

INTRODUCTION TO ENVIRONMENTAL SCIENCE

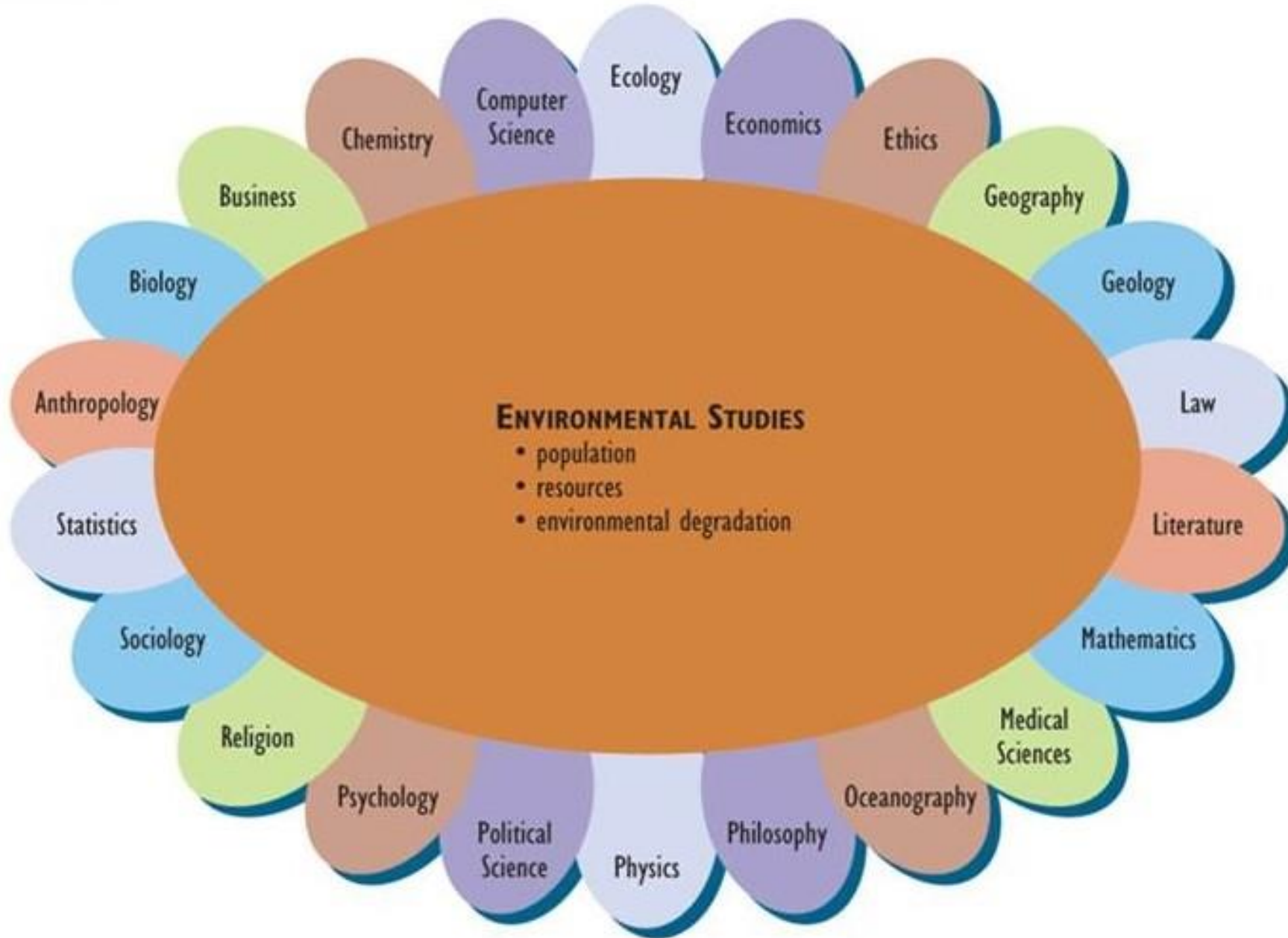
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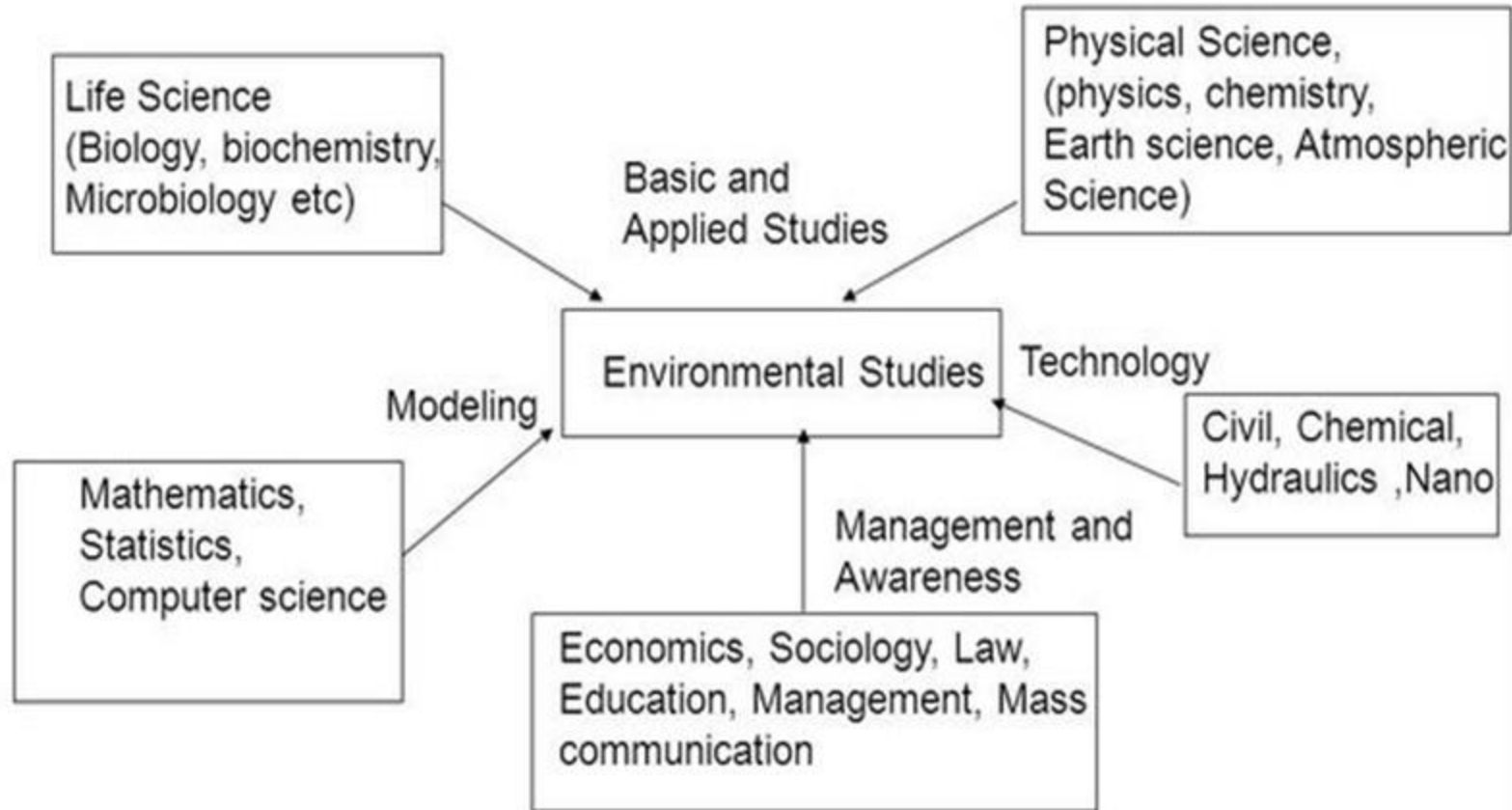
Definition of Environment

