Unit 3

- **Meaning of Environmental Management-**

✓ Environmental Management can be defined as "the management of the interaction and impact of human activities on the natural environment".

✓ Environmental management is concerned with the understanding of the structure and function of the earth system, as well as of the ways in which humans relate to their environment. Environmental management is therefore concerned with the description and monitoring of environmental changes, with predicting future changes and with attempts to maximise human benefit and to minimise environmental degradation due to human activities.

✓ A proper environmental management strategy would aim at 'creating minimum pollution', minimising usage of resources so as to lead to sustainable development.

✓ Environmental management further aims to ensure that ecosystem services and biodiversity are protected and maintained for equitable use by future human generations, and also, maintain ecosystem integrity as an end in itself by taking into consideration ethical, economic, and scientific (ecological) variables.

✓ It represents the organizational structure, responsibilities sequences, processes and preconditions for the implementation of an environmental corporate policy.

✓ The basic functions of good environmental management are goal setting; information management; support of decision making; organizing and planning of environmental management; environmental management programs; piloting; implementation and control; communication; internal and external auditing, etc.

✓ The role of environmental management for businesses is two-fold: to protect the environment from the effects of manufacturing by-products and to protect your business from non-compliance fines and penalties.

- **Why is Environmental Management necessary?**

✓ There's an age-old business statement coined by recognized management thinker Peter Drucker: "You can't manage what you don't measure". This most definitely applies to environmental management.

✓ Environmental management in an industrial setting has the end goal of ensuring our operations do not harm the local environment. The effect our actions have on the air, water, and wildlife around us can be concretely measured and quantified – although with some challenges. This is what we mean when we talk about environmental data management.

✓ Environmental management is necessary because it is a federally-mandated obligation for nearly every type of business.

✓ Environmental management becomes necessary because there is a burden of proof on businesses through their permits (for example, Title V air permits), requiring regular recordkeeping and reporting. As such, businesses need to keep data on their chemical inventories, chemical usages, waste generation, air emissions, water discharges in order to provide compliance reports to federal or state regulators. You will also need these records in case an auditor ever comes to inspect your facility; they will undoubtedly ask to see your records.

- ✓ Today most organizations also consider environmental management a business necessity because it helps businesses be good stewards (take care) of their resources, which ultimately results in lower operating costs. This is sometimes referred to as corporate sustainability.

- **How to do environmental data management?**

- ✓ If you are a corporation or other business. And truth be told there are a lot of approaches. Earlier we talked through the Plan-Do-Check-Act system, which is a proven methodology for environmental management.
- ✓ In most cases the actual "doing" of doing environmental management is done using spreadsheets or enterprise resource management software like a dedicate Environmental Management System (EMS). Spreadsheets aren't exactly designed as calculation engines so they're more suited to storing your environmental data rather than processing your information.
- ✓ An Environmental Management System (EMS) is designed to be both a database and an automation tool that will roll up your emissions numbers for you.
- ✓ There are countless data points that need to be measured, tracked, and accounted for in EH&S. Data can be collected about incoming materials, about outgoing emissions, about process efficiency, about sustainability – the sky is the limit.
- ✓ Only you can determine which data points are relevant (as long as you meet the needs of your regulatory compliance and environmental permits). The purpose of an Environmental Management System is to get you to collect, analyze and act on environmental data. Everything falls apart if you don't prioritize data.
- ✓ Here are some (just a sample) of the things that can be tracked in your EMS:
- ✓ Which chemicals are getting used or processed at your facility.
- ✓ The quantity of those chemicals which gets used, and the quantity stored.
- ✓ The VOC content and other emission data about those chemicals.
- ✓ The amount/weight of particulate matter generated by cutting or grinding.
- ✓ The application efficiency of paint, coating, topcoat or basecoat activities.
- ✓ Control device efficiencies.
- ✓ Monitoring EPA chemical lists for reportable and hazardous chemicals.
- ✓ The work that environmental managers do is all about measuring and managing these metrics (and many more) in order to both ensure their operations comply with federal and state environmental regulations as well as improve the overall efficiency of the material throughput of processes to increase profit margins.

- **What is an Environmental Management Plan?**

- ✓ An environmental management plan is the business side of how you plan to allocate time, resources, and staff to the act of environmental management.
- ✓ This should be a business document that your executives sign off on that describes the who, what, where, and when of environmental compliance management. It needs to address both your internal business logic and your external regulatory/permit conditions:

- **Who**: Which staff is responsible for collecting which pieces of data? Is someone responsible for reporting while someone is responsible for data collection? Which executive needs to sign off on compliance reports?
- **When**: when do your permits require you to collect data and report data? Is there a monitoring frequency? When is data generated and how often will you collect it?
- **Where**: where in your facility is data generated and where will it be stored? Where is your team located (some businesses, for example, have different teams across different sites).
- **How**: how will you do you environmental management? Will you use an EMS software? Are there specific calculation methodologies required by your permits? Also important in an environmental management plan is how will your business operate the environmental management department? What is the step by step process to get from data collection to data roll up to report submission?

