

ENVC 24 : Energy and Environment

Part-4 : Energy Management - Planning - Policy



Energy Management

- ➔ Principles of Environmental Management.
- ➔ Policy and Legal Aspects of EM.
- ➔ Environmental Impact Assessment (EIA).
- ➔ EIA Documentation and Processes.
- ➔ Environmental Auditing.
- ➔ Life Cycle Assessment (LCA).
- ➔ Environmental Management System Standards.
- ➔ Environmental Management Techniques.
- ➔ Environmental Design.
- ➔ Environmental Economics.

- **Unplanned developmental activities as well as ever-increasing population have caused enormous strain on the environment resources & hence societies across the world face several problems of environmental degradation. However, it is imperative to maintain a balance between the capacity of the environment & the sustainable utilization of resources. This is only possible by understanding the environment in its totality and the principles of its scientific management.**

- **Unplanned developmental activities as well as ever-increasing population have caused enormous strain on the environment resources & hence societies across the world face several problems of environmental degradation. However, it is imperative to maintain a balance between the capacity of the environment & the sustainable utilization of resources. This is only possible by understanding the environment in its totality and the principles of its scientific management.**
- **The critical task of EM is to balance the capacity of the environment against developmental requirements effectively. This task can be achieved through application of sustainable development/utilization mechanisms which are based on scientific principles of environment. EM thus involves managing the environment while ensuring the prudent use of natural resources without reducing their productivity & quality.**

- **Unplanned developmental activities as well as ever-increasing population have caused enormous strain on the environment resources & hence societies across the world face several problems of environmental degradation. However, it is imperative to maintain a balance between the capacity of the environment & the sustainable utilization of resources. This is only possible by understanding the environment in its totality and the principles of its scientific management.**
- **The critical task of EM is to balance the capacity of the environment against developmental requirements effectively. This task can be achieved through application of sustainable development/utilization mechanisms which are based on scientific principles of environment. EM thus involves managing the environment while ensuring the prudent use of natural resources without reducing their productivity & quality.**
- **EM represents the management of various activities, including environmental action plan, conservation of resources, environmental status evaluation, environmental legislation, administration & focuses more on implementation, monitoring, auditing, practice & real-world issues than on theoretical planning.**

Definition & Scope of EM

- (i) The process of allocating natural and artificial resources so as to make optimum use of the environment in satisfying basic human needs at the minimum & more if possible, on a sustainable basis (Jolly, 1978). (ii) A generic description of a process undertaken by systems-oriented professionals with a natural science, social science or less commonly, an engineering, law, or design background, tackling problems of the human altered environment on an interdisciplinary basis from a quantitative &/or futuristic viewpoint (Dorney, 1989).

Definition & Scope of EM

- (i) The process of allocating natural and artificial resources so as to make optimum use of the environment in satisfying basic human needs at the minimum & more if possible, on a sustainable basis (Jolly, 1978). (ii) A generic description of a process undertaken by systems-oriented professionals with a natural science, social science or less commonly, an engineering, law, or design background, tackling problems of the human altered environment on an interdisciplinary basis from a quantitative &/or futuristic viewpoint (Dorney, 1989).
- Characteristics of EM ➤ (i) It is often used as a **generic term**, (ii) It supports **sustainable development**, (iii) It deals with a world affected by **human beings**. (iv) It demands a multidisciplinary or **interdisciplinary** approach, (v) It has to **integrate** different development viewpoints, (vi) It seeks to integrate **science, social science, policy-making & planning**, (vii) It recognizes the **desirability of meeting**, & if possible exceeding **basic human needs**, (viii) The time-scale involved extends beyond the short-term & concerns range from **local to global**, (ix) It should show **opportunities** as well as address threats & problems.



Goals of EM

Goals of EM is an approach for environmental supervision integrating ecology, policy-making, planning & social development include (i) **preventing & resolving environmental problems**, (ii) **establishing limits**, (iii) **establishing & nurturing institutions that effectively support environmental research, monitoring & management**, (iv) **identifying threats and opportunities**, (v) **sustaining & if possible, improving existing resources**, (vi) **improving the quality of life**, (vii) **identifying environmentally sound technologies or policies**.

Goals of EM

Goals of EM is an approach for environmental supervision integrating ecology, policy-making, planning & social development include (i) **preventing & resolving environmental problems**, (ii) **establishing limits**, (iii) **establishing & nurturing institutions that effectively support environmental research, monitoring & management**, (iv) **identifying threats and opportunities**, (v) **sustaining & if possible, improving existing resources**, (vi) **improving the quality of life**, (vii) **identifying environmentally sound technologies or policies**.

- **Need for EM** ➡ World population is **7.6 billion** & the growth of human population is **83 million** annually (**1.1%**). In the last 10000 years, the population of the world has increased over a 1000-fold & much of that change has occurred in the last century (**from 1 billion in 1800 to 7.6 billion in 2017**). This phenomenal growth in population has put pressure on the means of subsistence, throwing it out of balance with the environment. The interaction between population & environment is very complex & dynamic.



Need for EM

- We are yet to understand this complex inter-relationship at its micro-level & its spatio-temporal ramifications over a region or the globe in its entirety. What is certain is that **as the population grows, the level of consumption of natural resources & production of wastes proportionately increases**. We know that the environment is constantly changing due to human activities, leading to problems as soil erosion, floods, droughts, climate changes, desertification & general degradation of the environment. In a finite world there are limits, & there indeed are complex environment-population linkages and feedback. **Sustainable development is therefore necessary to sustain the quality of life without exceeding environmental limits.**

Need for EM

- We are yet to understand this complex inter-relationship at its micro-level & its spatio-temporal ramifications over a region or the globe in its entirety. What is certain is that **as the population grows, the level of consumption of natural resources & production of wastes proportionately increases**. We know that the environment is constantly changing due to human activities, leading to problems as soil erosion, floods, droughts, climate changes, desertification & general degradation of the environment. In a finite world there are limits, & there indeed are complex environment-population linkages and feedback. Sustainable development is therefore necessary to sustain the quality of life without exceeding environmental limits.
- **Need for Sustainable Development** ➡ The great surge in development & technology over the last two centuries has contributed to the increase in quantities of chemicals sufficient to damage natural systems on a grand scale over the world. **Acid rain**, **desertification**, **destruction of species**, **greenhouse modification** & **ozone layer depletion** are well known examples of these impacts.

Need for Sustainable Development

- Protection of the natural ecosystem has long-term benefits for humans in utilitarian terms through maintenance of gene pools, bio-diversity and other potentially useful factors & in spiritual terms, through living in harmony with nature. **The ecosystem's intrinsic values and rights, regardless of human needs, therefore, should be taken into account apart from considering it a resource to be exploited for human settlement, food & energy production.**



Need for Sustainable Development

- Protection of the natural ecosystem has long-term benefits for humans in utilitarian terms through maintenance of gene pools, bio-diversity and other potentially useful factors & in spiritual terms, through living in harmony with nature. **The ecosystem's intrinsic values and rights, regardless of human needs, therefore, should be taken into account apart from considering it a resource to be exploited for human settlement, food & energy production.**
- Sustainable development is imperative. It is defined as a pattern of social & structured economic transformation (i.e., development), which optimizes the economic & societal benefits available in the present, without jeopardizing the likely potential for similar benefits in the future. A primary goal of sustainable development is to achieve a reasonable & equitably distributed level of economic well being that can perpetuate continuously for many human generations. **This implies using natural resources in a renewable manner that does not eliminate or degrade them, or diminish their usefulness for future generations.** It further implies using non-renewable mineral resources in a manner that does not unnecessarily preclude easy access to them by future generations.