- ▶ Environment -French word - 'environ' -surroundings.
- ▶ Hence, everything surrounding us -"ENVIRONMENT".
- ▶ Environmental Protection Act (1986) defined “Environment as the sum total of water, air and land, their interrelationship among themselves and with the human beings, other living beings and property.”
- ▶ It can also be defined as “ external surroundings and conditions which directly or indirectly affects the living organism”
- ▶ Environmental science is a systemic study of our environment and our place in it - mainly the abiotic and biotic components.
- ▶ It is a comprehensive sum of all living and non - living things and their interactions.
- ▶ It is an applied science as its seeks practical answers to making human civilization sustainable on the earth’s finite resources.
- ▶ Its components include biology, geology, chemistry, physics, engineering, sociology, health, anthropology, economics, statistics, computers and philosophy.

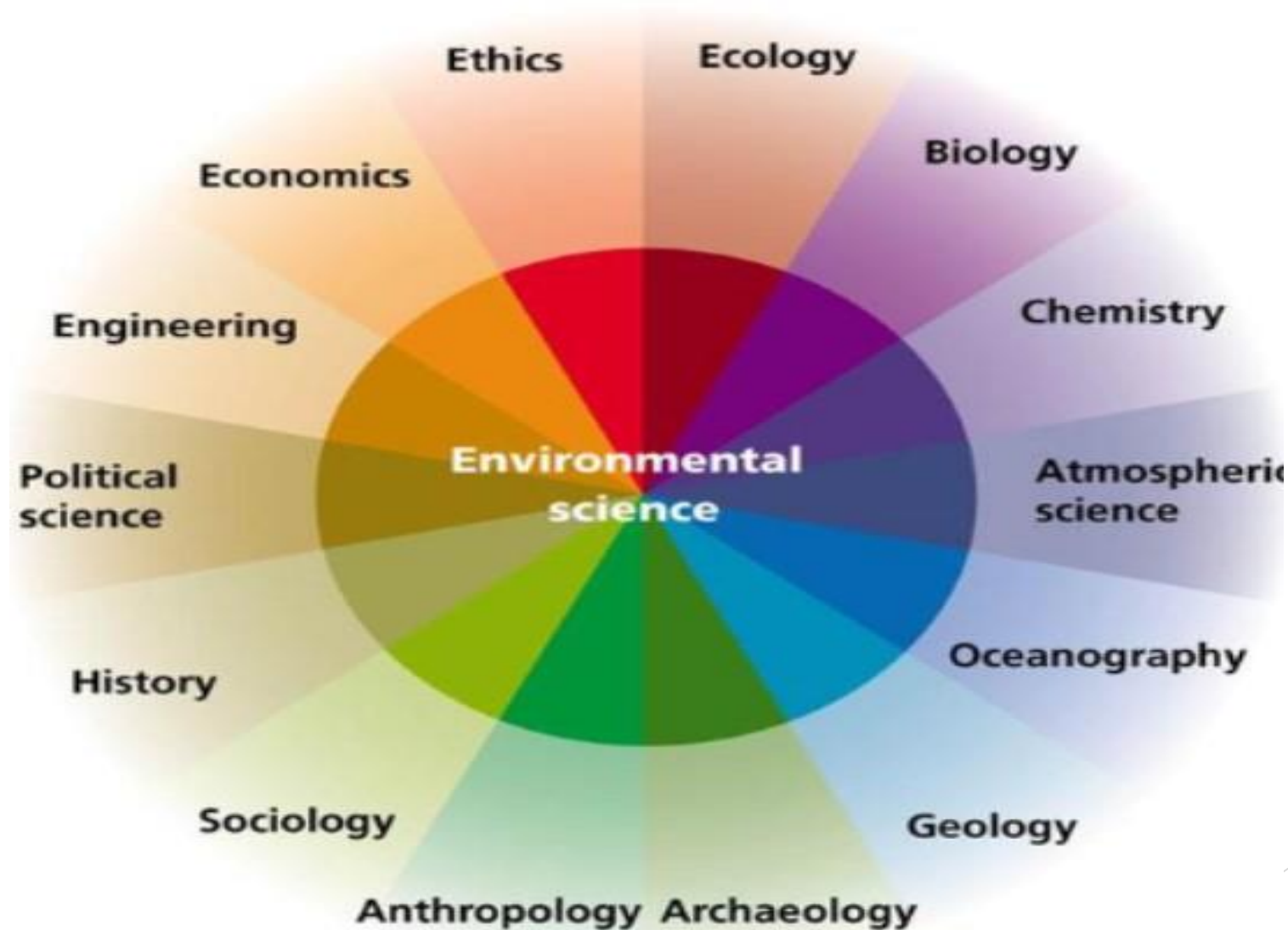
Multidisciplinary nature of Environmental Science



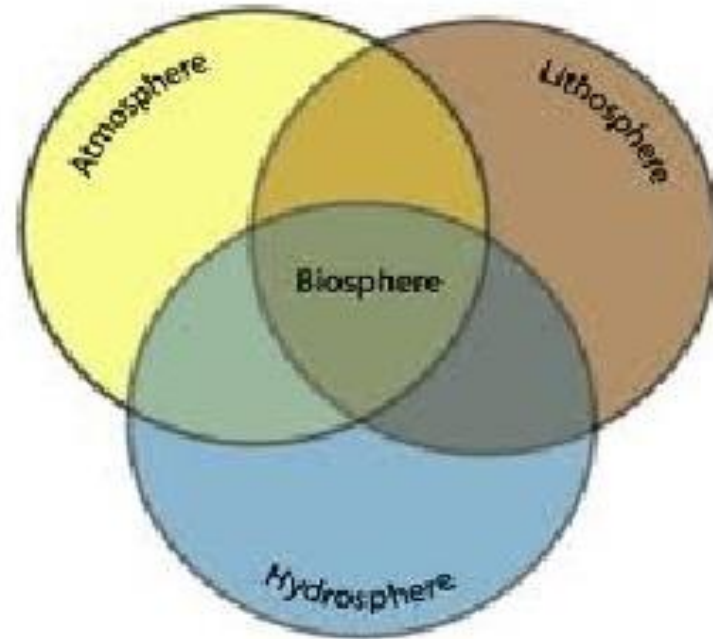
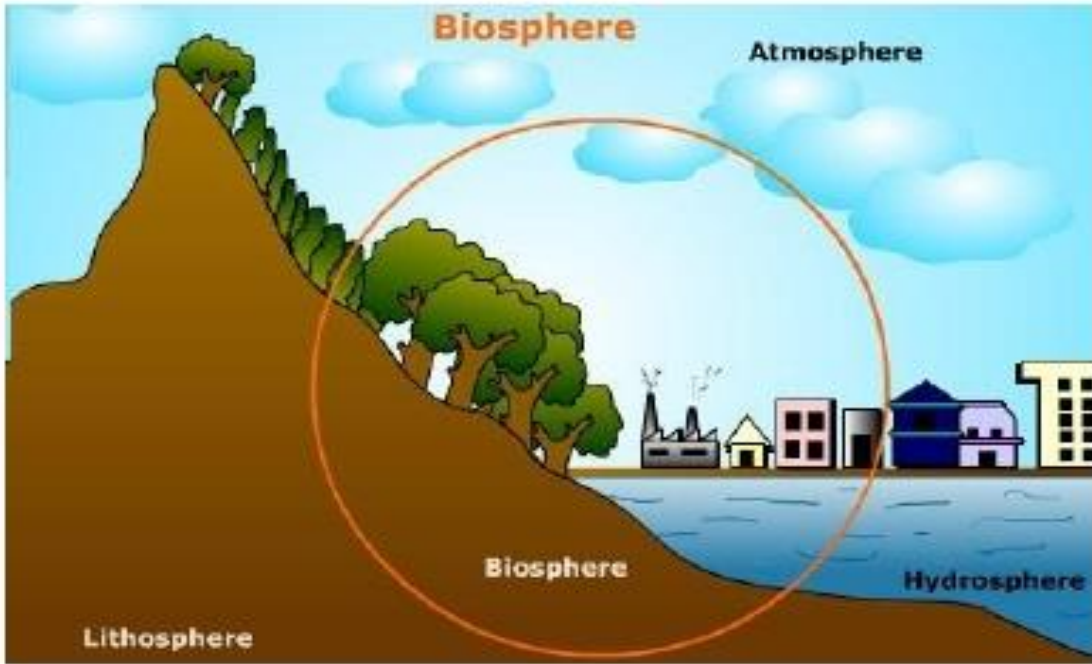
The multidisciplinary nature of environmental science is illustrated in following diagram



