

REFERENCES

Anjaneyalu, Y. 2004. Introduction to Environmental Science. BS Publications, Hyderabad, A.P. India.

Anji Reddy, M. Text book of Environmental Science and Technology, BS Publications, Hyderabad

Benny Joseph. 2006. Environmental Science and Engineering, Tata Mc-Graw Hill Publishing Company, New Delhi.

Cunningham, W.P., Cooper, T.H., Gorhani, E and Hepworth, M.T. 2001. Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p.

Down to earth published by Centre For Science And Environment.

Erach Bharucha. 2005. Text book of Environmental Studies for undergraduate courses, University Grants Commission, New Delhi.

Gupta, P.K. 2004. Methods in Environmental analysis –water, soil and air. Published by Agrobios (India), Jodhpur.

Kaul, S.N. and Ashutosh Gautam. 2002. Principles of Environmental Studies. Daya Publishing house, New Delhi.

Manoharachary, C. and P. Jayaramareddy 2009. Principles of environmental studies (ecology, economics, management and law), BS publications, Hyderabad.

Sharma, R.C. and D. Gurbir Sangha 2006. Environmental studies. Kalyani publishers, New Delhi.

Sushmitha Baskar and R.Baskar . 2007. Environmental studies for under graduate courses. Published by Unicon books, Delhi.

Swarajya Lakshmi, G., Prabhu Prasadini, P., Ramesh Thatikunta and VNLV Tayaru. 2010. Environmental Science A Practical Manual, BS publications, Hyderabad

Vidyasagar R and Prabhu Prasadini 2008. Objective Questions and Glossary in Environmental Science, BS publications, Hyderabad.

Web site: <http://en.wikipedia.org>

Multidisciplinary nature of Environmental Studies

The word environment is derived from the French verb ‘environner’ which means to ‘encircle or surround’. Thus our environment can be defined as the physical, chemical and biological world that surround us as well as the complex of social and cultural conditions affecting an individual or community. This broad definition includes the natural world and the technological environment as well as the cultural and social contexts that shape human lives. It includes all factors living and nonliving that affect an individual organism or population at any point in the life cycle; set of circumstances surrounding a particular occurrence and all the things that surrounds us.

Objective of this course is to develop concern for our own environment which will lead us to act at our own level to protect the environment we all live in. There are three reasons for studying the state of the environment. The first, is the need for information that clarifies modern environmental concepts like equitable use of natural

resources, more sustainable life styles *etc.* Second, there is a need to change the way in which we view our own environment, using practical approach based on observation and self learning. Third, there is a need to create a concern for our environment that will trigger pro-environmental action, including simple activities we can do in our daily life to protect it.

Environmental science is essentially the application of scientific methods and principles to the study of environmental issues, so it has probably been around in some forms as long as science itself. Environmental science is often confused with other fields of related interest, especially ecology, environmental studies, environmental education and environmental engineering. Environmental science is not constrained with any one discipline and it is a comprehensive field.

Environmental science is not ecology though that discipline may be included. Ecologists are interested in the interactions between some kind of organisms and its surroundings. Most ecological research and training does not focus on environmental problems except as those problems impact the organism of interest. Environmental scientists may or may not include organisms on their field of view. They mostly focus on the environmental problem which may be purely physical in nature. For *eg.* Acid deposition can be studied as a problem of emissions and characteristic of the atmosphere without necessarily examining its impact on organisms.

There are two types of environments:

1. Natural environment
2. Man made environment

Natural: The environment in its original form without the interference of human beings is known as natural environment. It operates through self regulating mechanism called homeostasis *i.e.*, any change in the natural ecosystem brought about by natural processes is counter balanced by changes in other components of environment.

Man made or Anthropogenic Environment: The environment changed or modified by the interference of human beings is called man made environment. Man is the most evolved creature on this earth. He is modifying the environment according to his requirements without bothering for its consequences. Increased technologies and population explosion are deteriorating the environment more and more.

Scope of environmental studies:

Because, the environment is complex and actually made up of many different environments, including natural, constructed and cultural environments, environmental studies is the inter disciplinary examination of how biology, geology, politics policy studies, law, geology, religion engineering, chemistry and economics combine to inform the consideration of humanity's effects on the natural world. This subject educates the students to appreciate the complexity of environmental issues and citizens and experts in many fields. By studying environmental science, students may develop a breadth of the interdisciplinary and methodological knowledge in the environmental fields that enables them to facilitate the definition and solution of environmental problems.