Need for Sustainable Development

- Definition ➡ (i) Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (ii) Sustainable development ensures that the maximum rate of resource consumption & waste discharge for a selected development portfolio would be sustained indefinitely, in a defined planning region, without progressively impairing its bio-productivity conservation & ecological integrity.



Need for Sustainable Development

- Definition ➡ (i) Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (ii) Sustainable development ensures that the maximum rate of resource consumption & waste discharge for a selected development portfolio would be sustained indefinitely, in a defined planning region, without progressively impairing its bio-productivity conservation & ecological integrity. Environment therefore, contrary to general belief, accelerates rather than hinders economic development. Therefore, the development plans have to ensure: (a) Sustainable and equitable use of resources for meeting the needs of the present & future generations without causing damage to environment, (b) To prevent further damage to our life-support systems, (c) To conserve and nurture the biological diversity, gene pool & other resources for long-term food security.



Need for Sustainable Development

- **Definition** ➡ (i) Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (ii) Sustainable development ensures that the maximum rate of resource consumption & waste discharge for a selected development portfolio would be sustained indefinitely, in a defined planning region, without progressively impairing its bio-productivity conservation & ecological integrity. Environment therefore, contrary to general belief, accelerates rather than hinders economic development. Therefore, the development plans have to ensure: (a) Sustainable and equitable use of resources for meeting the needs of the present & future generations without causing damage to environment, (b) To prevent further damage to our life-support systems, (c) To conserve and nurture the biological diversity, gene pool & other resources for long-term food security. (iii) The primary objective of the Sustainable Development is to reduce the absolute poverty of the world's poor through providing lasting and secure livelihoods that minimize resource depletion, environmental degradation, cultural disruption & social instability.

Approach of EM to achieve Sustainability

- **Ad hoc approach** ➡ This means an approach developed in reaction to a specific situation
- **Problem-solving approach** ➡ This refers to an approach that follows a series of logical steps to identify problems, needs and solutions.
- **Systems approach** ➡ This approach focuses on ecosystem (e.g., mountain; high latitude, savannah; desert; island; lake, etc.), agro-ecosystem, etc.
- **Regional approach** ➡ This is based on ecological zones or biogeophysical units such as watershed, river basin, coastal zone, islands, etc.
- **Specialist discipline approach** ➡ This refers to the approach often adopted by professionals like air quality management, water quality management, land management, environmental health, urban management, conservation area management, etc.
- **Voluntary sector approach** ➡ This represents the approach NGOs encourage &/or support.

Evolution of EM techniques

- One of the outcomes of the 3-decades of policy development since 1970 has been the evolution of the techniques for the analysis and management of environmental effects. The tools considered are (i) Environment assessment (EA), (ii) Economic assessment, usually through cost-benefit analysis (CBA), (iii) Environmental Impact Statement (EIS), (iv) Environment audits, (v) Waste minimisation programs & EM systems. (vi) Life cycle assessments (LCA), (vii) Environmental design (ED).

Evolution of EM techniques

- One of the outcomes of the 3-decades of policy development since 1970 has been the evolution of the techniques for the analysis and management of environmental effects. The tools considered are (i) Environment assessment (EA), (ii) Economic assessment, usually through cost-benefit analysis (CBA), (iii) Environmental Impact Statement (EIS), (iv) Environment audits, (v) Waste minimisation programs & EM systems. (vi) Life cycle assessments (LCA), (vii) Environmental design (ED).
- **Participants in EM** ➡ Following two groups involved in environment & development: (i) People or governments who are uninformed of the implications of development, or who are unable to voice their views adequately & affect change, (ii) Consultants, scientists, economists, bankers & those bent on riches or blinkered by concern for sovereignty, religion or national security.

Participants in EM

- In any given EM situation, there are likely to be a number of different perspectives & hence various possible responses. An environmental manager has to grasp the sum total of the perspectives & try to avoid conflicts between participants & minimize damage to the environment. The participants of EM can be categorized as **existing users, groups seeking change, groups with little control, the public, facilitators & controllers.**

Participants in EM

- In any given EM situation, there are likely to be a number of different perspectives & hence various possible responses. An environmental manager has to grasp the sum total of the perspectives & try to avoid conflicts between participants & minimize damage to the environment. The participants of EM can be categorized as **existing users, groups seeking change, groups with little control, the public, facilitators & controllers**.
- ➔ **Existing Users** ➡ This category refers to those who currently use land or other resources. Those using the environment or resources usually evolve *rights* & develop *management skills*. However, problems arise where unwritten traditional strategies & rights break down or taken illegally typically by incoming migrants & settlers, urban elites or powerful commercial organizations. **Worldwide, the expropriation of common resources from traditional users has become a problem.**

Participants of EM

There has been a growing practice of seeking to consult & involve local people (i.e., native groups) in EM to understand & make wider use of native knowledge. EM can learn a lot from the study of local people's livelihood strategies. Since 1975-1985 UN Decade for Women, there has been an interest in studying the role of women in EM. According to the different perspectives adopted, these studies take different shapes as:

Participants of EM

There has been a growing practice of seeking to consult & involve local people (i.e., native groups) in EM & to understand & make wider use of native knowledge. EM can learn a lot from the study of local people's livelihood strategies. Since 1975-1985 UN Decade for Women, there has been an interest in studying the role of women in EM. According to the different perspectives adopted, these studies take different shapes as:

Women, environment & development ➡ This focuses on women as having a special relationship with the environment as its users & managers.

Gender and development ➡ This seeks gender as a key dimension of social difference affecting people's experiences, concerns & capabilities.

Women in development ➡ This focuses on reasons for women's exclusion or marginalization from decision-making & receipt of the benefits of development.

Participants of EM

→ **Groups seeking change** ➡ This category consists of governments (with conflicting demands from various ministries or policy-makers), commerce (e.g. national, local, MNC's etc.), individuals seeking personal gain or seeking to change the prevailing situation, international agencies, NGOs, media, academics etc. It is probably the exception to the rule for special-interest groups not to control policy-making & development, although a few do so with the aim of improving environmental care. The environmental manager should be vigilant for such control & seek to reduce it, if it acts against environmental quality. When EM involves more than one country, which is often the case, negotiation skills are at least as important as access to technology, knowledge & management strategies.

Participants of EM

- **Groups seeking change** ➡ This category consists of governments (with conflicting demands from various ministries or policy-makers), commerce (e.g. national, local, MNC's etc.), individuals seeking personal gain or seeking to change the prevailing situation, international agencies, NGOs, media, academics etc. It is probably the exception to the rule for special-interest groups not to control policy-making & development, although a few do so with the aim of improving environmental care. The environmental manager should be vigilant for such control & seek to reduce it, if it acts against environmental quality. When EM involves more than one country, which is often the case, negotiation skills are at least as important as access to technology, knowledge & management strategies.
- **Groups with little control** ➡ This category consists of the poor with no option but to over-exploit what is available without investing in improvement – refugees, migrants, relocates, eco-refugees (i.e., those forced to move or marginalized so that they change the environment to survive), workers in industry/mining, etc. who face health and safety challenges while carrying out changes.

