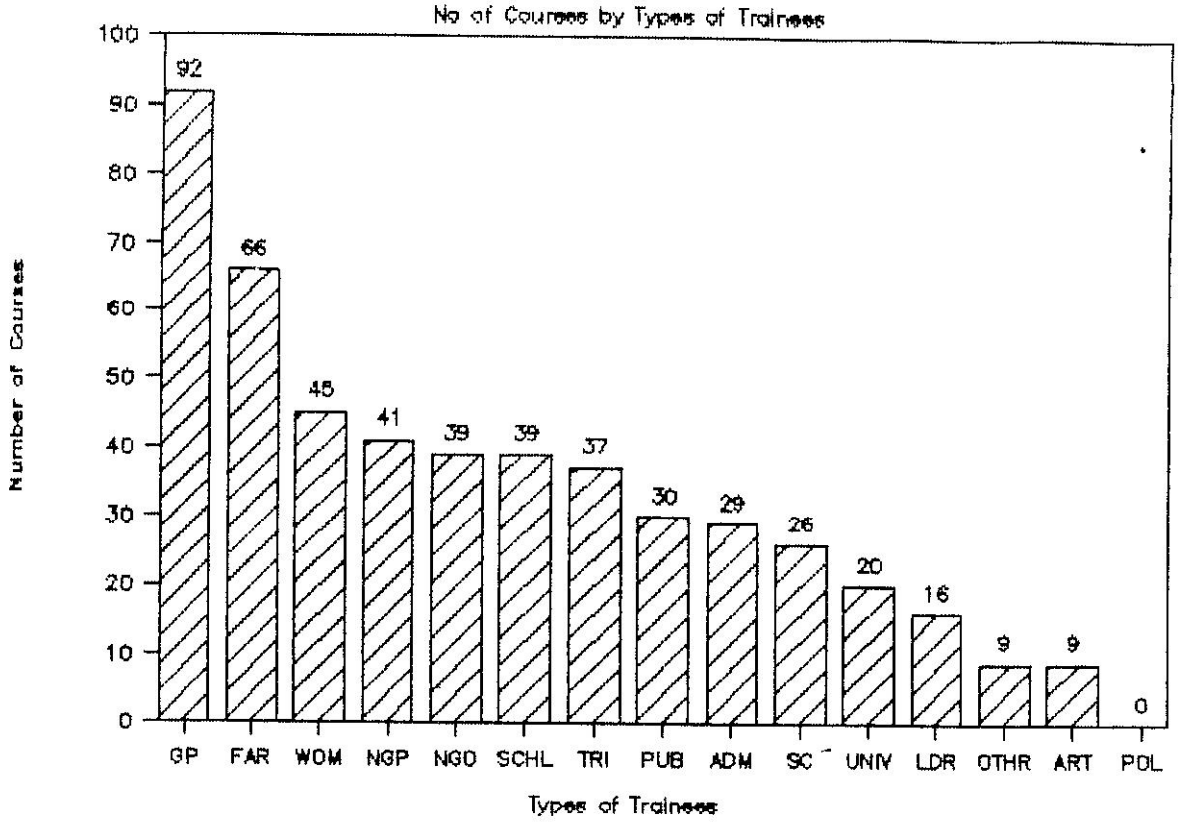
Graph – 3



GE = General Environment; WC = Water Conservation; EC = Energy Conservation; FOR = Forestry; SC = Schedule Castes; SF/CF = Social/ Community Forestry; PC = Pollution Control; EIA = Environmental Impact Assessment; REH = Rehabilitation; WL = Wildlife and Biodiversity Conservation; URB = Urban Environment; DAM = Dams; PRO = Project Formulation; ECO = Environmental Economics

Maximum number of courses [92 (20.5%)] were found to have government professionals as their main trainees followed by farmers attending 66 (14.7%) courses. Politicians did not figures as trainees in any of the courses [Graph-4]

Graph — 4



KEY: GP = Government Professionals; FAR = Farmers; WOM = Women; ADM = Administrators; PUB = General public; NGP = Non-government Professionals; NGO = Non-government organisations/Cooperatives; UNIV = College/ University students; LDR = Community leaders; SC = Schedule Castes; SCHL = School students; TRI = Tribals; OTHR = Others; ART = Artisans; POL = Politicians;

The number of trainees ranged from 2 to 6330. Few organisations reported to have more than 3000 trainees in one course. 54% of courses had 20-100 trainees [TABLE - 6]