The scope of environmental studies is that, the current trend of environmental degradation can be reversed if people of educated communities are organized and empowered; experts are involved in sustainable development. Environmental factors greatly influence every organism and their activities. The major areas in which the role of environmental scientists are of vital importance are natural resources, ecosystems, biodiversity and its conservation, environmental pollution, social issues and environment human population and environment.

It is essentially a multidisciplinary approach and its components include Biology, Geology, Chemistry, Physics, Engineering, Sociology, Health Sciences, Anthropology, Economics, Statistics and Philosophy It is essentially a multidisciplinary approach. An Understanding of the working of the environment requires the knowledge from wide ranging fields. The table below shows a list of topics dealt commonly in air pollution and the related traditional fields of knowledge illustrating the interdisciplinary nature of the subject.

Table: Interdisciplinary Nature of Environmental Science Ex:Air Pollution

Environmental issue/topics	Major subject/Topic knowledge required
Nature and reaction of air pollutants	Chemistry and Chemical engineering
Effects of air pollutants on human beings, animals and plants	Zoology and botany and various branches of life science. Physics and Chemistry
Effect of air pollutants on materials	Meteorology, Thermodynamics, Geography
Effect of climate on air pollution	Mathematical modeling, <i>etc.</i>
Air pollution control devices	Physics, chemistry and various branches of Engineering
History of air pollution and air pollution episodes	History
Economic impacts of air pollution	Economics, Demography
Sociological impacts of air pollution	Sociology
Alternative fuels	Various branches of physical sciences
Conservation of resources and pollution control	Various branches of physical and political sciences
Ozone hole and global warming	Almost all fields under the sun has got something to contribute to the understanding and prevention of these phenomenon.

Importance of environmental education:

Environment is not a single subject, it is an integration of several subjects that include both science and social studies. To understand all the different aspects of our environment, we need to understand biology, chemistry, physics, geography, resources management, economics, and population issues. Thus, the scope of environmental studies extremely wide and covers some aspects of nearly every major discipline.

We live in a world where natural resources are limited. Water, air, soil, minerals, oils, the products we get from forests, grasslands, oceans and from agriculture and live stock, are all a part of our life support systems. Without them, life itself would be

impossible. If we use them more and more, the earth's resources must inevitably shrink. The earth cannot be expected to sustain indefinitely due to over utilization of resources, misuse of resources. We waste or pollute large amount of clean water. We discard plastic, solid wastes and liquid wastes from industries which cannot be managed by natural processes. These accumulate in our environment, leading to a variety of diseases and other adverse environmental impacts, now seriously affecting all our lives. Air pollution leads to respiratory diseases, water pollution to gastro – intestinal diseases and many pollutants are known to cause cancer.

This situation will only improve if each of us begins to take action in our daily lives that will help to preserve our environmental resources. We cannot expect Government alone to manage the safeguarding of the environment, nor we can expect other people to prevent environmental damage. We need to do it ourselves. It is a responsibility that each of us must take on as one's own.

Environmental Issues of Global Concern

The main environmental issues today are wide ranging and all-encompassing are deforestation, biodiversity, soil erosion, climate change, pesticide build-up, industrial and municipal pollution. All these problems can be categorized into three main issues:

1. Population explosion
2. Land degradation
3. Environmental pollution: Industrialization, agriculture/fertilizer/pesticide/green house gases, air pollution, acid rain, ozone depletion, green house effect, water pollution and deforestation.

Environmental problems in India can be put into three classes: Poverty, problems arising as negative effects of the very process of development and problems arising from improper implementation of the directives and laws of environmental protection

Values of Nature: This can be discussed under three categories *i.e.* i) Productive value, ii) Aesthetic value or recreational value and iii) Option value

Productive value of nature : Worlds' species contain an incredible and unaccountable number of complex chemicals. These are raw materials used for developing new medicines and industrial products. When we permit the destruction of a forest, wet land or other natural area and do not protest about it, future generations are being denied the use of these valuable resources. Thus the urgent need to protect all living species is a concept that we need to understand and act upon. There is close link between agriculture and the forest, which illustrates its productive value. For crops to be successful, the flowers of fruit trees and vegetables must be pollinated by insects and birds. Their life cycle frequently require intact forests.