Many identify poverty, alleviation & environmental care as two challenges for those in charge of development. These two issues are closely related, although linkages are unclear & complex.

- It is often claimed that the **poor degrade their environment in an effort to survive**. Getting people out of poverty may be important for protecting the environment, but environmental managers must consider each local case to be sure of causes. **For example, the causes of environmental degradation in urban areas may lie with policies affecting agriculturalists hundreds of kms away, causing them to migrate & increase city population.** There are also situations where there is likely to be poverty related environment stress: **cities where population growth is outstripping employment & infrastructure**; marginal often vulnerable land where people have relocated, areas where traditional livelihood strategies are degenerating.

Participants of EM

→ **The Public** ➡ People, who are affected as bystanders, may wish to develop, conserve or change practices (if aware of what is happening) & those out of global concern form part of this category. **The public usually consists of more than one group of people who probably have different, perhaps conflicting, views & goals with powerful groups dominating the situation.** Environmental managers must establish the needs of the weak & ensure that they are not ignored, yet work with the influential. Sustainable development strategies need to be designed to fit local conditions & to be coordinated to ensure that one locality does not conflict with another. EM should act as mediator & catalyst to develop collaborative approaches.

Participants of EM

- ➔ **The Public** ➡ People, who are affected as bystanders, may wish to develop, conserve or change practices (if aware of what is happening) & those out of global concern form part of this category. **The public usually consists of more than one group of people who probably have different, perhaps conflicting, views and goals with powerful groups dominating the situation.** Environmental managers must establish the needs of the weak & ensure that they are not ignored, yet work with the influential. Sustainable development strategies need to be designed to fit local conditions & to be coordinated to ensure that one locality does not conflict with another. EM should act as mediator & catalyst to develop collaborative approaches.
- **Advantages of public involvement in EM are:** (i) The public may be able to provide advice on management considering local conditions, (ii) Often planning & management should be more accountable & careful, (iii) Fears & opposition to management may be reduced if people are informed, (iv) The communication gap between the experts & locals can be reduced.

Participants of EM

→ **Facilitators** This category consists of funding agencies, consultants, planners, workers including migrants affected by health and safety issues, etc. Funding bodies can support **environmentally desirable developments** or withhold money **until proposals are modified to meet required standards**. Starting with the World Bank in the early **1970s**, most funding bodies have developed **EM units, guidelines & manuals**. There is also a huge diversity of bodies conducting research aimed at improving EM: universities, private research companies, independent international research institutes & UN/UN-related agencies. Most research is applied in response to perceived needs, but some is anticipatory & warns about possible threats & potentially useful strategies.

Participants of EM

→ **Controllers** ➡ This category consists of Government & International Agencies, traditional rulers & religions, planners, law, consumer protection bodies & NGOs (including various green/environmental bodies), trade organizations, media, concerned individuals, academics, global opinion, environmental managers etc.

Participants of EM

- **Controllers** ➡ This category consists of Government & International Agencies, traditional rulers & religions, planners, law, consumer protection bodies & NGOs (including various green/environmental bodies), trade organizations, media, concerned individuals, academics, global opinion, environmental managers etc.
- The skills of environmental managers & ecologists are vital to determine the best strategies for the survival of fauna & flora, to organize sustainable land & resource use. NGO's have become important watchdogs of corporate, Government & special - interest group activities. They have a multifaceted role: **lobbying at international meetings & at national government level**; **media campaigning to increase public awareness & empowerment**; **fund-raising for conservation & EM, environmental education**; **researching environmentally sound strategies & approaches**; acting as **ginger groups to identify environmental problems & fight for their control** etc.

Environment & Ethics

- *Environmental ethics is the discipline in philosophy that studies the moral relationship of human beings & also the value & moral status of the environment & its non-human contents.*

Environment & Ethics

- *Environmental ethics is the discipline in philosophy that studies the moral relationship of human beings & also the value & moral status of the environment & its non-human contents.*
- It's concerned with issue of responsible personal conduct w.r.t. natural landscapes, resources, species & non-human organisms. It is cluster of beliefs, values & norms regarding how humans should interact on environment with environment. Human effects the today have consequences for the future & so discussions of environmental ethics also involve the rights of future generations. The arguments for & against various principles in environmental ethics are made more complex because of conflicting values. The resolution of the resulting conflict requires that we recognize differing values & have a basic scientific knowledge about the environment as well as the ability to clearly formulate a logical argument.

Environmental Philosophy

- It is that wing of philosophy that expresses anxiety with natural environment & livelihood of humans. Main areas of interest for philosophers include defining environment & its value, environmentalism & deep ecology, endangered species & restoration of nature. Its major components are environmental ethics, theology, environmental aesthetics and ecofeminism. Aldo Leopold formulated ecological restoration focusing on Land ethic, defined a new link between nature & people with a stage for modern conservation movement. For embracing this ethic, ecologically literate citizens are required, who can also solve global environmental challenges.
“ This Land ethic simply enlarges the boundaries of the community to include soils, waters, plants & animals or collectively – the land. ”



Environmental Philosophy

- It is that wing of philosophy that expresses anxiety with natural environment & livelihood of humans. Main areas of interest for philosophers include defining environment & its value, environmentalism & deep ecology, endangered species & restoration of nature. Its major components are environmental ethics, theology, environmental aesthetics and ecofeminism. Aldo Leopold formulated ecological restoration focusing on Land ethic, defined a new link between nature & people with a stage for modern conservation movement. For embracing this ethic, ecologically literate citizens are required, who can also solve global environmental challenges.
“ This Land ethic simply enlarges the boundaries of the community to include soils, waters, plants & animals or collectively – the land. ”
- **Environmental Concerns in India** ➡ We can categorize environmental concerns in India as those arising from negative effects of the very process of development, conditions of poverty & under development. The major problems which encompass the area of EM are:



Environmental Concerns in India

- Burgeoning population & its impact on life support systems, which negate the positive impacts of the developmental programs.

Environmental Concerns in India

- Burgeoning population & its impact on life support systems, which negate the positive impacts of the developmental programs.
- Rapid growth in the population of domesticated animals over the past few decades accompanied by a loss of area under grassland & pastures. Around **3.5%** of the geographical area is under grasslands, while the domesticated animal population numbers nearly **500 million** (1991).

Environmental Concerns in India

- Burgeoning population & its impact on life support systems, which negate the positive impacts of the developmental programs.
- Rapid growth in the population of domesticated animals over the past few decades accompanied by a loss of area under grassland & pastures. Around **3.5%** of the geographical area is under grasslands, while the domesticated animal population numbers nearly **500 million** (1991).
- Out of a total area of about **329 million hectares**, **175 million hectares** of land require special treatment to restore them for productive and profitable use. Land degradation is caused by water & wind erosion (**159 million ha**), salinity & alkalinity(**8 million ha**), river action & other factors (**7 million ha**).