TABLE - 6 NUMBER OF TRAINEES PER COURSES OFFERED

NO. OF TRAINEES	NO. OF COURSES OFFERED	PERCENTAGE OF TOTAL COURSES OFFERED
< 20	94	20.9
20-100	242	54.0
100-500	56	12.5
> 500	22	04.9

The duration of courses also varied from 1 day to 105 days. 50.8% of courses held were for 1-3 days. The number of courses held decreased as the number of days increased, except that 5.1% of courses were held for 1 month [TABLE - 7]

TABLE - 7 DURATION OF COURSES

NO. OF DAYS	NO. OF COURSES OFFERED	PERCENTAGE OF TOTAL COURSES OFFERED
1-3	228	50.8
4-8	113	25.2
10-15	29	6.4
20	6	1.3
30	23	5.1
40 and above	7	1.5

7. Sources of Funding

The source of funding for the courses were primarily from "various organisations". 256 (57.1%) out of 448 courses offered were funded by their own institutions, different organisations and industries. Contributions, donations and local sources also helped in funding these programmes.

16.2% of the courses were found to be funded by foreign agencies. Various Government institutions funded 18.3% of courses. Sources of funding were not specified for 6.02% of the courses and approximately 6% of the courses had more than 1 source of funds. [TABLE - 8]

TABLE - 8 DIFFERENT SOURCES OF FUNDING

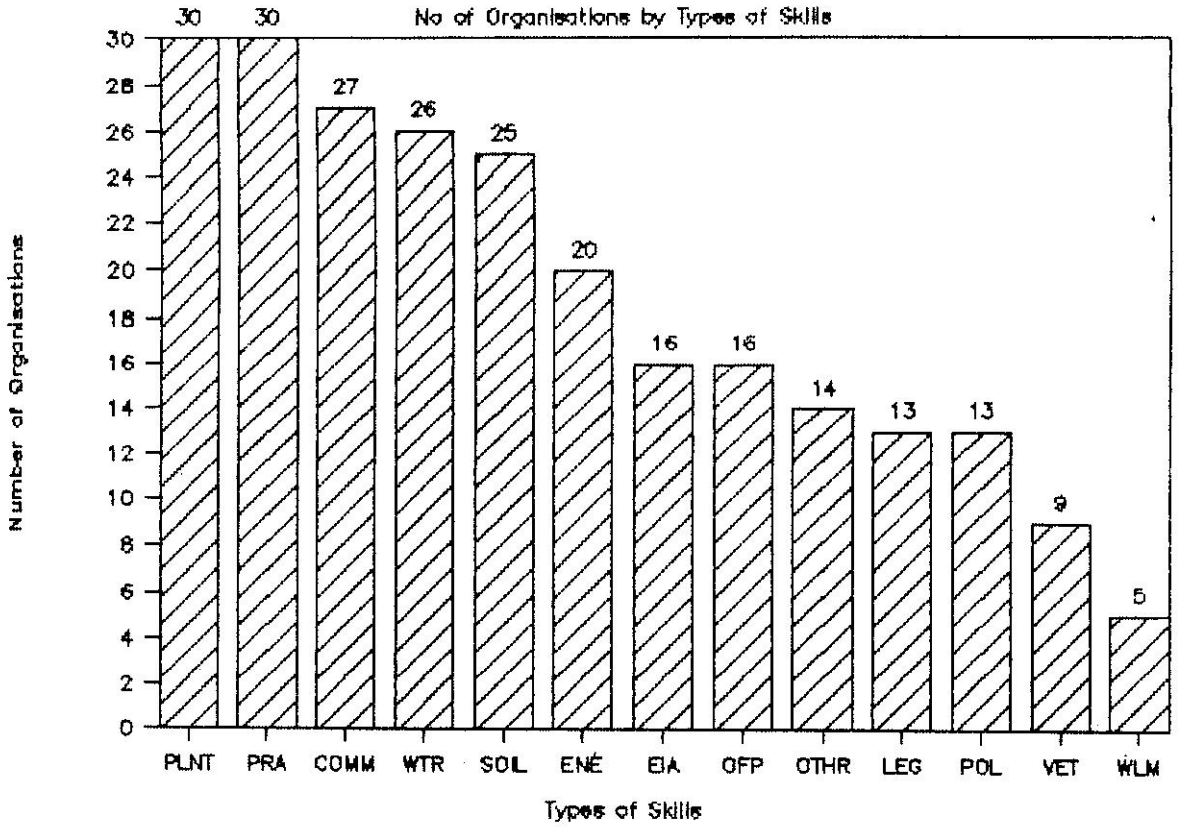
SOURCES OF FUNDING	NO. OF COURSES OFFERED	PERCENTAGE OF TOTAL OFFERED
FOREIGN AID	73	16.2
GOVERNMENT	82	18.3
VARIOUS ORG/INST/DON	256	57.1
NOT SPECIFIED	27	6.0
TOTAL	448	