Multidisciplinary nature of Environmental Science



SCOPE OF ENVIRONMENT



Atmosphere : Virtual Ocean of Air

Hydrosphere : The surface of Earth filled with any form of Water

Lithosphere : Outer shell of the Earth composed of crust and the rigid outer most mantle

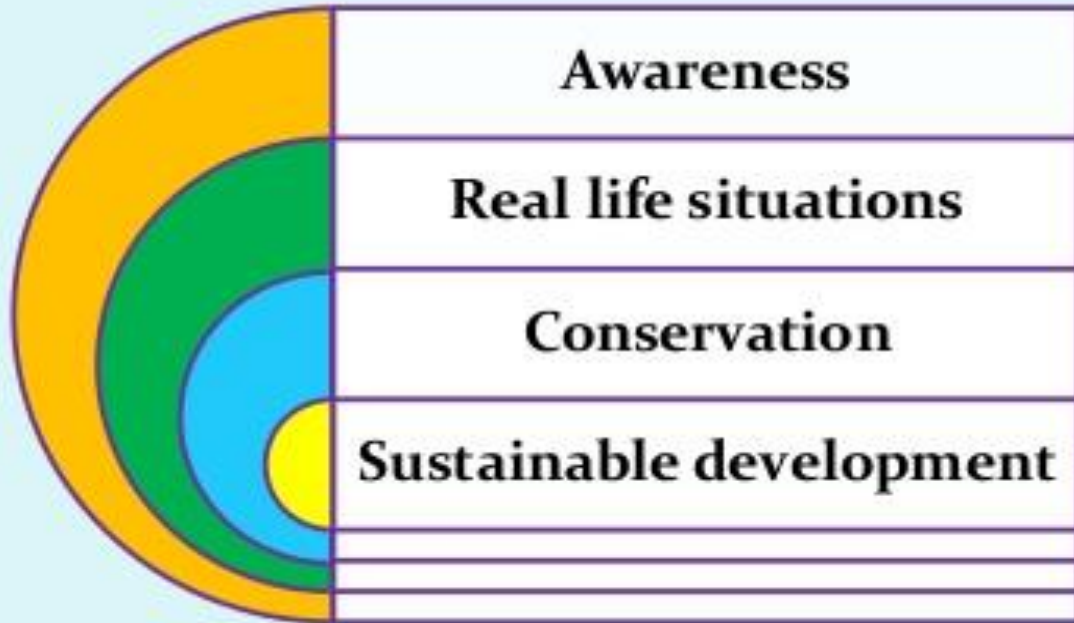
Biosphere : The place on earth where life exists



Conceptual spheres of Environment

- ▶ Atmosphere - The atmosphere implies the protective blanket of gases, surrounding the earth.
- ▶ Hydrosphere - The Hydrosphere comprises all types of water resources oceans, seas, lakes, rivers, streams, reservoirs, polar icecaps, glaciers, and ground water.
- ▶ Lithosphere - Lithosphere is the outer mantle of the solid earth.
- ▶ Biosphere - Biosphere indicates the realm of living organisms and their interactions with environment, viz atmosphere, hydrosphere and lithosphere

SCOPE OF ENVIRONMENTAL EDUCATION



ENVIRONMENTAL EDUCATION

Man, as a part and parcel of the environment, has to recognize the role and importance of environment in order to protect it and to get protection from it, for this, he needs environmental education.



GOALS OF ENVIRONMENTAL EDUCATION

- To improve the quality of environment.
- To create an awareness among the people on environmental problems and conversation.
- To create an atmosphere so that people participate in decision-making and develop the capabilities to evaluate the developmental programmes.