Environmental Concerns in India

- Burgeoning population & its impact on life support systems, which negate the positive impacts of the developmental programs.
- Rapid growth in the population of domesticated animals over the past few decades accompanied by a loss of area under grassland & pastures. Around **3.5%** of the geographical area is under grasslands, while the domesticated animal population numbers nearly **500 million** (1991).
- Out of a total area of about **329 million hectares**, **175 million hectares** of land require special treatment to restore them for productive and profitable use. Land degradation is caused by water & wind erosion (**159 million ha**), salinity & alkalinity(**8 million ha**), river action & other factors (**7 million ha**).
- The forest wealth is dwindling due to overgrazing & over-exploitation both for commercial & household needs, encroachments, unsustainable practices including certain practices of shifting cultivation & developmental activities such as roads, buildings, irrigation & power projects.

Environmental Concerns in India

- The recorded forest cover in the country is about **75 million hectare**, which is **19.5%** of the total geographical area against the national goal of **33%** in the plains & **66%** for hilly regions. Even within this area, a meager **11%** constitutes forests with **40%** or more of *crown cover*. The annual rate of loss of the forest cover is **47,500 hectares**.

Environmental Concerns in India

- The recorded forest cover in the country is about **75 million hectare**, which is **19.5%** of the total geographical area against the national goal of **33%** in the plains & **66%** for hilly regions. Even within this area, a meager **11%** constitutes forests with **40%** or more of *crown cover*. The annual rate of loss of the forest cover is **47,500 hectares**.
- The loss of habitat is leading to the extinction of plant, animal & microbial species. Over **1500** plant & animal species are in the endangered category.

Environmental Concerns in India

- The recorded forest cover in the country is about **75 million hectare**, which is **19.5%** of the total geographical area against the national goal of **33%** in the plains & **66%** for hilly regions. Even within this area, a meager **11%** constitutes forests with **40%** or more of *crown cover*. The annual rate of loss of the forest cover is **47,500 hectares**.
- The loss of habitat is leading to the extinction of plant, animal & microbial species. Over **1500** plant & animal species are in the endangered category.
- The wetlands of India, which are rich in aquatic & bird life providing food & shelter as also the breeding & spawning ground for the marine & fresh water fishes, are facing problems of pollution & over-exploitation.

Environmental Concerns in India

- The recorded forest cover in the country is about **75 million hectare**, which is **19.5%** of the total geographical area against the national goal of **33%** in the plains & **66%** for hilly regions. Even within this area, a meager **11%** constitutes forests with **40%** or more of *crown cover*. The annual rate of loss of the forest cover is **47,500 hectares**.
- The loss of habitat is leading to the extinction of plant, animal & microbial species. Over **1500** plant & animal species are in the endangered category.
- The wetlands of India, which are rich in aquatic & bird life providing food & shelter as also the breeding & spawning ground for the marine & fresh water fishes, are facing problems of pollution & over-exploitation.
- The major rivers of the country are facing problems of pollution & siltation. The coastline is under stress & coastal areas have been construction, severely waste damaged disposal due near to the indiscriminate water-line & aquaculture. Coastal vegetation including mangroves & sea grasses is facing extinction. The mountain ecosystems are under threat of serious degradation.

Environmental Concerns in India

- India is witnessing a rising requirement for forest based goods due to which, there is extensive deforestation leading to severe loss of natural resources & in turn erosion of valuable topsoil is threatening the livelihood & security of millions of hill people & also encroachment into *forest protected areas*. (As a result of requirement of 70 million m^3 of round wood/year in India by the end of the decade & its transportation, there is fear that this could result in loss of high conservation value forests & biodiversity elsewhere).

Environmental Concerns in India

- India is witnessing a rising requirement for forest based goods due to which, there is extensive deforestation leading to severe loss of natural resources & in turn erosion of valuable topsoil is threatening the livelihood & security of millions of hill people & also encroachment into *forest protected areas*. (As a result of requirement of 70 million m^3 of round wood/year in India by the end of the decade & its transportation, there is fear that this could result in loss of high conservation value forests & biodiversity elsewhere).
- Increasing demand for water for different sectors such as agriculture, domestic, energy generation, industry that resulted in depletion of water source. The quality of groundwater is being affected due to chemical pollution and due to the ingress of seawater in coastal areas.

Environmental Concerns in India

- Absence of an integrated land & water use policy for the country has resulted in a heavy toll of basic natural assets. Coral reef ecosystems are adversely affected by indiscriminate exploitation of corals for production of lime, recreational use & for ornamental trade. Island ecosystems are subjected to pressures of various forms, including migration of people from the main land.

Environmental Concerns in India

- Absence of an integrated land & water use policy for the country has resulted in a heavy toll of basic natural assets. Coral reef ecosystems are adversely affected by indiscriminate exploitation of corals for production of lime, recreational use & for ornamental trade. Island ecosystems are subjected to pressures of various forms, including migration of people from the main land.
- Pollution arising from toxic wastes & non-biodegradable consumer articles is on the rise. A large number of industries & other development projects are sited close to heavily populated urban centers, leading to over congestion & over pollution, as also the diversion of population & natural resources from the rural areas.

Environmental Concerns in India

- Absence of an integrated land & water use policy for the country has resulted in a heavy toll of basic natural assets. Coral reef ecosystems are adversely affected by indiscriminate exploitation of corals for production of lime, recreational use & for ornamental trade. Island ecosystems are subjected to pressures of various forms, including migration of people from the main land.
- Pollution arising from toxic wastes & non-biodegradable consumer articles is on the rise. A large number of industries & other development projects are sited close to heavily populated urban centers, leading to over congestion & over pollution, as also the diversion of population & natural resources from the rural areas.
- Mechanism to naturally arrive at a reliable estimate of total greenhouse gas emissions in the country, among various sources such as agriculture, animals, energy production & consumption, forestry & land use change, waste management etc., is inadequate. More such reliable data is essential for negotiating international law, treaties, protocols & conventions on environment-related problems, where developing countries are unduly pressurized.

Environmental Policies

Environmental policies may be either enacted as laws by governing bodies or created & enforced by government agencies. They may originate from local, national or foreign governments & address an array of issues including air or water quality, fossil fuel extraction, energy conservation, habitat protection or restoration, pesticide use, storage/disposal of hazardous materials, recycling & trafficking in endangered species. An environmental policy being interdisciplinary in nature draws together technology, economics, natural & social sciences. In order to develop sustainable policies, therefore, it is necessary to have sound knowledge of the actual & potential environmental impacts of certain activities & some knowledge of the technical characteristics, economic costs, social acceptability & possible side effects of alternative policy options.

Environmental Policies

Environmental policies may be either enacted as laws by governing bodies or created & enforced by government agencies. They may originate from local, national or foreign governments & address an array of issues including air or water quality, fossil fuel extraction, energy conservation, habitat protection or restoration, pesticide use, storage/disposal of hazardous materials, recycling & trafficking in endangered species. An environmental policy being interdisciplinary in nature draws together technology, economics, natural & social sciences. In order to develop sustainable policies, therefore, it is necessary to have sound knowledge of the actual & potential environmental impacts of certain activities & some knowledge of the technical characteristics, economic costs, social acceptability & possible side effects of alternative policy options.

- The quality of the environment has both direct & indirect effect on the standard of living. This does not mean that environmental degradation is simply a by-product of economic activities, it is also the consequence of the priorities set by States in their economic policies. These policies generally aim at stimulating production & as a consequence, tend to ignore their implications for the environment.

Environmental Policies

Past experience shows that economic policies may actually have more impact on the quality of the environment, than those policies explicitly designed to protect the environment.