KEY: ORG = Organisations; INST = Institutions; DON = Donations

8. Types of Skills Imparted

Most of the skills were found to be covered by all organisations, but participatory rural appraisal and planting trees were found to be the major skills imparted by 57.6% of organisations. Wildlife management (9.6%) and veterinary practices (17.3%) were the two skills found to be the most poorly covered [GRAPH-5].

Graph – 5



KEY : PLNT = Planting Trees; PRA = Participatory Rural Appraisal; COMM = Community Organisation; WTR = Water Harvesting Measures; SOIL = Soil Conservation Measures; ENE = Energy Conservation Measures; EIA = Environment Impact Assessment; OFP = Planting Other Forest Produce; OTHR = Others; LEG = Take Legal Action; POL = Pollution Control Measures; VET = Veterinary Practices; WLM = Wildlife Management

9. Funds and Facilities Required

76.9% of the total organisations required funds. Equipment (73%) and information (69.2%) were also required by a majority of organisations. Only 44.2% of the organisations were found to require technical assistance. [TABLE - 10]

TABLE - 10 ASSISTANCE REQUIRED BY ORGANISATIONS

ASSISTANCE REQUIRED	NO. OF ORGANISATIONS RESPONDING	PERCENTAGE OF TOTAL ORGANISATIONS RESPONDING
FUNDING	40	76.9
TECHNICAL ASSISTANCE	23	44.2
EQUIPMENT	38	73.0
INFORMATION	36	69.2
DOCUMENTATION	32	61.5
OTHERS	18	34.6

1. Formulating a National Environmental Training and Education Policy and Action Plan: A detailed, national policy and action plan, which brings together the scattered statements on EE in documents like the National Policy on Education and various programmatic statements such as those of the Ministry of Environment and Forests, is urgently needed. Such a policy and action plan should be drawn up after a series of public hearings at various levels. It should be framed by a group with strong representation of non-governmental people, and should involve officials of at least the Ministries of Environment and Forests, Human Resource Development, Information and Broadcasting, Science and Technology, and the Department of Personnel, as also representatives of the environment, forests, education and science and technology departments of State Governments.

Budget

For preparatory and supportive research and data collection, meetings etc., through the Ministry of Environment and Forests (MOEF), in collaboration with the Ministry of Human Resources Development (MOHRD) and Department of Personnel (DOP).	Rs. 1 crore

2. Integrating Environmental Concerns into Educational and Training Activities: An urgent attempt needs to be made to infuse environmental issues into teaching at all levels of the formal and semi formal education system, and in all appropriate training programmes. To achieve this, the following steps are required:

(i) Identification of realistic methods of incorporating environmental concerns and values into each discipline

(ii) Training of teachers, trainers and communicators in EE

(iii) Reviewing and suitably amending educational and training curricula. Technical environment-related subjects, especially the rapidly increasing courses in our universities and academic institutes, need to be modified to include social aspects. The UGC,

in consultation with other government agencies, citizens' groups, and individual experts, should work out the possibilities of imparting a much more holistic approach in existing subjects than is presently the case.

(iv) Producing and distributing printed and audio-visual material which could facilitate the infusion of environmental concerns into training and educational programmes. These would include:

- Modules and workbooks which teachers and trainers at various levels of the educational and training structures can use. These should be flexible enough to accommodate suitable modifications, as far as possible by the users themselves, to fit local conditions.
- Low-cost environment kits, such as those to sample water and soil, for mass distribution among students.
- Simple audio-visual material, both on general themes as well as locale-specific and technical issues.

Such material development would necessarily require the involvement of CGs and individual EE experts and activists. One immediate task can be to screen the tremendous amount of material produced under NEAC, and shortlist relevant material for widespread distribution.