- **<u>Environmental Auditing</u>**

✓ Environmental auditing is essentially an environmental management tool for measuring the effects of certain activities on the environment against set criteria or standards. Depending on the types of standards and the focus of the audit, there are different types of environmental audit.

✓ The term 'audit' has its origins in the financial sector. Auditing, in general, is a methodical examination - involving analyses, tests, and confirmations - of procedures and practices whose goal is to verify whether they comply with legal requirements, internal policies and accepted practices.

✓ Organizations of all kinds now recognise the importance of environmental matters and accept that their environmental performance will be scrutinised by a wide range of interested parties. Environmental auditing is used to

- Investigate
- Understand
- identify

✓ These are used to help improve existing human activities, with the aim of reducing the adverse effects of these activities on the environment.

✓ An environmental auditor will study an organisation's environmental effects in a systematic and documented manner and will produce an environmental audit report. There are many reasons for undertaking an environmental audit, which include issues such as environmental legislation and pressure from customers.

✓ An environmental audit is a type of evaluation intended to identify environmental compliance and management system implementation gaps, along with related corrective actions. In this way they perform an analogous (similar) function to financial audits. There are generally two different types of environmental audits: compliance audits and management systems audits.

✓ The International Chamber of Commerce (ICC) produced a definition in 1989 which is along the same lines.

✓ A management tool comprising systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of helping to safeguard the environment by facilitating management control of practices and assessing compliance with company policies, which would include regulatory requirements and standards applicable.

- ✓ Audits provide information about the organization's operational status compared to management's expectations of environmental performance. In other words, if management expects the organization to comply with the regulations, then an audit provides information as to whether or not compliance has actually been achieved. If the organization has not achieved compliance, the audit will also reveal what specific measures are required to address this shortcoming.

- The key concepts, which occur in all the definitions, are as follows.
- ✓ **Verification**: audits evaluate compliance to regulations or other set criteria.
- ✓ **Systematic**: audits are carried out in a planned and methodical manner.
- ✓ **Periodic**: audits are conducted to an established schedule.
- ✓ **Objective**: information gained from the audit is reported free of opinions.
- ✓ **Documented**: notes are taken during the audit and the findings recorded.
- ✓ **Management tool**: audits can be integrated into the management system (such as a quality management system or environmental management system).

- **<u>What are their benefits?</u> -** Benefits vary depending on the objectives and scope of the audit. Environmental auditing benefits include:

- ✓ Organisations understand how to meet their legal requirements;
- ✓ Meeting specific statutory reporting requirements
- ✓ Organisations can demonstrate they are environmentally responsible
- ✓ Organisations can demonstrate their environmental policy is implemented
- ✓ Understanding environmental interactions of products, services & activities
- ✓ Knowing their environmental risks are managed appropriately
- ✓ Understanding how to develop and implement an ISO 14001 EMS
- ✓ Improving environmental performance and saving money.
- ✓ It provides a framework for measuring (and therefore managing) environmental performance.
- ✓ It reinforces accountability for the environmental dimension of the business: the audit process requires managers to be clear about their responsibilities and how these are being implemented.
- ✓ It raises awareness of the importance of professional environment management throughout the organisation.
- ✓ To the extent that external reporting will be required, it provides a sound basis that enables companies to feel sure that what is included in the reports is an accurate record.
- ✓ It provides valuable information for future planning. This includes the future design of processes and products as well as inputs into future financial plans where pollution control and other investments are to be made.

- **<u>Audit tools and technology</u>**
- ✓ The term "protocol" means the checklist used by environmental auditors as the guide for conducting the audit activities. There is no standard protocol, either in form or content. Typically, companies develop their own protocols to meet their specific compliance requirements and management systems.
- ✓ Audit firms frequently develop general protocols that can be applied to a broad range of companies/operations.

