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Batch: Isb OB-61
LMS ID: 33378

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# Q NO-5

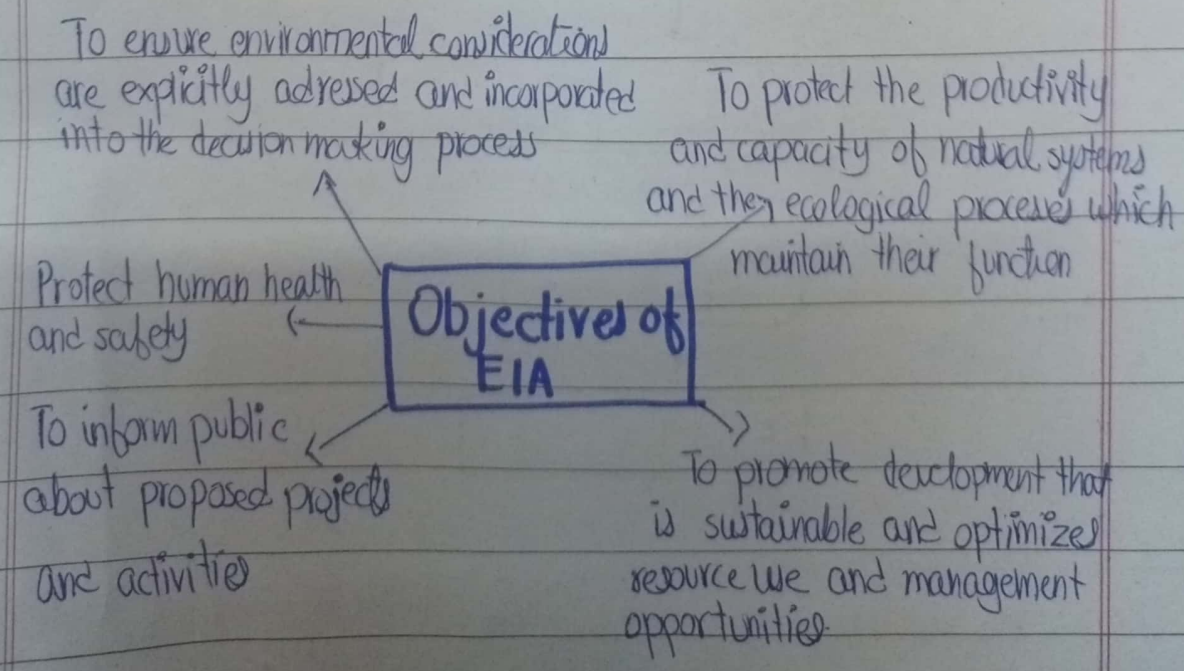
## (A)

### Definition of EIA:

It is a tool used to identify the environmental, social and economic impacts of a project prior to decision making.

### Purpose of EIA:

The primary purpose of EIA (Environmental Impact Assessment) is to encourage the consideration of the environmental issues in the planning and decision making and to ultimately arrive at actions which are more environientally compatible.