ENVIRONMENTAL AWARENESS IS ESSENTIAL FOR

- Protection of the atmosphere
- Protection of land resources
- Conservation of biological diversity
- Environmentally sound management of biotechnology and hazardous wastes
- Prevention of illegal traffic in toxic products and wastes
- Improvement in living and working conditions of the poor by eradicating poverty and stopping environmental degradation.

ENVIRONMENTAL ORGANISATIONS - NGOs

I. Assam Science Society.

- ▶ It has 75 branches and was set up in 1953 to disseminate science knowledge.
- ▶ They impart environmental education and training through camps for teachers and students and conduct surveys on environment.
- ▶ Publications: Science books and journals.
- ▶ **Contacts:**
General Secretary
Assam Science Society, Latsil
Lamb Road
Guwahati - 781 001
Assam

II. BAIF (Bharatiya Agro Industries Foundation). Development Research Foundation Kamdahnu

- It was set up in 1967 at Urli Kanchan, Pune District to improve the quality of life of the poor through regeneration of degraded resources such as land, livestock, water and vegetation.
- They carry out tree plantation, agro forestry and wasteland development and conduct research on tree species capable of surviving in adverse conditions.
- They do consultancy for afforestation, wasteland and watershed management.
- They encourage the use of non-conventional sources of energy.

Publications: The BAIF journal (quarterly).

<http://www.ngoindia.com/baif/>

Contacts:

President

BAIF Development Research Foundation Kamdhenu

Senapati Bapat Marg

Pune - 411 016

Maharashtra

III. Bombay Natural History Society

- ❖ started its work in September 1883 at Mumbai.
- ❖ It aims to collect data on the specimens on natural history throughout the Indian sub-continent.
- ❖ To disseminate knowledge of flora and fauna by means of lectures, field trips, literature and expeditions and, to study wildlife related problems and recommend management plans to conserve wildlife and its habitat.
- ❖ It conducts field research projects on bird migration and studies on the movement and population structure of Indian avifauna.
- ❖ It also conducts studies of certain endangered species of wildlife and their habitat and through environmental education impart the knowledge and awareness of the need to conserve wildlife.

Publications: Hornbill (4 issues in a year), other journals.

www.bnhs.org/

Contacts:

**Honorary Secretary
Bombay Natural History Society (BNHS)
Hornbill House, Opposite Lion Gate
Shahid Bhagat Singh Marg
Mumbai**

IV. Centre for Environmental Education (CEE)

- ❖ CCE was set up in 1984 to spread awareness of environmental issues and try to find solutions for them.
- ❖ It is based at Ahmedabad and they have offices all over the country.
- ❖ They mainly aim to create environmental awareness in the communities.
- ❖ They conduct widespread environmental education and training programmes through a very vast network.
- ❖ They have also taken up projects related to conservation of biodiversity and eco-development.

Publications and database:

- ❖ They have a vast range of publications - books, posters, educational packages, bibliographies and directories.
- ❖ There is also a large computerised database - the Environment Education bank, which has a collection of more than 800 environment concepts, about 2500 environment related activities and 100s of case studies.

education.vsnl.com/cee/index.html

envfor.nic.in/cee/cee.html

Director

Centre for Environment Education (CEE)

Thaltej Tekra

Ahmedabad - 380 054

Gujarat

V. Centre for Science and Environment

- ❖ (CSE) does research, investigative and educational work in the field of pollution, forest, wildlife, land and water use.
- ❖ The activities are carried out through lectures, field trips, publications, exhibitions on the various issues they take up, meetings and workshops.

Publications:

Down to Earth - a fortnightly environment magazine; Children's magazine The Gobar Times; books; reports; computer database; audio visuals, etc.

www.oneworld.org/cse/

Director

Centre for Science and Environment (CSE)

41, Institutional Area

Tuglakhabad

New Delhi - 110 062

VI. Clean Ahmedabad Abhiyan

It is a local NGO that has been working with the Ahmedabad municipal corporation in the area of solid waste and is instrumental for organizing door to door meetings, awareness campaigns to educate people about the importance of segregating waste into biodegradable and recyclable waste. Once they have convinced the people of this the household begins segregating the waste.

www.un.org/esa/earthsummit/abhiyan.htm

VII.CPR Environmental Education Centre (C.P.Ramaswami Aiyar Foundation)

- ▶ CPR Environmental Education Centre (C.P.Ramaswami Aiyar Foundation)
- ▶ It is based at Chennai and was set up in 1989 to promote environmental awareness.
- ▶ To produce and disseminate basic educational and reference material on environment and to take up environmental projects.
- ▶ It has done a study of the sacred groves of Tamilnadu and soil and water analysis.
- ▶ Gives guidance on environmental laws, environmental impacts and management studies.
- ▶ It works in the field of environmental education. Has promoted smokeless chulhas and other renewable sources of energy.
- ▶ Publications:
- ▶ Books on environment, posters, audio cassettes, web site on environment education.
- ▶ www.crpeec.or

Director

**C.R.P. Environment Eductaion Centre
I A Eldams Road, Alwarpet
Chenna - 600 018**

VIII. Dasholi Gram Swarajya Mandal

- ▶ Dasholi Gram Swarajya Mandal was set up at Gopeshwar, Chamoli District, U.P. in 1964.
- ▶ Its aims are to encourage forest conservation and the use of forest products for self employment; to cut down soil erosion by encouraging volunteers to build embankments in the catchment areas and to plant trees.
- ▶ The world famous Chipko Movement was spearheaded by this organization.
- ▶ It gives a great deal of importance to forest conservation in the Himalayas.
- ▶ It has promoted environmental awareness in these areas and carried out major eco-regeneration programmes.