- ✓ Current technology supports many versions of computer-based protocols that attempt to simplify the audit process by converting regulatory requirements into questions with "yes", "no" and "not applicable" check boxes.
- ✓ Many companies and auditors find these useful and there are several such protocol systems commercially available. Other auditors (typically those with many years of environmental auditing experience) use the regulations/permits directly as protocols.
- ✓ There is a long standing debate among environmental audit professionals on the value of large, highly detailed and prescriptive protocols (i.e., that can, in theory, be completed by an auditor with little or no technical experience) versus more flexible protocols that rely on the expertise and knowledge of experienced auditors and source documents (regulations, permits, etc.) directly.
- ✓ However usage of structured and prescriptive protocols in ISO 14001 audits allows easier review by other parties, either internal to the Certification Body (e.g. technical reviewers and certification managers) or external (accreditation bodies).
- ✓ During the past 20 years, advances in technology have had major impacts on auditing. Laptop computers, portable printers, CD/DVDs, the internet, email and wireless internet access have all been used to improve audits, increase/improve auditor access to regulatory information and create audit reports on-site.
- ✓ At one point in the 1990s, one major company invested significant resources in testing "video audits" where the auditor (located at the corporate headquarters) used real-time video conferencing technology to direct staff at a site to carry live video cameras to specific areas of the plant. While initially promising, this technology/concept did not prove acceptable. An emerging technology in environmental auditing is the use of tablet computers.

- **Who should carry out the environmental audit?**

- ✓ To be of maximum value an environmental audit should be objective and the environmental auditor should be free from pressure from within the organisation; in other words it is important that the audit report should be objective and the auditor should feel able to make critical comments without fear of the effect of such comments on his future career within the organisation.
- ✓ A number of major companies have established audit teams within their corporate environmental health and safety department.
- ✓ Some organisations have used external consultants to carry out some or all of the audits; in this case it is often valuable for the external auditor to work with the company's team.
- ✓ Environmental auditing requires an understanding of the activity to be audited (this may be a plant, an abandoned site or a corporate headquarters); an understanding of management systems, environmental regulations and permitting procedures; and also a broad understanding of environmental impacts.
- ✓ A qualified auditor will, in addition, need to be systematic, able to deal in a constructive way with a range of management and technical staff.

- **Planning an Environmental Audit**

✓ Assemble An Audit Team

✓ An Audit Management Committee (AMC) established by management at Directorate level, is responsible for:

- Overseeing the audit process
- Appointing an Audit Team Leader to be in charge of the audit
- Securing the necessary resources and funding
- Reviewing the Audit Report
- Reporting to the organisation Directorate

✓ The AMC in conjunction with the Audit Team Leader to:

- Appoint Audit Team Members
- Assess requirement for external assistance to ensure thoroughness and objectivity of audit
- Secure financial resources if external assistance is required
- Confirm availability of Audit Team members

✓ At each audit site, Site Facilitator(s) is/are selected to provide local support to the Audit Team in gathering the necessary information and assistance during the audit.

- **Conducting an Environmental Audit**

✓ An environmental audit is typically undertaken in three phases:

- Pre-audit
- On-site audit
- Post-audit

✓ Each of these phases comprises a number of clearly defined Objectives, with each objective to be achieved through specific Actions, and these actions yielding results in the form of Outputs at the end of each phase.

1) Pre Audit

a) Develop an Audit Plan

- The Audit Plan should address:
- **Where**: audit site & boundary with overview
- **What**: scope & objectives
- **How**: site personnel interview, site inspection, audit protocols; site logistics and administrative arrangement
- **Who**: audit team and site facilitation arrangement
- **When**: audit schedule and milestones
- The Audit Team is subsequently to: Seek agreement from AMC on audit plan Establish the reporting structure.

b) Prepare Pre-Audit Questionnaire

✓ To prepare questionnaire and document checklists on:

✓ The "hard" issues:

- Overall environmental management

- Procurement policy
- Energy management
- Materials management
- Water and wastewater management
- Waste management
- Noise monitoring and control
- Air quality monitoring and control
- Emergency response procedures

✓ The "soft" issues:

- Transportation and travelling
- Staff awareness and training
- Publicity of environmental information
- Response to public enquiries and complaints
- The questionnaire and checklists are to be forwarded to the relevant site personnel for completion.

c) Review Background Information- To gain familiarity with audit site through review of:

- Site layout plan(s)
- Site history, use and activities
- Blue prints/as built drawings
- Organizational structure at audit site(s)
- Internal environmental policies, procedures and Guidelines

d) Review Operational Information

To gain appreciation of site activities and operational practices on site through review of:

- Operational activities and process descriptions
- Management system policies, procedures and program
- Documentation
- Relevant records (compliance, monitoring, training, maintenance, calibration etc.)
- Other relevant information pertaining to environmental management practices

e) Conduct Initial Site Visit

- To arrange with the site facilitator(s) for an initial visit during normal operation of audit site to:
  - Meet with officer-in-charge to explain purpose of audit
  - Assess whether background information gathered is up to date and accurate
  - Follow-up on the list of preliminary audit impressions
  - Identify and request additional site information as necessary
  - Confirm thoroughness of audit scope
  - Establish adequacy of resources for audit

f) Develop On-Site Questionnaire and Audit Protocols

- To develop a series of step-by-step questions and evaluation criteria to assess:
  - Compliance with pertinent legislative and regulatory requirements
  - Conformance with internal environmental policies, procedures and guidelines
  - Status of current environmental practices
  - Staff awareness of internal environmental policies, procedures and guidelines

g) Review Audit Plan and Arrange Logistics

- All documents and arrangements should be updated or revised to reflect current knowledge and conditions. Key points to review include:
  - Audit scope
  - Audit schedule
  - Audit protocols
  - Allocated resource

2) On Site Audit Activities

a) Opening Meeting

Conduct on-site audit Opening Meeting with Office manager and site personnel to:

- Introduce audit team members
- Present audit scope and objectives
- Outline the audit approach and methodology
- Address questions or concerns of site personnel
- Rally staff support and assistance

b) Document Review

Audit Team member to undertake a review of relevant document such as:

- Management policy
- Management system documentation
- Operational procedures
- Records (utility, inventory, monitoring, calibration, transportation, training etc.)
- Previous audit reports
- Green management team meeting minutes
- Green suggestions

- In particular, to evaluate whether the records are:
  - Current
  - Properly completed
  - Signed and dated
  - Consistent
  - Meet relevant requirement

c) Detailed Site Inspection

✓ Conduct detailed site inspections with aid of on-site audit protocols to look for evidence on:

- Compliance with legislative and regulatory requirements
- Conformance with internal policies, procedures and guidelines
- Status of operational practice
- Staff participation in management system
- Implementation

d) Staff Interview

- To obtain information on Actual practices (current and past)
- Compliance with/or deviation from statutory and departmental requirements
- Awareness of requirements and expectations
- Ideas to do it better
- Comments and suggestions

e) Review Audit Evidence

Ensure adequacy of audit evidence at the conclusion of onsite audit by:

- Reviewing information gathered
- Collecting additional information as needed
- Substantiating audit findings
- Summarising and documenting all findings and observations
- Identifying issues requiring immediate attention/mitigation
- Noting outstanding issues requiring follow-up
- Preparing debriefing material for the Closing meeting

f) Closing Meeting

The Closing Meeting provides an opportunity at the conclusion of on-site audit to:

- Debrief the senior site management
- Summarise the audit activities and findings
- Highlight system strengths and weaknesses
- Discuss preliminary findings and recommended
- corrective actions
- Bring up findings requiring immediate attention
- Clarify any outstanding issues
- Address staff questions or concerns
- Agree on reporting schedule and chain of communication

3) Post-Audit Activities

a) Collate Information and Follow Up

- Outstanding Issues
- Information to be organised should include: Completed pre-audit questionnaire, operational document checklists
- Completed on-site survey questionnaires, on-site audit protocols

- All relevant correspondence, memoranda, reports, diagrams and drawings
- Copies of records, photographs, and other information collected during the site visit
- Detailed inspection and interview notes and summaries.

b) Prepare the Audit Report

The Audit Report should include:

- An Executive Summary
- Introduction and background to the audit
- Audit scope and objectives
- Description of audit approach and methodology
- Summary of audit findings and recommendations
- Conclusions

✓ In particular, the findings summary should comprise the followings:

- Status of compliance with environmental legislative requirements
- Status of conformity with internal environmental policies, procedures and guidelines
- Status of good environmental practices implementation
- Level of staff awareness of operational issues relating to environmental performance
- Overall status of environmental performance
- Recommendations for environmental performance improvement

c) Circulate Draft Audit Report for Comments- Include the following parties on the circulation list

- The Audit Management Committee
- Senior audit site management
- Site Facilitator(s)
- Site personnel with responsibilities for implementing the major recommendations
- Other parties included on the agreed circulation list

d) Final Reporting

- Incorporate or resolve all comments received before producing the Final Report
- Issue the report to the Audit Management Committee and site senior management for endorsement.

e) Following up an Environmental Audit

- Output
- Action Plan
- Status report for implementation
- Scope and schedule of next audit

- **Clearance/Permission for Establishing Industry-**

✓ Environment And Pollution Related Clearances

✓ **Pollution Control** - State Pollution Control Board. A No Objection Certificate (NOC) should be obtained from the State Pollution Control Board before commencement of construction activity. In case the industry is of the highly polluting category, a full-fledged or rapid **Environmental Impact Assessment (EIA)** study has to be carried out and submitted to the State Pollution Control Board for approval, after which the construction can commence.