Budget

Developing EE methodology and reviewing syllabus Rs. 5 crores

Training of teachers, trainers and communicators Rs. 50 crores

Production of educational and training material Rs. 20 crores

Agencies MOEF, MOHRD, DOP, Ministry of Science and Technology (MOS&T) and OTHERS

3. Information Dissemination: There must be a serious, widespread attempt by central and state governments to make information accessible, by placing basic environmental documents at libraries and document centres at various levels, and by readily making information available to those who ask for it.

Efforts must also be made to translate important documents into regional languages so that they become accessible to a larger number of people.

Budget

Preparation, translation and distribution of material through the MOEF and the MOHRD.	Rs. 10 crores

4. Strengthening the National Literacy Mission (NLM) and the School Science Clubs: There is scope to strengthen the environmental aspects of NLM, especially at the post-literacy programme level. A locale-specific approach is very essential here. The special needs of women vis-a-vis environment can be a particular focus here.

A similar strengthening of the Work Experience and School Science Clubs programmes, with a view to encouraging schools to use them for EE purposes, should be undertaken. Appropriate modifications may be desirable, to open out these programmes to non-school members of the society. This would encourage interaction between students and others who are dealing with the consequences of environmental problems. It will also enable students to investigate and participate in the solution of these problems.

Budget

For strengthening environmental concerns in the NLM and in the School Science Clubs programme (MOEF, MOHRD)	R. 25 crores

5. Encouraging EE for Professionals: Regular and sustained EE programmes are needed for professionals, starting at the stage of their training (in vocational/technical institutes, etc.) and continuing through their career life. Special efforts are needed to

break the alienation from fundamental knowledge caused by a high degree of specialisation among most professions.

Budget

To create chairs in EE in various professional, technical and training institutions.	Rs. 5 crores

6. Encouraging EE for Government Officials and Politicians: Regular and sustained EE programmes are urgently needed for government officials and politicians. Several short-term courses and workshops are presently run for government officials, but these do not adequately meet the needs of the bureaucracy. Since these officials may be in varied and seemingly unrelated departments, it is essential to establish the relevance of environmental issues in their work and to demonstrate realistic methods of integrating environmental concerns into all areas of governance.

For this purpose, the environmental training inputs in the induction institutions of government servants need to be significantly strengthened. The MOEF needs to take urgent measures to set up environmental training units in these institutions, and to identify from the existing training institutions a few that could be developed and strengthened to become 'centres of excellence' in environmental training. A special focus must be Members of Parliament and Legislative Assemblies, since they are the ones who make final policy decisions. At present, there appear to be no training workshops on environment for them.

Budget

To strengthen induction and in-service training institutions and to set up "centres of excellence" in environmental training, through the MOEF, DOP, MOHRD and OTHERS.	Rs. 100 crores
Cost of organising special training programmes for MPs, MLAs, and civil servants (at Rs 2 lakh per course, for 150 courses per year covering 3000 persons per year, for 5 years). Details of some suggested training programmes are in the section on training.	Rs. 15 crores

7. Starting a Course on Environmental Management: A graduate and/or post-graduate course on environmental management should be started in various universities, dealing with both the theoretical and applied aspects of the topic, and preparing students to be professional environmental managers. This should be explored, perhaps by the UGC, with various universities, as also with those large CGs and institutes which may be able to take up the responsibility. Environment-related courses must also be started at both higher secondary and tertiary levels, which are inter-disciplinary in nature, and are as accessible to students of social science and arts backgrounds as they are to science students.

Budget

Initial support to Institutions, Universities and CGs, through the MOEF & MOHRD, for starting such courses at school and college/university level, for five years	Rs. 50 crores

8. Strengthening the Centres of Excellence in Environmental Education: The Ministry of Environment and Forests should consider the setting up of more such Centres, especially to give a greater geographical balance.

Budget

For setting up five more such centres, over 5 years	Rs. 25 crores

9. Screening the Mass Media: The urgent need to impart EE must also include measures to counter environmentally destructive learning and communication. To this end, the Censor Board of India, the Press Council of India, and other bodies dealing with mass media should be asked to develop guidelines for judging the environmental implications of programmes in the electronic media and mass-distribution print material, and taking appropriate measures such as are taken, for example, for communally sensitive matters. Particularly scrutinised should be television programmes, including

advertisements, since they have a very strong influence on viewers. The relevant bodies could be asked to include eminent environmentalists as members of censor committees.