Aesthetic/ recreational value of nature : Nature encompasses every aspect of living (biodiversity: flora and fauna) and non-living (sea, desert) part of the earth and it enlivens our existence on earth. This is created by developing national parks and wildlife sanctuaries in relatively undisturbed areas. In an Urban setting, there will be green spaces and gardens – psychological and physical health of city dwellers and provides aesthetic

value and visual appeal. It also gives access to certain amount of peace. Nature tourism or wildlife tourism or eco tourism is a pleasurable experience and also creates a deep respect and love for nature.

The option value of nature :

Nature provides us with various options on how we utilize its goods and services. This is its option value. We can use up goods and services greedily and destroy its integrity and long term values or we can use its resources sustainably and reduce our impact on environment. The option value allows us to use its resources sustainable and preserve its goods and services for the future. “The earth provides enough to satisfy every person's need but not every person's greed” is the vision of Mahatma Gandhiji.

Need for public awareness:

As the earth's natural resources are rapidly dwindling and our environment is being increasingly degraded by human activities, it is evident that some thing needs to be done.

The following measures may help for the environmental awareness.

1. Join a group to study nature, such as WWF-1 or BNHS or another environmental group
2. Begin reading news paper articles and periodicals like Down to Earth, WWF-1 News letter, BNHS, Hornbill, Sanctuary magazine etc which will tell you more about our current environmental issues. There are also several environmental websites.
3. Lobby for conserving resources by taking up the cause of environmental issues during discussions with friends and relatives. Practice and promote issues such as saving paper, saving water, reducing use of plastic, practicing the 3Rs principle of reduce, reuse, recycle and proper waste disposal.
4. Join local movements that support activities like saving trees in your area, go on nature treks, recycle waste, buy environmentally friendly products.
5. Practice and promote good civic sense and hygiene such as enforcing no spitting or tobacco chewing, no throwing garbage on the road, no smoking in public places, no urinating or defecating in public places.
6. Take part in events organized on World Environment Day, Wildlife Week etc.
7. Visit a National Park or Sanctuary or spend time in whatever natural habitat you have near your home.

Institutions in environment

Managing natural resources require efficient institutions at all levels i.e. local, national, regional and global. Institutions, as defined by Young (1999), are systems of rules, decision-making procedures, and programs that give rise to social practices, assign roles to participants in these practices, and guide interactions among the occupants of the relevant roles. Institutions often figure prominently in efforts to solve or manage environmental problems. Several Government and Non- Government Organizations (NGO'S) are working towards environmental protection in our country. They play a role both in causing and in addressing problems arising from human-environment interactions. They

have led to a growing interest in environmental protection and conservation of nature and natural resources. Among the large number of institutions that deal with environmental protection and conservation, a few well-known organizations include government organizations like the BSI and ZSI, and NGOs like the BNHS, WWF-1, etc.

The Bombay Natural History Society (BNHS), Mumbai: It was founded on 15 September 1883, is one of the largest non-governmental organizations in India engaged in conservation and biodiversity research. It supports many research efforts through grants, and publishes a popular magazine called the Hornbill and also an internationally well-known the Journal of the Bombay Natural History Society. Its other publications include Salim Ali's Handbook on Birds, J.C. Daniel Book of Indian reptiles. S.H. Prater's book of Indian mammals and P.V. Bole's book of Indian trees. Many prominent naturalists, including the ornithologists Salim Ali and S. Dillon Ripley have been associated with it. The BNHS has over the years helped the government to frame wildlife-related laws and has taken up battles such as the 'save the silent valley' campaign.

World Wide fund for nature - India (WWF-1), New Delhi: The WWF-1 was initiated in 1969 in Mumbai, after which the headquarters were shifted to Delhi with several State, Divisional and Project offices spread across India. In the early years it focused attention on wildlife education and awareness. It runs several programs, including the nature clubs of India program for school children and works as a think-tank and lobby force for environmental and development issues.

Centre for science and environment (CSE), New Delhi: is a public interest research and advocacy organisation based in New Delhi. CSE researches into, lobbies for and communicates the urgency of development that is both sustainable and equitable. It has published a major document on the State of India's Environment, the first of its kind to be produced as a citizen's Report on the environment. It also publishes a popular magazine, Down to Earth which is a science and environment fortnightly. It is involved in the publication of material in the form of books posters, video films and also conducts workshops and seminars on biodiversity-related issues. The Centre's efforts are built around five broad programmes: Communication for Awareness, Research and Advocacy, Education and Training, Knowledge Portal and Pollution Monitoring.