✓ **Industries Requiring Water and Affecting Effluent Disposal** - State Pollution Control Board No Objection Certificate (NOC) should be obtained from the State Pollution Control Board before commencement of construction activity.

✓ **For units functioning outside Industrial Area** - Permission from Municipal Corporation/ Municipality/ Panchyat. In case private agricultural land is purchased for the project, the land would have to be rezoned as industrial zone. Permission to convert such agricultural land to industrial area would have to be obtained before the actual start of the construction from the local office of the Directorate of Town & Country Planning.

✓ **Registration and Licensing of a Boiler** - Chief Inspector of Boiler. The safety clearance of the Chief Electrical Inspector and the Chief Inspector of Boilers are required before commencing operations with electrical and pressure vessels(boilers) respectively.

✓ For registration as a **100% export oriented unit (EOU)** which can enjoy many additional concessions, the clearance of the Development Commissioner of the Export Processing Zone (EPZ) would be required. If the company wishes to offer equity shares to the public, the clearance of the Stock Exchange Board of India (SEBI) has to be taken.

✓ **Product Specific Clearances**

- Establishing a Printing Press - District Magistrate
- License for Cold Storage Construction - Designated Official in State
- Pesticides - Central/State Agricultural Department - Ministry of Agriculture
- Drugs and Pharmaceuticals - Drug license from State Drug Controller
- Safety Matches/ Fireworks - License under Explosives Act from Directorate of Explosives, Nagpur
- Household Electrical Appliances - License from Bureau of Indian Standards
- Wood Working Industry within 8 km from forest - District Forest Officer
- Milk Processing & Milk products manufacturing units - Approval under Milk and Milk Products Order from State Agricultural/ Food Processing Industries Department above a designated capacity.

- **Process of getting Clearance/Permission-**

✓ The environmental clearance process is required for **39** types of projects and covers aspects like **screening, scoping and evaluation** of the upcoming project. The main purpose is to assess impact of the planned project on the environment and people and to try to abate/minimise the same.

- ✓ The process consists of following **steps**:
- Project proponent identifies the location of proposed plant after ensuring compliance with existing siting guidelines. If project site does not agree with the siting guideline, the proponent has to identify other alternative site for the project
- The project proponent then assesses if the proposed activity/project falls under the purview of environmental clearance. If it is mentioned in schedule of the notification, the proponent conducts an EIA study either directly or through a consultant. If the project falls in B category, the project goes to state government for clearance which further categorise into B1 and B2 projects. B2 projects does not require preparation of EIA reports.
- After the EIA report is ready, the investor approaches the concerned State Pollution Control Board (SPCB) and the State Forest Department (if the location involves use of forestland). The SPCB evaluates and assesses the quantity and quality of effluents likely to be generated by the proposed unit as well as the efficacy of the control measures proposed by the investor to meet the prescribed standards.
- If the SPCB is satisfied that the proposed unit will meet all the prescribed effluent and emissions standards, it issues consent to establish (popularly known as NOC), which is valid for 15 years.
- The public hearing is a mandatory step in the process of environmental clearance for certain developmental projects. This provides a legal space for people of an area to come face-to-face with the project proponent and the government and express their concerns.
- The process of public hearing is conducted prior to the issue of NOC from SPCB. The District Collector is the chairperson of the public hearing committee. Other members of the committee includes the official from the district development body, SPCB, Department of Environment and Forest, Taluka and Gram Panchayat representative, and senior citizen of the district, etc. The hearing committee hears the objections/suggestions from the public and after inserting certain clauses it is passed on to the next stage of approval (Ministry of Forest and Environment).
- The project proponent submits an application for environmental clearance with the MoEF if it falls under Project A category or the state government if it falls under project B category. The application form is submitted with EIA report, EMP, details of public hearing and NOC granted by the state regulators.
- **Environmental appraisal**: The documents submitted by an investor are first scrutinised by a multi-disciplinary staff functioning in the Ministry of Environment and Forests who may also undertake site-visits wherever required, interact with the investors and hold consultations with experts on specific issues as and when necessary.
- After this preliminary scrutiny, the proposals are placed before specially constituted committees of experts whose composition is specified in the EIA Notification. Such committees, known as **Environmental Appraisal Committees** have been constituted for each sector such as River Valley, Industries, Mining etc. and these committees meet regularly to appraise the proposals received in the Ministry. In case of certain very special/controversial projects, which have aroused considerable public interest, the committee may also decide to arrange for public hearings on those projects to ensure public participation in developmental decisions.
- Announcements for such public hearing shall be made at least 30 days before through newspapers. On the basis of the exercise described in the foregoing paragraphs, the Appraisal Committees make their