Secretary

Dasholi Gram Swarajya Mandal (DGSM)

Gopeshwar

Chamoli District - 246 401

Uttar Pradesh

IX. Darpana Academy of Performing Arts

- ▶ Darpana Academy of Performing Arts was set up in Ahmedabad in 1984 to spread education in dance, drama and puppetry.
- ▶ Through their various activities they spread the message of a better environment.
- ▶ They have launched a programme 'Jagruti', a school project for environmental empowerment.
- ▶ Publication and aids: Video and audio tapes
- ▶ www.darpana.com

Smt. Mrinalini V. Sarabhai

Founder Director

Darpana Academy of Performing Arts

Usmanpura, Ashram Road

Ahmedabad - 380 013

Gujarat

X. Development Alternatives

- ▶ Development Alternatives based at Delhi, work in all parts of the country.
- ▶ It was established in 1983 to design options and promote sustainable development through programmes of economic efficiency, equity and social justice, resource conservation and self-reliance.
- ▶ Its activities cover the entire nation.
- ▶ They are working in the field of pollution monitoring and control; waste recycling management; wasteland development; appropriate technology.
- ▶ Publications and aids: Monthly newsletter, audio cassettes (songs on environment and development), video cassettes (Green Show)
- ▶ www.ecouncil.ac.cr/devalt/dagrp.htm

President
Development Alternatives
B-33/2, Institutional Area, Tara Crescent
New Mehrauli
New Delhi - 110 016

XI. Friendicoes

- ▶ Friendicoes, Society for the Eradication of Cruelty to Animals was set up at Delhi in 1979 to rescue.
- ▶ It feed and medicate all injured, abused and ownerless animals; to promote adoption programmes for animals.
- ▶ Humane education programmes for schools and slum areas.
- ▶ Sterilisation of stray dogs.
- ▶ Running mobile clinics in slum areas.

- ▶ 27/273 under Defence Colony Flyover,
- ▶ New Delhi - 110 024

XII. Friends of the Doon

- ❖ It was founded in 1983 as a pressure group against illegal mining, tree felling and as a platform for voicing people's grievances.
- ❖ They aim at preserving and rehabilitating the environment of the Doon Valley, its forests, rivers and mountains.
- ❖ One of their main activities include the support they give to the case against limestone mining. Some of their main activities are in the area of environmental education and afforestation.
- ❖ They also encourage the use of non conventional sources of energy and are executing town beautification schemes.

XIII. Gandhi Peace Foundation - Environment Cell

- ▶ Gandhi Peace Foundation - Environment Cell began functioning at Delhi from June 1979. It was set up mainly to promote the environmental activities of rural development agencies.
- ▶ To disseminate environmental information through the publication of up to date reports on environmental issues.
- ▶ To organize workshops and seminars for environmental experts, policy makers, individuals and organisations working for environmental issues.
- ▶ Their activities include researching the role of women in community forestry and rural development; conducting studies in soil erosion, water logging, drainage and seepage around select dams; planting fast growing trees.
- ▶ Publications:
- ▶ They bring out publications and educational aids on the Chipko Movement, environmental education, dams etc; audio visuals on Mitti Bachao, the Chipko Movement, deforestation, the Yamuna and the Narmada rivers and traditional rain harvesting techniques.
- ▶ www.undp.org.in/gup/gpf.htm

Gandhi Peace Foundation

Environment Cell

221/223, Deen Dayal Upadhyay Marg

New Delhi - 110 002

XIV. Indian Association for Environmental Management (IAEM)

- ▶ Indian Association for Environmental Management (IAEM) was set up at Nagpur in 1963
- ▶ To educate people on the environment.
- ▶ To encourage the conservation of the environment and to spread environmental knowledge.
- ▶ They conduct seminars, essay competitions and exhibitions related to water and its pollution, they have carried out water pollution control activities and worked in the field of environmental management.
- ▶ **Publication: Journal**

Indian Association for Environmental Management (IAEM)

C/o NEERI, Nehru Marg

Nagpur - 440 020

Maharashtra

XV.Narmada Bachao Andalon

- ▶ Narmada Bachao Andalon was set up in 1986 under the leadership of Medha Patkar.
- ▶ It aims mainly to educate those directly affected by large development projects, such as tribals, on the social and environmental impact of such projects.
- ▶ To protest against the construction of dams in the Narmada Valley in general; struggling towards a right to information and new environmentally sustainable water policy.
- ▶ To help the tribals get a substantial share of the government's development schemes/services and to enable them to undertake development activities themselves.
- ▶ They mainly educate, mobilize and organize residents of the Narmada Valley on human rights and justice, alternative development policies, environmental issues related to big dams in general and the Narmada project in particular.
- ▶ They undertake surveys of the affected villages, protest against land and forest issues and government interference in this regard. They are fighting against displacement and disregard of the rights of the people.
- ▶ **Publication:** They come out with a bi-monthly publication the Narmada Samachar.