C.P.R Environmental Education Centre, Madras: the CPR-EEC was set up in 1988 (CPREEC) is a Centre of Excellence of the Ministry of Environment and Forests (MoEF), Government of India, established jointly by the Ministry and the C.P. Ramaswami Aiyar Foundation. It conducts a variety of programs to increase awareness and knowledge of public i.e., school children, local communities, women as main key target groups about the various aspects of environment. Its programs include components on wildlife and biodiversity issues. CPR-EEC also publishes large number of text books for school children and video-on wheels for rural public. The C. P. R. Environmental Education Centre received the Indira Gandhi Paryavaran Puraskar for the year 1996.

The **Centre for Environment Education (CEE)** in India was established in August 1984 as a Centre of Excellence supported by the Ministry of Environment and Forests. The organisation works towards developing programmes and materials to increase awareness about the environment and sustainable development. The head office is located in Ahmedabad. The Centre has 41 offices including regional cells and several field offices, across India.. It has international offices in Australia, Bangladesh and Sri Lanka. CEE's primary objective is to improve public awareness and understanding of the environment with a view to promoting the conservation and sustainable use of nature and natural resources, leading to a better environment and a better quality of life. To this end, It undertakes demonstration projects in education, communication and development that endorse attitudes, strategies and technologies which are environmentally sustainable. CEE is committed to ensuring that due recognition is given to the role of education in the promotion of sustainable development.

Bharati Vidyapeeth University, Institute of Environment Education & Research, Pune was established in 1993. This is part of the Bharati Vidyapeeth deemed University. Its major focus is to spread the message of the need for pro-environmental action in society at large through a dual strategy of formal and non –formal integrated activities. BVIEER is a one of a kind institution that caters to the need of Environment Education at all levels - PhD, M.Sc and Diploma. The distinctive characteristics of BVIEER are its wide mandate of teaching, research and extension. It implements a large outreach program that has covered over 435 schools in which it trains teachers and conduct fortnightly environment education programs. Biodiversity conservation is a major focus of its research initiatives. It develops low-cost interpretation centers for natural and architectural sites that are highly locale-specific as well as a large amount of innovative environment educational material for a variety of target groups. It has developed a teachers handbook linked to school curriculum and a textbook for UGC for the compulsory undergraduate course on environment. Its director has developed a CD-ROM on India's biodiversity.

The Salim Ali Center for Ornithology and Natural History (SACON): - It is an autonomous organization with headquarters at Coimbatore. It is a national centre for information, education and research in ornithology and natural history in India. This institution was Dr. Salim ali's dream, which became a reality only after his demise and was named in honor of Salim Ali, the leading pioneer of ornithology in India. Its mission is *"To help conserve India's biodiversity and its sustainable use through research, education and peoples' participation, with birds at the centre stage"*.

Wild life Institute of India (WII), Dehradun: Is an autonomous institution of MoEF, GOI, established in 1982. It is an internationally acclaimed Institution, which offers training program, academic courses and advisory in wildlife research and management. The Institute is actively engaged in research across the breadth of the country on biodiversity related issues. Its most significant publication has been 'Planning wild life and protected area network for India (Rodgers and Panwar, 1988). It has environment

impact assessment cell. It trains personnel in ecodevelopment, wildlife biology, habitat management and nature interpretation.

Zoological survey of India (ZSI): is a premier organisation in zoological research and studies. The activities of the ZSI are coordinated by the Conservation and Survey Division in the MoEF, GOI. This is the only taxonomic organization in the country involved in the study of all kinds of animals from Protozoa to Mammalia, occurring in all possible habitats from deepest depth of the ocean to the peaks of Himalaya, was established on 1st July, 1916 to promote survey, exploration and research leading to the advancement in our knowledge of the various aspects of the exceptionally rich animal life. It has over the years collected type specimens on the basis of which our animal's life has been studied over the years. Its origins were collections based at the Indian museum at Calcutta, which was established in 1875. The older collections of the Asiatic society of Bengal and of the Indian museum were also transferred to the ZSI. Today, it has over a million specimens. This makes it one of the largest collections in Asia. It currently operated from 16 regional centers.