Budget

Framing of guidelines and initial support for the screening activities	Rs. 1 crore

10. Setting up a National Environmental Training and Education Commission (NETEC): This commission should have a co-ordinating role and work primarily through existing governmental and non-governmental organisations and institutions at different levels, and strengthen and support them.

The NETEC should also organise the production of educational and training material (discussed in 2 above), and an information and library system to support training institutions and activities around the country.

It should encourage NGOs to set up district and village training centres and provide funds for these.

Budget

For setting up the NETEC and funding its activities over five years, especially the setting up of district and village centres for training and education, through the MOEF.	Rs. 150

11. Appointment of National Professors in Environment: The MOEF, along with MOHRD, the DOP and the University Grants Commission (UGC), should identify National Professors in Environment, similar to an existing UGC scheme, and facilitate these national professors to visit and lecture in various institutions across the country. A similar system must also be set up for practitioners and activists, where they could be paid a stipend and travel costs to travel around the country for a year, assisting in the training activities of various institutions and organisations.

Budget

For supporting national professors, and activists and practitioners, over five years, through the MOEF	Rs. 5 crores

12. Training and Education by Example: An important part of training and education is to learn by doing or observing. A scheme needs to be urgently started which would allow practitioners, activists, professionals, civil servants and others to actually participate in and directly observe protection and regeneration activities.

Budget

To enable different categories of persons to travel to participate in, and observe, environmental conservation and regeneration activities, over five years, through the MOEF	Rs. 10 crores

13. To set up a National Institute of Environmental Management (NIEM): There is urgent need for such an institution to promote research and instruction in environmental management and to offer specialised courses in environmental management. It is understood that MOEF has already constituted a committee to go into the modalities of setting up such an institution.

Budget

Support for the setting up and maintenance of such an institution, over five years, through the MOEF.	Rs. 25 crores

14. To Set Up a National Training Information System

There is a need to have a training information system whereby individuals and employers can locate the appropriate training programme and institution relevant for their requirements.

Budget

To collect, store and disseminate information regarding training programmes and opportunities, over five years, through the MOE and DOP.	Rs. 5 crores

Appendix 1

Suggested Activities to be Undertaken Under the Scheme of Environmental Orientation to School Education

[Source: GOI 1988]

1. Adoption of monuments for upkeep and maintenance, preparation of informative brochures, etc.

2. Nature study - visits to nearby sites for study of flora and fauna of the area, writing essays and reports.

3. Study of ecological problems of a village, educating people on the hazards of environmental pollution, advocating construction of sanitary toilets, participation in the conservation efforts of the community.

4. Adoption of a municipal ward or locality - study of the social and ecological environment, history and culture of the area.

5. Preparation of general informative books, booklets, brochures, posters, etc. on environment, history, and culture and their dissemination.

6. Preparation of slides, audio-tapes, video-tapes, films on environment conservation.

7. Review of the curriculum to make it locale specific; conducting curriculum workshops.

8. Preparation of textbooks/ instructional material (print and non-print).

9. Organisation of seminars for creating environment consciousness.

10. Orientation of staff of SCERTs/Boards of Education

11. Plantation of trees, purchase of implements/fencing for school nurseries

12. Visits to zoos/wild life sanctuaries

13. Trekking/nature walks - educating children about the causes of soil erosion and measures for soil protection/social forestry.

14. Measurement of environmental erosion - of soil, leaves, wood etc., and relating the instructional programme to such study.

Appendix 2

The National Environmental Awareness Campaign: Some Salient Features

[Source : GOI undated]

Year	Theme	Number of Participating Organisations	Financial Assistance Provided (Rs. lakhs)
1986	General theme	115	42.00
1987	Floods and Droughts	207	100.00
1988	Conserving our Water Reserves	215	88.00
1989	Conserving our Water Reserves	307	65.00
1990	Save Environment, Save Yourself	490	73.40
1991	People's Participation in Global Environmental Concerns	555	78.50
1992	Biodiversity	(underway)	

Appendix 3

Urban and Rural Areas of Work of Citizens' Groups Who Responded

[Source: Responses to Environment Education Questionnaire Sent by IIPA]

Focus Mainly on Urban Areas

1. Beauty Without Cruelty, Maharashtra
2. Educational Planning Group, New Delhi
3. Kalpavriksh, New Delhi
4. Madras Naturalists' Society, Tamil Nadu
5. Press Institute of India, New Delhi
6. Sanctuary Films/ Sanctuary Asia Magazine and Cub, Maharashtra
7. Schools' Environment Network, New Delhi