Economics ➡ One sign of a sustainable economy is when the costs of environment & health caused by economic growth have been added to consumer prices & when economic policy instruments support sustainable development. Environmental policies should supplement economic instruments. Environmental policies involve certain measures aimed at achieving a sound environment. They are usually developed in the context of public policy, based on economic theory, which focuses more on the level of costs and benefits associated with the implementation of environmental policies than on the quality of the environment. When governments propose & subsequently implement strict standards, sectors that pollute the environment will have to take measures, and this cannot be achieved without incurring extra costs. Polluting industries are often keen to highlight the likely costs they have to incur due to the proposed environmental measures.

Environmental Policies

The immediate benefits resulting from environmental policies are extremely difficult to assess. As a consequence, the costs of environmental measures are often paid more attention than the benefits resulting from the implementation of the policy.

Environmental Policies

The immediate benefits resulting from environmental policies are extremely difficult to assess. As a consequence, the costs of environmental measures are often paid more attention than the benefits resulting from the implementation of the policy.

- The definition of the property rights of natural resources plays a vital role in the distributional effects of environmental policies. The implementation of strict standards & regulations will effect a change in the definition of property rights. For example, industries polluting the rivers will be confronted with regulations that prevent them from, or reduce their opportunities for, using the rivers. However, throughout the process of formulating the regulations, polluting industries will try to influence & stifle the policies.

Environmental Policies

The immediate benefits resulting from environmental policies are extremely difficult to assess. As a consequence, the costs of environmental measures are often paid more attention than the benefits resulting from the implementation of the policy.

- The definition of the property rights of natural resources plays a vital role in the distributional effects of environmental policies. The implementation of strict standards & regulations will effect a change in the definition of property rights. For example, industries polluting the rivers will be confronted with regulations that prevent them from, or reduce their opportunities for, using the rivers. However, throughout the process of formulating the regulations, polluting industries will try to influence & stifle the policies.
- Sectoral economic policies that influence the environmental policies directly or indirectly ➡ Agricultural sector: Virtually the entire food cycle attracts huge direct or indirect subsidies at a cost to taxpayers & consumers. These subsidies send farmers far more powerful signals than do the small grants, usually provided for soil & water conservation.

Environmental Policies

They encourage farmers to occupy marginal land and to clear forests & woodlands, make excessive use of pesticides, fertilizers & use underground and surface waters in irrigation indiscriminately. **Forestry sector:** The pressures on forests throughout the world vary greatly in both developed & developing countries, which are reinforced by government policies. The logging & forestry industry attracts a variety of direct & indirect subsidies. The perverse incentives that encourage the over harvesting of temperate as well as tropical forests also mark world-trade in forest products.

Environmental Policies

They encourage farmers to occupy marginal land and to clear forests & woodlands, make excessive use of pesticides, fertilizers & use underground and surface waters in irrigation indiscriminately. **Forestry sector:** The pressures on forests throughout the world vary greatly in both developed & developing countries, which are reinforced by government policies. The logging & forestry industry attracts a variety of direct & indirect subsidies. The perverse incentives that encourage the over harvesting of temperate as well as tropical forests also mark world-trade in forest products.

Transport sector: This sector, especially motor vehicles, also benefits from economic policies that are ecologically perverse. Fuel taxes in many jurisdictions still fail to distinguish between the environmental effects of different types of fuel (e.g., petrol or diesel, leaded or unleaded). The tax & tariff structure, direct & indirect subsidies, encourage heavier & more energy-intensive vehicles & road freight, as opposed to rail transport in many countries. In addition, in some countries, private vehicle expenses can be deducted from taxable income.

Environmental Policies

Energy sector: The major obstacle to energy efficiency is the existing framework of incentives for energy exploration, development & consumption. These incentives underwrite coal, oil and gas, ignore the costs of air, land & water pollution & seem to favour inefficiency and waste. While industrialized countries have been spending billions to distort the market & consumer prices in ways that actively promote acid rain & global warming, they have been spending only a few million on measures to promote energy efficiency. As long as pollution problems are mainly national, there is a need for a strong national authority. However, environmental problems are becoming increasingly international or global. This complicates the environmental policies considerably. On the one hand, international co-operation in the fighting of environmental problems is absolutely necessary. On the other hand, different countries have different economic interests. Furthermore, polluting sectors are not evenly distributed among countries. Economic based environment policies have been designed to facilitate economic growth & allow business while ensuring the sustainability of the environment & achieve economic efficiency.

Environmental Policies

Industries ➡ Industries are a measure of a country's economic growth. Consequently, countries have a tendency to protect their polluting industries, in particular when they are relatively important economically. However, the growing interest in EM has fuelled certain industries to adopt policies that are economically feasible & which helps curb environmental degradation. Various factors drive the development of a managed approach to environmental performance. These include the following:



Environmental Policies

Industries ➔ Industries are a measure of a country's economic growth. Consequently, countries have a tendency to protect their polluting industries, in particular when they are relatively important economically. However, the growing interest in EM has fuelled certain industries to adopt policies that are economically feasible & which helps curb environmental degradation. Various factors drive the development of a managed approach to environmental performance. These include the following:

- The need to meet increasingly stricter environmental regulations.
- Stakeholder pressure (e.g., pressure from shareholders, insurers and investors).
- Supply-chain pressure from customers.
- Historically poor relations with regulatory bodies and local communities.

Many industries have established **EM systems** (EMS) to tackle activities, which either pose a serious threat to ecosystems in the event of accidents or involve significant expenditure because of the costs associated with raw material use and/or waste disposal.



Environmental Policies

An EMS is “*the part of an overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes & resources for developing, implementing, achieving reviewing and maintaining the environmental policy*”. EMS aims to help organizations achieve sound environmental performance by identifying key activities which impact, already or potentially, on the environment & by putting in place management controls to ensure that organization continues to meet its legal & policy requirements to deal with these impacts.



Environmental Policies

An EMS is “*the part of an overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes & resources for developing, implementing, achieving reviewing and maintaining the environmental policy*”. EMS aims to help organizations achieve sound environmental performance by identifying key activities which impact, already or potentially, on the environment & by putting in place management controls to ensure that organization continues to meet its legal & policy requirements to deal with these impacts.

Traditionally, most of the work on EMS has been done by those industrial sectors with the greatest potential to affect the environment, e.g., the chemical, waste management & oil refining sectors. In addition to this basic need to control pollution, some companies have identified EMS as an effective way of improving productivity through waste & resource minimization initiatives & a mechanism for increasing sales as customers turn on to environmentally safer products. Implementing effective EMS can be a useful deregulatory tool for business.



Environmental Policies

For example, by reducing the use of certain hazardous substances, some organizations in India have achieved major improvements in their air emissions & as a result, they came out of the strict controls imposed on them by the Environmental Protection Act (EPA) 1990. In addition, they have gained a better working environment for their employees & eliminated a difficult raw material storage hazard.

- Close on the heel of industrial policy is the agricultural policy that can be adopted to prevent the deleterious effect of agricultural activities on the environment.



Environmental Policies

For example, by reducing the use of certain hazardous substances, some organizations in India have achieved major improvements in their air emissions & as a result, they came out of the strict controls imposed on them by the Environmental Protection Act (EPA) 1990. In addition, they have gained a better working environment for their employees & eliminated a difficult raw material storage hazard.