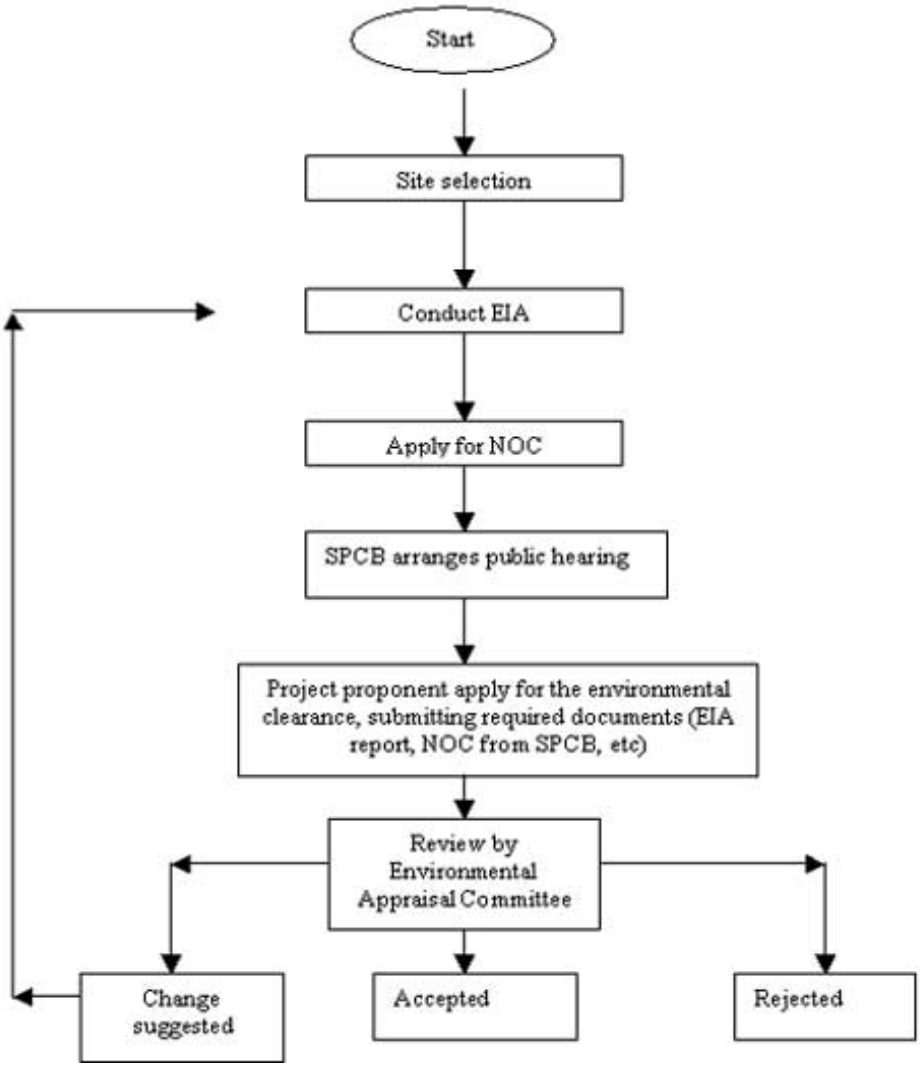
recommendations for approval or rejection of particular projects. The recommendations of the Committees are then processed in the Ministry of Environment and Forests for approval or rejection.

- **Issues of clearance or rejection letter:** When a project requires both environmental clearance as well as approval under the Forest (Conservation) Act, 1980. Proposals for both are required to be given simultaneously to the concerned divisions of the ministry.

✓ The processing is done simultaneously for clearance/rejection, although separate letters may be issued. If the project does not involve diversion of forest land, the case is processed only for environmental clearance.

✓ Once all the requisite documents and data from the project authorities are received and public hearings (where required) have been held, assessment and evaluation of the project from the environment angle is completed within 90 days and the decision of the ministry shall be conveyed within 30 days thereafter. The clearance granted shall be valid for a **period of five years** for commencements of the construction or operation of the project.

✓ The Process is summarized in below chart:



- Industrial projects located in any of the following notified ecologically fragile/sensitive areas would require environmental clearance **irrespective** of the type of project:

  - Religious and historic places
  - Archaeological monuments
  - Scenic areas
  - Hill resorts
  - Beach resorts
  - Coastal areas rich in mangroves, corals, breeding grounds of specific species
  - Estuaries
  - Gulf areas
  - Biosphere reserves
  - National parks and sanctuaries
  - National lakes and swamps
  - Seismic zones
  - Tribal settlements
  - Areas of scientific and geological interest
  - Defense installations, specially those of security importance and sensitive to pollution
  - Border areas (international)
  - Airports

- **Public hearing**

✓ Involvement of the public is one of the fundamental principles of a successful EIA process. It not only provides an opportunity to those directly affected by a project to express their views on the environmental and social impacts of the proposal but also brings about transparency in the environmental clearance system.