Focus Mainly on Rural Areas

1. Bhagavatalu Charitable Trust, Andhra Pradesh
2. Eco-Development Society of Meghalaya, Meghalaya
3. Gramonnati Sansthan, Uttar Pradesh
4. Jakheshwar Shikshan Sasthan, Uttar Pradesh
5. Nagaland Gandhi Ashram, Nagaland
6. Parisara Samrakshana Kendra, Karnataka
7. PRIDE India, Maharashtra
8. Seva Mandir, Rajasthan
9. Shramjivi Unnayan, Bihar
10. Social Uplift through Rural Action, Himachal Pradesh
11. Society for Development Action, Orissa
12. Society for Environmental Education in Kerala, Kerala
13. Society for People's Action and Development Education, Tamil Nadu
14. Tarun Bharat Sangh, Rajasthan
15. Ubeshwar Vikas Mandal, Rajasthan
16. Vivekananda Adivasi Kalyan Samity, West Bengal

Focus on Both Rural and Urban Areas

1. BAIF Development Research Foundation, Maharashtra
2. Bal Bhavan Society of India, New Delhi
3. Bharatiya Paryavaran Raksha Dal, Bihar
4. Centre for Environment Education, Gujarat
5. Centre for Youth and Social Development, Orissa
6. Consumer Education and Research Centre, Gujarat
7. Consumer Education Centre, Andhra Pradesh
8. CPR Environmental Education Centre, Tamil Nadu
9. Darpana Academy of Performing Arts, Gujarat
10. Development Research Communication and Services Centre, West Bengal
11. Ecological Society, Maharashtra
12. Educator Manufacturer Association, Karnataka
13. Enviromedia, New Delhi
14. Environmental Education Centre, Maharashtra
15. Environmental Society (Paryavaran Parishad), Rajasthan
16. Family Planning Association of India, Maharashtra
17. Forum for the Advancement of Interdisciplinary Study, West Bengal
18. Gorakhpur Environmental Action Group, Uttar Pradesh
19. Gram Seva Sangha, West Bengal
20. Indian Women Scientist's Association, Maharashtra
21. Kerala Association for Non-formal Education and Development, Kerala
22. Kerala Sastra Sahitya Parishad, Kerala
23. Ladakh Ecological Development Group, Jammu and Kashmir

24. Lok Chetna Manch, Uttar Pradesh
25. Orissa Environmental Consciousness Society, Orissa
26. Parisar, Maharashtra
27. People's Association for Himalaya Area Research, Uttar Pradesh
28. People's Education for Action and Community Emancipation, Tamil Nadu
29. Population and Environmental Education Centre, Andhra Pradesh
30. Save Nilgiris Campaign, Tamil Nadu
31. School of Fundamental Research, West Bengal
32. Society for Himalayan Environmental Rehabilitation and People's Action, Uttar Pradesh
33. Socio-Legal Aid Research and Training Centre, West Bengal
34. Tripura Adimjati Sevak Sangh, Tripura
35. Udaipur Environmental Group, Rajasthan
36. Vikram A. Sarabhai Community Science Centre, Gujarat
37. Vishwa Yuvak Kendra, New Delhi
38. Vivekananda Kendra, Tamil Nadu
39. Vivekananda Nidhi, West Bengal
40. World Wide Fund for Nature - India, New Delhi

Appendix 4

Citizens' Groups Having a Syllabus for Environmental Education

[Source: Responses to Environment Education Questionnaire Sent by IIPA]

1. Centre for Environment Education, Gujarat
2. Centre for Youth and Social Development, Orissa
3. CPR Environmental Education Centre, Tamil Nadu
4. Ecological Society, Maharashtra
5. Educator Manufacturer Association, Karnataka
6. Jakheshwar Shikshan Sansthan, Uttar Pradesh
7. Kerala Sastra Sahitya Parishad, Kerala
8. Ladakh Ecological Development Group, Jammu and Kashmir
9. People's Education for Action and Community Emancipation, Tamil Nadu
10. School of Fundamental Research, West Bengal
11. Shramjivi Unnayan, Bihar
12. Society for Himalayan Environmental Rehabilitation and People's Action, Uttar Pradesh
13. Socio-Legal Aid Research and Training Centre, West Bengal
14. Udaipur Environmental Group, Rajasthan
15. Vivekananda Kendra, Tamil Nadu
16. Vivekananda Nidhi, West Bengal

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