- Close on the heel of industrial policy is the agricultural policy that can be adopted to prevent the deleterious effect of agricultural activities on the environment.

Agriculture → Agriculture has a major impact on the environment, on land, water & biodiversity. Over the last 10 - 15 years, the environmental performance of agriculture has been mixed. For example, nitrogen and pesticide loading in water remain relatively high & risks of soil erosion & water resource depletion persist in many regions & countries. Recently however there have been improvements in wildlife habitats, landscapes & sinks for greenhouse gases provided by agriculture, but the most significant progress has occurred where environmental pressures have been greatest. Main environmental impacts of agriculture may be characterized through the beneficial or harmful contribution of agricultural activities to:



Environmental Policies

- soil quality (e.g., erosion, nutrient supply, moisture balance, salinity, etc.).
- land quality (e.g., ecological management of agricultural land).
- water quality (e.g., nutrient, pesticide and sediment run-off & leaching, salinity).
- water quantity (e.g., irrigation consumption, use efficiency, water retention capacity, flood prevention, etc.).
- air quality (e.g., emissions of dust, odours, ammonia & greenhouse gas, absorption of carbon dioxide, etc.).
- bio-diversity (e.g., farm and indigenous animal and plant diversity).
- wildlife and semi-natural habitats (e.g., diversity of animal & plant habitats associated with farming).
- rural landscape (e.g., environmental features of areas shaped by farming, including those associated with historic buildings & landmarks etc.).

Environmental Policies

- Agricultural policies in India provide substantial farm support, often linked to commodity production affecting resource use, farming practices & environmental performance. Reconciling food production & environmental goals however is a challenge. But, reconciling them implies that the rights & responsibilities of farmers regarding farm practices need to be clearly defined & applied – thus the situations under which they are entitled to remuneration or obliged to pay PPP (polluter-pays-principle). Defining who pays and who is paid for the desired level of environmental performance has important implications for the distribution of income and wealth.

Environmental Policies

- Agricultural policies in India provide substantial farm support, often linked to commodity production affecting resource use, farming practices & environmental performance. Reconciling food production & environmental goals however is a challenge. But, reconciling them implies that the rights & responsibilities of farmers regarding farm practices need to be clearly defined & applied – thus the situations under which they are entitled to remuneration or obliged to pay PPP (polluter-pays-principle). Defining who pays and who is paid for the desired level of environmental performance has important implications for the distribution of income and wealth.
- Role of agro-environmental policies** ➡ When private & public mechanisms designed to facilitate the improvement & diffusion of appropriate farming practices & market forces are not enough to ensure the supply to meet the demand of environmental services, specific agriculture-environmental measures at the farm level may be needed.

Environmental Policies

- Such measures may be necessary to reduce the environmental harm, or enhance the environmental benefits of farming activities. When designing & implementing such policy measures, a number of general policy principles should be taken into account in the choice of the type of policy incentive or disincentive – payment or tax.

Environmental Policies

- Such measures may be necessary to reduce the environmental harm, or enhance the environmental benefits of farming activities. When designing & implementing such policy measures, a number of general policy principles should be taken into account in the choice of the type of policy incentive or disincentive – payment or tax.
- The PPP applies to reducing environmental harm for which farmers, as any other polluter, should be accountable. However, the PPP guiding principles recognize the possibility of different property rights and reference levels among countries, with the possibility of offering transitional financial incentives to encourage farmers to adopt appropriate production practices for improving their environmental performance through reducing environmental harm. It includes the case of transitional financial assistance provided to stimulate the development of new pollution control technologies & abatement equipment to achieve a better environmental performance through improved production practices.

Environmental Policies

- **General policy principle** ➡ When markets do not exist to allocate costs & benefits of agriculture-environmental impacts & outputs, policy action may be needed to account for environmental targets & the costs to ensure of not respecting the provision of environmental benefits. When designing & implementing policy measures, the environmental problem needs to be clearly defined & the following principles for policy design need to be kept in mind:
 - The necessary condition for a welfare gain from implementing an agriculture-environmental policy measure is that the resulting environmental benefits **exceed the costs associated with the policy**. These costs include those due to a reduction in outputs, associated with more environmentally friendly technologies & practices, transaction (administrative) costs of policy implementation & enforcement.
 - When farmers & other economic agents provide a specific environmental service, the level of benefit should be clearly specified & efforts made to ensure that the **most efficient operator is the provider**.

Environmental Policies

- When a specific environmental outcome is jointly the result of agricultural output, a wide range of policy options & approaches may achieve its provision by an individual farmer that either provides positive incentives (through, for example, a payment) or negative incentives (e.g., a tax). If incentives were set correctly, it would be in the individual farmer's interest to achieve the outcome and receive the incentive payment, or achieve the outcome and avoid paying the tax. The effectiveness of either a tax or a payment depends not only on whether it correctly confronts the farmer with the opportunity costs of not respecting environmental requirements, but also on the degree to which the associated obligations can be enforced and tailored to local environmental circumstances and demands. The more the payment or tax is tailored to specific circumstances, the larger the need for monitoring, the lower the probability of individual control & the higher the transaction costs.

➡ *An environmental policy that conserves the ecosystem is a wise attempt to manage the environment.*

Environmental Policy Instruments (EPI)

- EPI refers to official actions taken to curb & remove the negative environmental impacts caused by society. The methods, laws, administration & decisions relating to these actions are collectively termed environmental policy. An EPI is divided into economic, information & legal measures. Indicators of sustainable development frequently measure the status of development or pressures directed at it. Indicators of EPI reflect society's reaction & the steps taken to make sustainable development possible.
- Three different categories are used to classify EPI :
 - (i) Regulatory instruments that mandate specific behaviour.
 - (ii) Market-based instruments that act as incentives for particular activities.
 - (iii) Information-based instruments that seek to change behaviour through the provision of information.

Governments may establish formal cleaner production strategies or programmes to act as a framework for the coordinated implementation of subsequent & more specific policy instruments. Cleaner production strategies may take one/combination of the following shapes:

Environmental Policy Instruments (EPI)

- EPI refers to official actions taken to curb & remove the negative environmental impacts caused by society. The methods, laws, administration & decisions relating to these actions are collectively termed environmental policy. An EPI is divided into economic, information & legal measures. Indicators of sustainable development frequently measure the status of development or pressures directed at it. Indicators of EPI reflect society's reaction & the steps taken to make sustainable development possible.
- Three different categories are used to classify EPI :
 - (i) Regulatory instruments that mandate specific behaviour.
 - (ii) Market-based instruments that act as incentives for particular activities.
 - (iii) Information-based instruments that seek to change behaviour through the provision of information.

Governments may establish formal cleaner production strategies or programmes to act as a framework for the coordinated implementation of subsequent & more specific policy instruments. Cleaner production strategies may take one/combination of the following shapes:

Environmental Policy Instruments (EPI)

- **Product Bans:** The imposition of a ban or defined phase-out schedule for a particular product or substance is an authoritarian means of promoting cleaner production. This may be implemented through application of the product choice or substitution principle.
- **Extended producer responsibility (EPR):** EPR aims at making environmental improvements throughout the life cycle of a product by making the manufacturer responsible for various aspects of the product's life cycle. In particular, this could include the take-back recycling and final disposal of the product.
- **Cleaner production audits:** As part of their permitting requirements, it is mandatory for production industries to carry out cleaner production audits of their plants & to implement findings as long as they do not harm the environment.
- **Mandatory EMS and reporting:** In terms of integrated permit conditions, it is mandatory for production industries to implement a structured EMS & make public information on their environmental performance.