✓ Nearly all EIA systems make some sort of provision for public involvement. This could be in the form of public consultation (or dialogue) or public participation (which is a more interactive and intensive process of stakeholder engagement).

✓ Most EIA processes are undertaken through public consultation rather than participation. Public consultation refers to the process by which the concerns of the local people regarding the adverse impacts of a project are ascertained and taken into account in the EIA study. This concept was legally introduced in India in the form of 'public hearing' in 1997. Since then the public hearing process has been conducted as a mandatory step of environmental clearance for most projects and activities.

✓ The public consultation process ensures an equitable and fair decision-making process resulting in better environmental outcomes. The type of consultation, whom to consult during EIA activities, when and how to do so and who should do it all vary significantly from project to project.

✓ This depends on the needs of the project. However, it is an important component for all kinds of project. This is because public consultations help allay the concerns of the local community, and reduce inaccurate information in the EIA report.

✓ Ideally public consultation should start from when the idea of the project is conceived and continue throughout the course of the EIA. The five main stages when public involvement can take place in the EIA process are screening, scoping, impact analysis and mitigation, review of EIA quality, and implementation and follow up.

- ✓ In India, the role of the public in the entire environment clearance process is quite limited. Public consultation happens at a very late stage when the EIA report is already prepared and the proponent is about to present it to the review committee for clearance.
- ✓ This means that the EIA study is unable to take into account the concerns and issues important to public. Even if the members of the community raise certain issues in the public hearing process, they have no means of knowing if it actually gets addressed in the final EIA report as they have no access to it.
- ✓ There are several weaknesses in the public hearing process as it exists now. Instead of becoming a participatory forum it has become a mere procedure.
- ✓ There have been several cases in the past that have shown that the public hearing process has failed to meet its objective of effectively involving people in the clearance process. Several means have been devised to keep the public away such as poor circulation of notice, politics, etc.

Environmental Accounting-

- ✓ Environmental accounting is a field that identifies resource use, measures and communicates costs of a company's or national economic impact on the environment. Costs include costs to clean up or remediate contaminated sites, environmental fines, penalties and taxes, purchase of pollution prevention technologies and waste management costs.
- ✓ An environmental accounting system consists of environmentally differentiated conventional accounting and ecological accounting. **Environmentally differentiated accounting** measures effects of the natural environment on a company in monetary terms. **Ecological accounting** measures the influence a company has on the environment, but in physical measurements.
- ✓ Environmental accounting is the practice of using traditional accounting and finance principles to calculate the costs that business decisions will have on the environment. **For example**, before choosing to close down a manufacturing plant and outsourcing the function to a foreign corporation, a business uses environmental accounting to determine the short- and long-term effects of the decision, such as unemployment in the plant's region.
- ✓ Environmental accounting is an important tool for understanding the role played by the Natural environment in the economy. Environmental accounts provide data which highlight both the contribution of natural resources to economic well-being and the costs imposed by pollution or resource degradation.
- ✓ Environmental accounting data is not only used by companies or other organizations internally, but is also made public through disclosure in environmental reports.
- ✓ The disclosure of environmental accounting data as one of the key elements in an environmental report enables those parties utilizing this information to get an understanding of the company's stance on environmental conservation and how it specifically deals with environmental issues. At the same time, a more comprehensive grasp of the companies and other organizations' environmental information can be obtained.

- ✓ Businesses use three generally accepted methods to implement environment accounting: financial accounting, managerial accounting and national income accounting. Financial accounting is the process of preparing financial reports, such as earning statements, for presentation to investors, lenders, governing bodies and other members of the public. In this instance, environmental accounting estimates are presented as part of the financial accounting reports.
- ✓ Managerial accounting is used solely for internal decision making. In this capacity, department heads use environmental accounting to collect data used by senior management to make business-critical decisions, such as those surrounding procurement. Alternatively, environmental accounting is used by government agencies to calculate the nation's gross domestic product and how business decisions affect the country's economic wellbeing.

Structural Elements of Environmental Accounting

✓ Environmental accounting as defined under these guidelines consists of the following structural elements with the purpose of attaining two types of benefits derived from costs incurred from environmental conservation activities during the regular course of business.

(1) **Environmental Conservation Cost**- Investments and expense related to the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities are measured in monetary value.