The madras Crocodile Bank Trust (MCBT): MCBT, the first crocodile conservation breeding in Asia, was founded in 1976 to conserve Indian crocodilians and establish program for the conservation and propagation of other species of endangered reptiles. Head quarters are at Madras. Over years, over 1500 crocodiles and several hundred eggs have been supplied to various state forest departments for restocking programmes in the wild, and for setting up breeding facilities in other state in India and neighboring countries. It is the one which started the first sea turtle surveys and conservation program in India, including a sea turtle hatchery. It is involved in environmental education programs for the villages and schools that include nature camps, training workshop for teachers and youth from fishing villages.

The Andaman and nicobar islands Environmental team (ANET) a division of the MCBT was constituted in 1992. A base was set up by Harry Andrews in south Andaman for herpetological and other ecological studies in these islands. The Crocodile bank is the site of the *irula* Snake catchers' cooperative society, which is an adivasi self-help project and supplies all of India's snake and scorpion venom needed for the production of anti-venom and for medical use. MCBT personal also initiated the Irula Tribal Women's welfare society, which is primarily a society for reforestation of wastelands and income-generation projects for irula women.

Uttarkhand seva nidhi (USKN), Almora: It is a public charitable trust founded in 1967. This organization was appointed as a nodal agency in 1987 by the Department of Education, Ministry of Human Resources Development, Government of India to undertake locale-specific environmental education programmes both in rural schools and villages in the hill districts of Uttar Pradesh, now Uttaranchal. Subsequently, a research and resource centre, the Uttarakhand Environmental Education Centre (UEEC), was set up in 1993, also with support from the Department of Education. As activities continued to increase, a separate organisation, the Uttarakhand Seva Nidhi Paryavaran Shiksha Sansthan (USNPSS), a registered society, was set up in 1999 to handle all the

environmental activities of the Nidhi. As Uttaranchal is a fragile ecological zone where human activities can cause extensive land degradation (deforestation and soil erosion) if not carried out in an environmentally-sound manner. The organization conducts education, training and on the spot problem solving programmes with the aim of helping people to understand their surroundings from a broad ecological point of view and encourage them to organise themselves to deal with environmental problems that affect their daily lives, and to provide training in technical know-how and practical skills. Its main target is sustainable resource use at the village level through training school children. Its environment education program covers about 500 schools.

Kalpavriksh: This NGO, initially Delhi-based, is now working from pune and is active in several other parts of India. Kalpavriksh worked on a variety of fronts: education and awareness; investigation and research; direct action and lobbying, and litigation with regard to environment and development issues. Its activities include talks and audio-visuals in schools and colleges, nature walks and outstation camp, organizing student participation in ongoing campaigns including street demonstrations, pushing for consumer awareness regarding organic food, press statements, handling green alerts, and meeting with city administrators. Kalpavriksh was among those responsible for developing India's National Biodiversity Strategy and action plan in 2003.

The **Botanical Survey of India (BSI)** is an institution set up by the Government of India in 1887 to survey the plant resources of the Indian empire. The Botanical Survey was formally instituted on 13 February 1890 under the direction of Sir George King, who had been superintendent of Royal Botanic Garden, Calcutta since 1871. King became the first ex-officio Director of BSI. Presently, it has nine regional centres. It carries out surveys of plant resources in different regions. It monitors botanical resources by analyzing their occurrence, distribution, ecology, economic utility, conservation, environment impact, etc.

People in environment

There are several internationally known environmental thinkers. Among those who have made landmark contributions include Charles Darwin, Ralph Emerson, Henry Thoreau, John Muir, Aldo Leopold, Rachel Carson and EO Wilson. Each of these thinkers looked at the environment from a completely different perspective.

Charles Darwin: wrote the origin of species, which brought to light the close relationship between habitats and species. It brought about a new way of thinking about man's relationship with other species that was based on evolution.

Ralph Emerson: spoke of the dangers of commerce to our environment way back in the 1840s.

Henry Thoreau: in the 1860s wrote that the wilderness should be preserved after he had lived in the wilderness for a year. Thoreau had many theories and beliefs, which he poured out in his journals and books. Among these was the concept of human ecology: of the relationship between humans and nature. He saw unity and community as important aspects of nature, and he saw all disturbances in these links as caused by

human beings. “Thank God men cannot fly, and lay waste the sky as well as the earth” is his famous quotation.