Environmental Policy Instruments (EPI)

- **Financial and technical incentives:** Governments may stimulate cleaner production measures by providing grants, loans and favourable tax regimes, &/or by supplying targeted technical assistance to relevant industrial enterprises.

Regulatory Instruments ➡

Since the inception of environmental policy, the predominant strategy for pollution control has generally been through the use of regulatory instruments. Usually, a public authority sets standards & then inspects, monitors and enforces compliance to these standards, punishing transgressions with formal legal sanction. These regulations may specify an environmental goal such as the reduction of carbon dioxide emissions by a specified date. They may also mandate the use of a particular technology or process. Such an approach gives the regulator the maximum authority to control where & how resources will be allocated to achieve environmental objectives. Also, this provides the regulator with a reasonable degree of predictability as to how much the pollution levels will be reduced.

Environmental Policy Instruments (EPI)

Specified & negotiated compliance ➡ The specified compliance approach imposes the precise & specific demands on the regulated communities without any scope for bargaining & exceptions. However, this approach has some significant drawbacks in that the regulated community may tend to become alienated from the authorities & united in its opposition to the rules and regulations.

The negotiated compliance approach, by contrast, adopts a more cooperative approach between the regulators & the regulated in setting & enforcing standards. This shared responsibility between the government & industry enhances the likelihood of a more open exchange of information between the parties & allows greater flexibility regarding the means of meeting the standard. Moreover, a number of countries have started to develop regulations where attainment of certain targets (e.g., recycling targets) is required while concrete means of achieving such targets are left in the hands of industries (non-prescriptive regulations).

Environmental Policy Instruments (EPI)

This, in turn, may increase the economic efficiency of the regulation and may be conducive to the adoption of innovative, preventative approaches.

Indeed, with the growing appreciation of the limits of conventional policy instruments, many governments are encouraging the adoption of self-regulatory & co-regulatory policy instruments for promoting cleaner production.

Market-based instruments ➡

Market-based instruments generally seek to address the market failure of environmental externalities either by incorporating the external cost of a firm's polluting activities into the firm's private cost (for example, through taxation), or by creating property rights & facilitating the establishment of a proxy market (for example, by using tradable pollution permits). Before introducing any new economic instruments, governments should identify & evaluate any economic incentives that may already be in operation, either explicitly or implicitly.

Environmental Policy Instruments (EPI)

These include, for example, the use of subsidies to make local industries more competitive. Many of these policies lead to artificially low prices for resources, such as energy and water & as a result of which these resources may be overused, creating both pollution & shortages. Government assessments of such policies are needed before other economic instruments are applied.

Taxes, fees and charges may be used to promote cleaner production practices by raising the costs of unwanted outputs or by providing incentives to promote more efficient use of natural resources. In some instances, it may be appropriate to use the revenues generated from these instruments to support cleaner production activities & thereby stimulating preventative approaches. A significant constraint against the more widespread adoption of market-based instruments, however, is that it is not always politically feasible to set taxes at a sufficiently high level to achieve desired environmental goals. Governments often face resistance, if taxation related to environment is taken merely as a means of increasing its revenues.

Environmental Policy Instruments (EPI)

Governments may be able to avoid some obstacles by earmarking the corrected charges or shifting tax sources. In any case, the successful implementation of such instruments requires a system of monitoring, revenue collection and enforcement as well as measures to combat possible corruption.

Financial subsidies, (e.g., low-interest loans, direct grants or preferential tax treatment) can be targeted to specific industries to stimulate technological development.

Governments must, however, carefully examine how subsidies work to ensure that they are not misused resulting in environmentally counter-productive behaviour.

Information-based strategies ➡

In addition to creating an appropriate regulatory & financial framework for cleaner production, government may further stimulate the adoption of cleaner production practices through the use of informational measures. These may be used to provide the right incentive (e.g., through the public disclosure of a firm's environmental performance) as well as to build capacity within industry (e.g., through the publication & dissemination of relevant case studies).

Environmental Policy Instruments (EPI)

A few examples of information-based strategies are:

- Promoting the adoption of targeted, high profile demonstration projects, to demonstrate the techniques & cost-saving opportunities associated with cleaner production.
- Encouraging educational institutions to incorporate preventative EM within their curricula, particularly within engineering and business courses.
- Requiring public disclosure of information on environmental performance by, for example, establishing a pollutant release and transfer register, stimulating greater voluntary corporate reporting and requiring the provision of information on specific materials.
- Initiating &/or consumption supporting such as measures eco-labelling that address schemes & environmental product declarations.
- Promoting the adoption of effective training initiatives.
- Issuing high profile awards for enterprises that have effectively implemented cleaner production.

Environmental Laws & Legislation

- Environmental law refers to rules and regulations governing human conduct likely to affect the environment. It reflects the legislative measures & the administrative & judicial structures to protect the environment. However, it is difficult to define precisely the boundaries of environmental law in the same way as we define, say, the law of contract explained in detail later in this chapter. Unlike the traditional legal subjects such as contract, which are well developed, environmental law is still in its infancy. Nevertheless, attention is now increasingly focused on the rationalization and streamlining of existing measures rather than the development of substantial law.

Environmental law aids in ➡

- regulation of resource use.
- protection of the environment and biodiversity.
- mediation, conflict resolution and conciliation.
- formulation of stable, unambiguous undertakings & agreements.

Environmental Laws & Legislation

- Legislations have evolved in response to problems, so that there is often a delay between the need & the establishment of satisfactory law. Without effective legislation, resource use, pollution control, conservation and most fields of human activity are likely to fall into chaos & conflict. Law can encourage satisfactory performance, enable authorities to punish those who infringe EM legislation, confiscate faulty equipment or close a company. It may also be possible for employee, bystanders & product or service users to sue for damages, if they are harmed. Environmental laws, in essence, are indispensable instruments in curbing environmental degradation. Environmental laws can be categorized as public & private laws depending on the environmental issue.

Private and public law ➡

Based on the environmental nuisance cases the legal actions are taken to understand to which category the environmental issue relates to; there is a need to know about private and public law.

Environmental Laws & Legislation

- Private law includes law of contracts, law of torts, law of property & the law of obligations, is the part of legal system that involves relationships between individuals. It is a private BILL enacted into law which is applied to individual or corporation. Labour law, commercial law, corporation's law & competition law come under private law. This law when observed as common law shows relationship between governments & private individuals. Law of contract are governed by private law that affects the relationships between the individuals without the intervention of the state or government.
- Public law is a theory of law governing the relationships individuals & the state. The major sub divisions of this law are constitutional law, administrative law & criminal law. For most lawyers & clients this law is how public authorities make decisions. That explains the irrelevant & relevant factors considered by public for which reasons may be important or not. They also analyse whether the decision maker complied with all legal requirements along with EC law regulations to make a decision.

Environmental Laws & Legislation

This law governs activities of public bodies such as environment agency & regulates the relationship between state and individuals.