- Investment amounts are expenditures allocated during a target period for the purpose of environmental conservation. The benefits from these investments are seen over several periods and are recorded as expense during the depreciation period (the amount of depreciable assets recorded during the period under financial accounting standards).
- Expense amounts refer to the expense or losses recorded under financial accounting standards resulting from the consumption of goods or services for the purpose of environmental conservation.

(2) **Environmental Conservation Benefit-** Benefits obtained from the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities are measured in physical units.

(3) Economic Benefit Associated with Environmental Conservation Activities- Benefits to a company's profit as a result of carrying forward with environmental conservation activities are measured in monetary value.

Environmental Tax shift

- According to the OECD, an environmental tax is a tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment. Four subsets of environmental taxes are distinguished: energy taxes, transport taxes, pollution taxes and resources taxes.
- Environmental Taxes are a kind of economic instruments to address environmental problems. They are designed to internalize environmental costs and provide economic incentives for people and businesses to promote ecologically sustainable activities.
- Carbon taxes are a kind of Environmental Taxes.
- Tax shift or Tax swap is a change in taxation that eliminates or reduces one or several taxes and establishes or increases others while keeping the overall revenue the same.
- An eco tax (short for ecological taxation) is a tax levied on activities which are considered to be harmful to the environment and is intended to promote environmentally friendly activities via economic incentives.
- Such a policy can complement or avert the need for regulatory (command and control) approaches. Often, an eco tax policy proposal may attempt to maintain overall tax revenue by proportionately reducing other taxes (e.g. taxes on human labor and renewable resources); such proposals are known as a green tax shift towards ecological taxation. Eco taxes address the failure of free markets to consider environmental impacts.

- Environmental tax reform is defined as 'reform of the national tax system where there is a shift of the burden of taxes, **for example** from labour to environmentally damaging activities, such as unsustainable resource use or pollution'.
- Environmental taxes are those whose base is a physical unit, for example, a litre of petrol or a passenger flight, that has a proven negative impact on the environment. These taxes are designed to promote environmentally positive behaviour, reduce damaging effects on the environment and generate revenue that can potentially be used to promote further environmental protection.
- The proposed additional tax would not be the first of its kind in India. Under the Forest Conservation Act, 1980, any entity that diverts forest land for non-forest purposes is required to provide financial compensation for the purpose of afforestation in non-forest or degraded land, in order to compensate for the loss of forest cover.
- In 2002, the Supreme Court had directed that a Compensatory Afforestation Fund (CAF) should be created to manage the funds generated. Similarly, India's Clean Environment Cess or coal cess acts as a carbon tax. The coal cess is levied on coal, lignite and peat at the rate of ₹ 400 per tonne, and the funds raised are managed by the National Clean Environment Fund (NCEF), which was known as the National Clean Energy Fund earlier.

Why do we need Environmental Taxes?

- ✓ Because environmental taxes provide incentives to lessen environmental burden and preserve the environment.
- ✓ By internalizing the environmental costs, (for example, activities that burden the environment will be taxed, whereas activities that contribute to the preservation of the environment will get tax break), environmental taxes provide incentives for businesses and individuals to integrate environmental concerns into economic activities, and minimize negative environmental impacts.
- ✓ Because revenues generated by environmental taxes can be used for other environmental preservation projects or to cut other taxes.
- ✓ Tax revenues of environmental taxes can be used for environmental preservation or other non-environmental welfare. The revenues from environmental taxes can be used to cut taxes such as income tax, corporate tax and social insurance premium.

What is green Funding

- ✓ Green funding refers to a mutual fund or other form of investment vehicle that allows its dollars to go only to businesses and products that are socially and ecologically responsible, or to directly promote a green theme such as recycling or general environmental responsibility
- ✓ It is the raising of grants for protection and improvement of environment, granted by govt., corporate houses and other organisations.
- ✓ Need for green funds -whole world is posing threats to clean green environment by increasing air, water, land pollution. Green funds are raised to protect the nature from these pollution evils.
- ✓ Current threat to global environment- ozone depletion, global warming
- ✓ Ozone depletion - it is the decrease in density of ozone layer in stratosphere leading to increase in penetration of UV rays.
- ✓ Effects of ozone depletion: skin cancer and eyesight weakness , photosynthesis is halted and disturbance of food chain.

- ✓ Global warming - it is rise in global temperature due to increasing green house gases.
- ✓ Effects of global warming: extreme weather changes, rise in sea level and effect on agriculture production and ecological imbalance.
- ✓ Green funding is sought by individuals, companies and organizations who are producing goods and services that are friendly to the environment, often by having a smaller environmental impact or footprint than alternative products or companies. Examples include renewable energy companies, purchasers of renewable energy generation, organic farms, makers of products that contain few or no synthetic chemicals and clean technology developers.