John Muir: He was a Scottish-born American naturalist, author, and early advocate of preservation of wilderness in the United States. His letters, essays, and books telling of his adventures in nature, especially in the Sierra Nevada mountains of California, have been read by millions. His activism helped to save the Yosemite Valley, Sequoia National Park and other wilderness areas. He is remembered as having saved the great ancient sequoia trees in California’s forests. In the 1890s he formed the ‘Sierra club’, which is major conservation NGO in the USA.

Aldo Leopold: was a forest official in the US in the 1920s. He designed the early policies on wilderness conservation and wildlife management. He was considered the father of wildlife ecology and a true Wisconsin hero. His book, ‘*A Sand County Almanac*’ is acclaimed as the century’s literary landmark in conservation, which guided many to ‘live in harmony with the land and with one another’.

Rachel Carson : was an American marine biologist and conservationist whose writings are credited with advancing the global environmental movement. She was nature writer, and some of the books like ‘*The Sea Around Us*’ and ‘*The Edge of the Sea*’ are to her credit. In the late 1950s, Carson turned her attention to conservation and the environmental problems caused by synthetic pesticides. Then in 1962, she wrote ‘*Silent Spring*’, which was met with fierce denial from chemical companies, spurred a reversal in national pesticide policy—leading to a nationwide ban on DDT and other pesticides—and the grassroots environmental movement the book inspired led to the creation of the Environmental Protection Agency. Carson was posthumously awarded the Presidential Medal of Freedom by Jimmy Carter.

EO Wilson: is an entomologist who envisioned that biological diversity was a key to human survival on Earth. He wrote ‘Diversity of life’ in 1993, which was awarded a prize for the best book published on environmental issues. He emphasised the risks to mankind due to man made disturbances in natural ecosystems that are leading to the rapid extinction of species at the global level.

There are several individuals who have been instrumental in shaping the environmental history of our country. To name a few with their significant contributions goes as follows:

Salim Ali: was an Indian ornithologist and naturalist, Known as the "birdman of India", Salim Ali was among the first Indians to conduct systematic bird surveys across India. He was instrumental in creating the Bharatpur bird sanctuary (Keoladeo National Park) and prevent the destruction of what is now the Silent Valley National Park. He was awarded India's second highest civilian honour, the Padma Vibhushan in 1976. His autobiography, **fall of a sparrow**, should be read by every nature enthusiast. He was our country’s leading conservation scientist and influenced environmental policies in our country for over 50 years.

Smt. Indira Gandhi: as PM played a very significant role in the preservation of India’s wildlife. It was during her period as PM, that the network of protected areas (PAs) grew

from 65 to 298 and the wildlife protection act was formulated. The Indian Board of wildlife was extremely active as she personally chaired all its meetings.

S P Godrej was one of India's greatest supports of wildlife conservation and nature awareness programs. Between 1975 and 1999 SP Godrej received 10 awards for his conservation led to his playing a major advocacy role for wildlife in India.

M. S. Swaminathan: He has founded the MS Swaminathan Research Foundation in Chennai, which does work on the conservation of biological diversity.

Madhav Gadgil is a well-known ecologist in India. His interests range from board ecological issues such as developing community Biodiversity Registers and conserving sacred groves to studies on the behavior of mammals, birds and insects. His research interests include population biology, conservation biology, human ecology and ecological history and he has published over 215 research papers and 6 books and is the editor for the series '*lifescapes of peninsular India*'..

M. C. Mehta: Environmental lawyer. Initiated the Government to implement Environmental education in schools and colleges, struggles for protection of Taj Mahal and cleaning of Ganga water.

Anil Agarwal : a journalist who wrote the first report on the state of India's Environment in 1982. He was the founder of CES, an active NGO that supports various environmental issues.

Medha Patkar: known as one of rural India's champions, has supported the cause of the downtrodden tribal people whose environment is being affected by the dams on the Narmada river.

Sunderlal Bahuguna's chipko movement has become an internationally well-known example of a highly successful conservation action program through the efforts of local people for guarding their forest resources. His fight to prevent the construction of the Tehri Dam in a fragile earthquake-prone setting is a battle that he continues to wage. The Garhwal hills will always remember his dedication to the cause for which he has walked over 20 thousand kilometers.



Medha Patkar



Rajendra Pachauri



sunderlal bahuguna