- Private law can be used in environmental cases when the claimer is against someone causing a nuisance. This nuisance can be causing personal injury, trespassing on the land etc. In these cases it is better to be familiar with private law and environmental law with science background to win the case & to judge which ones are not worth pursuing the case.
- Environmental law is practised in the public interest for public benefit in the form of groups or individuals seeking environmental protections. Strength of law lies in its potential elasticity that represents the basis for developing an environmental action unconnected to land and capable of protecting wider community interests.

Environmental Laws & Legislation

- Public interest rarely happens whereas the law that is practised in private interest in the form of groups or individuals who are responsible for polluting or committing environmentally destructive activities who can also avoid violating these environmental laws in the process are usually common cases issues. This clearly shows private law plays negative role in environmental cases. This law balances only individual interests such as challenging uses of land rather than environmental protection.

Objectives and principles of legislation ➡

- The objectives of environmental legislation are to provide a set of enforceable & standard rules to contribute to the pursuit of:
 - (i) preserving, protecting & improving the quality of the environment.
 - (ii) protecting human health.
 - (iii) utilising natural resources in a prudent and rational way.
 - (iv) promoting measures at international level to deal with regional or worldwide environmental problems.

Environmental Laws & Legislation

- Environmental legislation seeks to regulate pollution of the natural environment in relation to air, noise, vibration, water, radiation & soil. It contains rules relating to the conservation of the natural environment, the protection of endangered species, the promotion of biological diversity, the protection of forests & the pursuit of environmentally friendly agriculture. With regard to the human environment, it seeks to protect human beings (the consumer) against contaminated food, dangerous or defective products, economic harm and danger in travel. With regard to the human-made environment it seeks the protection of historic & cultural environment. It seeks harmonization of standards & the enforcement of those standards through legislative provisions particularly relating to the introduction of appropriate environmental management systems to harness scarce resources.

Environmental Laws & Legislation

- Further objectives of environmental legislation are to set standards such as achieving a high level of protection by taking into account the diversity of situations in the various regions, to give a legal basis to the precautionary principle whereby legislative action is taken where there is no reason to believe that substances or energy or materials introduced directly or indirectly into the environment, may, or are likely to create, hazards to human health, harm living resources, damage communities or interfere with other legitimate uses. This can be done even where there is no conclusive evidence of a cause or relationship between inputs and their effects and to give a legal basis to the principle that preventive action should be taken as prevention & if successful, to advise all the detailed legislation relating to steps to be taken to cure a problem.

Environmental Laws & Legislation

- Environmental legislation is generally based on the principles that environmental damage should, as a priority, be rectified at source & that the polluter should pay. Environmental protection requirements should be integrated into the definition & implementation of legislation relating to non-environmental issues. Where crossborder matters relating to provisions primarily of a fiscal matter, measures concerning town & country planning & land use (other than waste management), management of water resources & measures significantly affecting the choice between different energy resources & the general structure of energy supply, decisions should only be adopted with unanimous agreement between the participants.
- Other legal principles produced by the expert group are that countries must:
 - ➡ Conserve and use the environment including its natural resources for the benefit of both the present & future generations.
 - ➡ Maintain ecosystems & ecological processes essential for the functioning of the biosphere, & preserve biological diversity.

Environmental Laws & Legislation

- ➡ Observe the principle of optimum sustainable yield in use when dealing with natural resources & ecosystems.
- ➡ Establish adequate environmental protection standards & monitor changes & publish relevant data on environmental quality & resource use.

Evolution of Environmental Legislation in India ➡

- The *Indian Forest Act* (1927) consolidates the law relating to forests, the transit of forest-produce & the duty leviable on timber & other forest products.
- The *Prevention of Cruelty to Animals Act* was enacted in 1960 to prevent the infliction of unnecessary suffering on the animals & to amend the laws relating to the prevention of cruelty to animals. As a promotion for enactment of this act there was formation of animal board of India.
- In *1966 Indian Forest Service* was constituted under the All India Services Act, 1951 by the Gov. of India. The main aim of their service is to implement the country's *National Forest Policy* which envisages scientific management of forest & to exploit them on a sustained basis primarily for timber products.



- **Wild life Act** enacted in the year 1972 with the objective of effectively protecting the wildlife of the country & to control poaching, smuggling & illegal trade in wildlife & its derivatives. This act was amended in January 2003. To strengthen the act – the Ministry has proposed further amendments in the law by introducing more rigid measures. Main objective is to provide protection to the flora & fauna & also to ecologically important protected areas.
- **Water Act** was enacted in 1974 to provide for the prevention & control of water pollution & for water maintenance in the country. The **Water cess Act** was enacted in 1977, to provide for the levy and collection of a cess on water consumed by persons operating & carrying on certain types of industrial activities. The act was last amended in 2003.
- **Forest Conservation Act** was enacted in 1980 to protect & conserve country's forest.





- **Air Act** (1981) was amended in 1987 to provide for prevention control & abatement of air pollution in India.
- **Environment protection Act** (1986) came into existence after 14 years of UN conference with an objective of protection & improvement of the country. Later on the amendments were done to it in 1991.
- **The Man & Biosphere (MAB) programme** of UNESCO was launched in 1971; India joined it in 1988 after formation of bioreserve committee. Purpose of this is to develop a base for rational use or conservation of natural resources while improving the relationship between the man & environment. The coastal line in India (7860 km) consists of Malvan (Maharashtra), Okha (Gujarat), Mandapam (TN), Gangetic Sundarbans (WB) as well as Lakshadweep & Andaman-Nikobar islands, which are rich in marine flora & fauna. India has established 15 bioreserves – first one at Nokrek (Meghalaya) in 1988.





- **Hazardous waste rules** (1989) were framed in which hazardous chemicals list was finalized.
- **Eco-Mark Scheme of India** was introduced in 1991 to increase the environmental awareness amongst citizens. This scheme aimed at encouraging the public to purchase products which are ecofriendly.
- **Public liability insurance act** was enacted in 1991 to provide for damages to victims of an accident which occurs as a result of handling hazardous substances (owners associated with the production or handling).
- **National Environment Tribunal** (1995) is for strict liability for damage arising out of accidents caused from handling of hazardous waste.
- **Biomedical Waste Rules** (1998) deals with collection, reception, storage, treatment & disposal of the waste.





- The Noise Pollution Rules (2000) the state government categorized industrial, commercial & residential or silence zones to implement noise standards.
- The Biodiversity Act (2002) was born out of India's attempt to realize the objectives mentioned in the UN-convention on biological Diversity (CBD) enacted in 1992 states that country should use their own biological resources.
- The Scheduled Tribes & Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (2006) recognizes the rights of forest-dwelling Scheduled Tribes & other traditional forest dwellers over the forest areas inhabited by them. This act also provides framework for their rights.
- The National Environment Appellate Authority (NEAA) was set up by the ministry of environment & forests to address cases in which environment clearances are required in certain restricted areas.





It was established by the *National Environment Appellate Authority Act* (1997) to hear appeals w.r.t. restriction of areas in which any industries, operations or processes, operations or processes shall or shall not be carried out, subject to certain safeguards under the *Environment Protection Act* (1986). The Authority shall become defunct & the Act shall stand repealed upon the enactment of the *National Green Tribunal Bill* (2009) currently pending in Parliament.