Smt. Medha Patkar
Narmada Dharangrast Samiti
(Narmada Bachao Andolan)
C/o P.D. Dalal, Post Box 52
Dhule - 424 001, Maharashtra

XVI.Kalpavriksh

- ▶ Kalpavriksh was started in 1971 as a movement opposed to the destruction of Delhi's green area.
- ▶ It is a citizens action group set up to inculcate understanding and concern on environmental issues, especially among the youth. It also aims to conduct research in environmental problems, to campaign on environmental issues and to evolve a holistic environmental perspective.
- ▶ It imparts environmental education in schools and colleges by forming a network of nature clubs, conducting bird watching expeditions and nature trails and has developed workbooks for the school level.
- ▶ It has conducted research on environmental subjects such as an impact assessment study on the Narmada Valley Project, pesticide use in India, air pollution in Delhi, mining activities in Dehra Dun district, protecting the Delhi ridge, are some of the works they have highlighted.
- ▶ **Publications:**
 - 1. The Little Green Book.**
 - 2. Narmada - a campaign newsletter.**
 - 3. What is that bird (An illustrated guide), etc.**

C-17/A, Munirka
New Delhi - 110 067

XVII.Madras Naturalists Society (MNS)

- ▶ Madras Naturalists Society (MNS) commenced its activities in Chennai in 1976 but was registered in 1979.
- ▶ Its main aims are to study environmental problems in and around Chennai.
- ▶ To impart environmental education through seminars and discussions.
- ▶ To imbibe a love for nature through camps and slide shows;
- ▶ To organise visits to sanctuaries in Tamilnadu;
- ▶ To disseminate information on nonpolluting and renewable sources of energy. It imparts environmental education to students and teachers through planting of trees in schools and slide shows.
- ▶ It conducts surveys and symposia on water pollution and forest destruction and is cooperating with other agencies in studying the city's pollution problems.
- ▶ It has conducted ecological survey and done enumeration of species found on the seacoast along Chennai city. It has been encouraging the use of nonpolluting and renewable sources of energy.
- ▶ **Publications:**
- ▶ Quarterly journal the Blackbuck, report on a pollution survey of Chennai beaches; checklist of birds in and around Chennai; monthly bulletin on the society's activities.

8, Janaki Avenue
Abhirampuram
Chennai - 600 018

XVIII. INTACH Indian National Trust for Art and Cultural Heritage

- ▶ INTACH Indian National Trust for Art and Cultural Heritage, New Delhi was set up in 1984 to preserve Indian cultural and natural heritage.
- ▶ They undertake water-harvesting projects in urban areas.
- ▶ They have done studies on the restoration of the ecological balance of freshwater lakes and ponds and marine habitats and prepared maps.
- ▶ They also publish books on environmental issues.
- ▶ **Publications:**
- ▶ Books on environmental issues - 1. The Greening of India. 2. Land and Water. 3. Tropical Desertification, etc.

- ▶ **Director General**
- ▶ **Indian National trust for Art and Cultural Heritage (INTACH)**
- ▶ **Bhartiyam Near Humayun Tomb**
- ▶ **Nizamuddin**
- ▶ **New Delhi - 110 013**

XIX. Nilgiri Wildlife and Environment Association

- ▶ Nilgiri Wildlife and Environment Association is based at Ottacamand to conserve the natural resources of the Nilgiri and preserve wildlife and the habitat.
- ▶ Impart environmental education and conduct tree planting, bird watching, and soil conservation programmes.
- ▶ They have assisted in the imposition of hunting restrictions and the protection of the elephant.
- ▶ Publications: Quarterly in English 'Tahr' and booklets.

**Honorary Secretary
Nilgiri Wildlife and Environment Association
C/o District Forest Office
Nilgiris North Division
Mount Stewart Hill
Ottacamand, Nilgiri District - 643 001
Tamil Nadu**

XX. Ramakrishna Mission Lokashiksha Parishad

- ▶ Ramakrishna Mission Lokashiksha Parishad was set up in 1952 and its mission is to uplift the rural people with a view to making them self-reliant.
- ▶ It works in 11 districts covering about 4000 villages.
- ▶ It has been carrying out programmes for the development of the wasteland areas restoration of bundhs in the Sundarbans riverine areas to protect the land from saline water.
- ▶ It has conducted studies on the status, expectation and contribution of non timber forest products for the subsistence of forest fringe dwellers.
- ▶ It has been promoting the use of smokeless chulhas, sanitary toilet linked biogas plants, solar energy; extensive tree plantation; preservation of the Sunderban biosphere; promoting ecofriendly farming.
- ▶ It is also working in the area of environmental education.

Director

Ramakrishna Mission Lokashiksha Parishad

Belur Math

Belur

West Bengal

XXI. The Energy and Resources Institute (TERI),

- ▶ The Energy and Resources Institute (TERI), established in 1974.
- ▶ TERI is a wholly independent not-for-profit research institute.
- ▶ Its mission is to develop and promote technologies, policies and institutions for efficient and sustainable use of natural resources.
- ▶ It has been imparting environmental education through projects, workshops, audio visual aids and quiz competitions.
- ▶ It deals with policy related work in the energy sector, research on environmental subjects development on renewable energy technologies and promotion of energy efficiency in the industry and transport.
- ▶ TERI also has a major programme in biotechnology, the applications of which are oriented towards increased biomass production, conversion of waste into useful products and mitigating the harmful environmental impacts of several economic activities.
- ▶ **Publications:** They have several books on energy, climate change, renewable energy, regulation, environment and sustainable development and forestry & biodiversity. They also publish research journals and digest journals, newsletters. There are also several databases and audio-visuals on various environment issues.
- ▶ Some of them are as follows - 1. TERI Energy Data Directory & Yearbook. 2. Looking back to think ahead. 3. Mahatma Gandhi: an apostle of applied human ecology. 4. How global is global and how warm is warming?, etc.

Director-General

TERI, Darbari Seth Block, IHC Complex, Lodhi Road, New Delhi - 110 003.

XXII. World Wide Fund for Nature

- ▶ **World Wide Fund for Nature was set up in India in 1969. The coordinating body the WWF International, is located in Gland in Switzerland.**
- ▶ **Its main aim is the promotion of conservation of nature and environmental protection as the basis for sustainable and equitable development.**
- ▶ **It has five broad programme components:**
 - ▶ **a) Promoting India's ecological security; restoring the ecological balance.**
 - ▶ **b) Conserving biological diversity.**
 - ▶ **c) Ensuring sustainable use of the natural resource base.**
 - ▶ **d) Minimising pollution and wasteful consumption.**
 - ▶ **e) Promoting sustainable lifestyles.**
- ▶ **This organisation has been working in the field of biodiversity conservation including field projects, consultancy and research and support to other organizations.**
- ❖ **Forest management; environmental education and awareness.**
- ❖ **They also work in the area of ecodevelopment, promoting and supporting local conservation networks (Community Biodiversity Conservation Movement).**

XXII. World Wide Fund for Nature

- ▶ They are doing wildlife trade monitoring, and assisting CITES and related National Legislations; research in Indian and international laws; legal intervention on environmental issues; legal education on environment including Asia's only diploma course on environmental law.
- ▶ **Publications:**
- ▶ They have innumerable books, cassettes and data on various issues which can be got from their outlets in the cities.
- ▶ Some of them are as follows - 1. WWF Indian Network Newsletter (Quarterly). 2. Nature News. 3. The Web of Life - a resource pack for children. 4. The Law Digest, etc.

Secretary General
WWF-India
Delhi Office
Pirojsha Godrej National Conservation Centre
172-B, Max Mueller Marg
Lodhi Estate
New Delhi - 110 003

XXIII. Srishti

- ▶ Srishti was set up in Delhi in 1988 to promote conservation and enrichment of the environment;
- ▶ To carry out research on all aspects of sustainable living;
- ▶ To foster concern for the environment among the people, making its preservation a shared responsibility.
- ▶ It has been working for the conservation of the Delhi Ridge by involving community participation; they have kept a bird count in the wetlands of Delhi.
- ▶ It has coordinated the Asian midwinter waterfowl census for northern India and has carried out tree plantation, conservation of biodiversity and waste management.
- ▶ It played a very active role in the drafting and finalisation of the Biodegradable Waste (Management and Handling) Rules, 1998. It worked closely with the CPCB and the MOEF in the finalisation of the rules. Now that the rules have been issued, it is propagating the cause of better bio-medical waste practices

1001, Antariksh Bhavan
22, Kasturba Gandhi Marg
New Delhi - 110 001

XXIV. Theatre in Education Company

- ▶ Theatre in Education Company is affiliated to the National School of Drama New Delhi and was set up in 1989.
- ▶ Its aim is to use theatre as a medium for education. It conducts various environment related plays for children with a view to impart environment education through theatre.

National School of Drama
Bhagwan Dass Road
New Delhi - 110 001

XXV. Tiger link

- ❖ Tiger link began functioning in 1995 at Delhi under Valmik Thapar and its parent order is the Ranthambore Foundation.
- ❖ It has been established to provide links between different sections working in the interest of the tiger and its habitat, and to effectively take actions to overcome local obstacles.
- ❖ They are working mainly in the field of conservation and the preservation of the environment.
- ▶ **Publication: Tigerlink News: a bi-annual newsletter.**

19, Kautilya Marg,
New Delhi - 110 021