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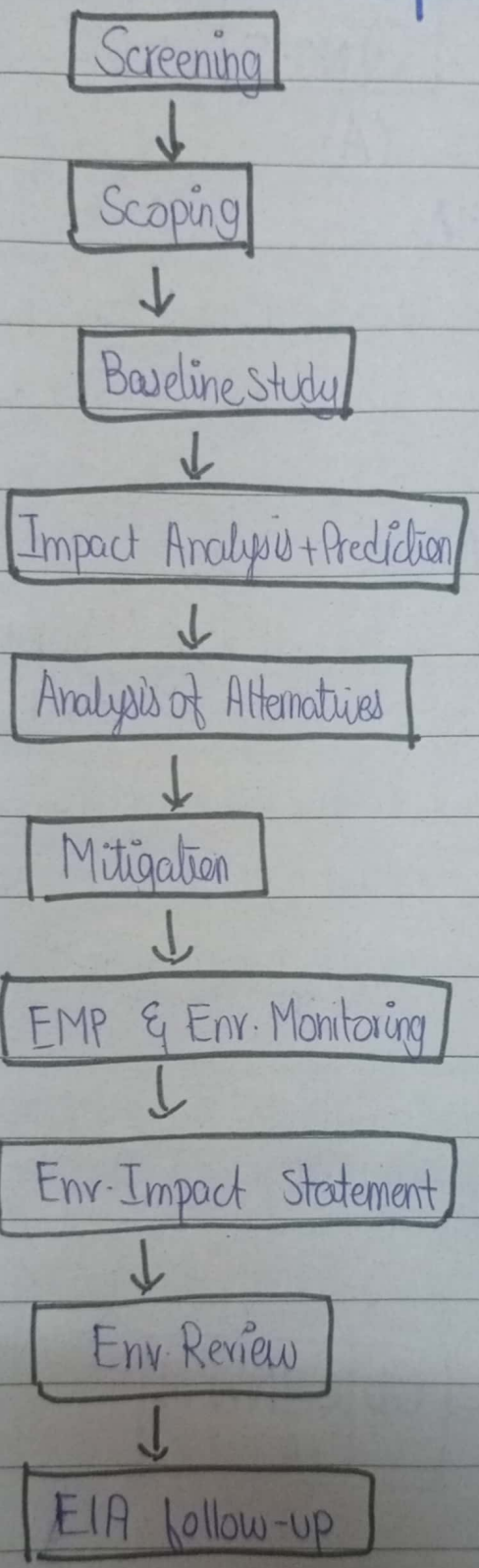
# Process of Environmental Impact Assessment:




As we have seen above the 1st step in the process of environmental impact assessment involves

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screening which determines whether environmental impact assesment or initial environmental examination is required for the proposed project.

Then comes the step of scoping which identifies the key concerns at an early age at look into the future aspects of the projects example what type of job availabilities will it create, what impact will it have on economy and what will be the benefit of this project.

After that is the baseline study step which involves gathering detailed information of the site by doing frequent number of visits.

Then the impact analysis and prediction of the poject is done and the duration, timing, magnitude, type and extent of the project is determined

The alternatives for the project are found out to make the project environmentally sound, financially feasible.

During the step of mitigation the approah of Avoid, Replace, Reduce, Restore and compensate is carried out.

Then EMP is carried out to minimize any potential damage posed by the project.

Following this an environmental impact statement is made which contains summary, policy, description of environment and poject, environmental

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impacts and etc.

At the end an environmental review is done to see if the terms and conditions finalized during the EIA are implemented or not and frequent follow up visits are made to ensure this thing.

## Importance of EIA:

1. EIA identifies the potential effects of a project.
2. It also predicts the severity of the effects on the environment.
3. It provides an opportunity to modify project designs
4. It helps in controlling pollution of every type produced by the projects.
5. Helps reduce global warming and climate change.
6. It helps promote sustainable development.
7. It gives a chance to involve potentially affected communities and ask for their opinion
8. It avoides violation of national and international standards
9. It minimizes use of resources and maintains biodiversity
10. With the help of EIA the performance of the project enhances
11. It helps in saving time and cost of the project.

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# (B)

## Scientific methods to control pollution:

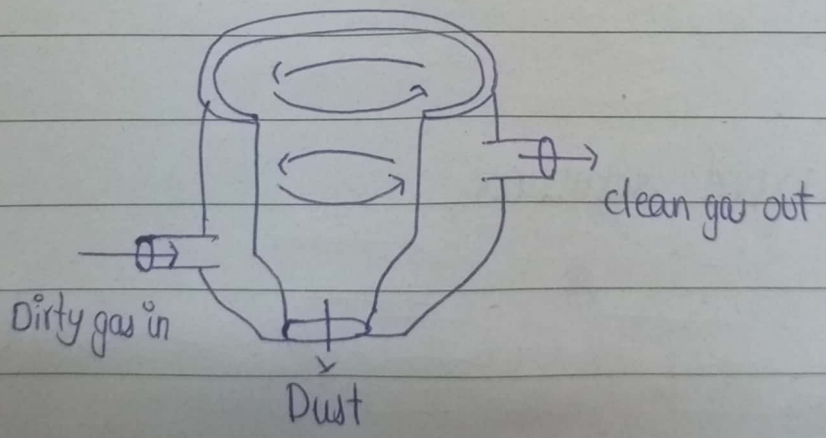
There are various scientific ways to control pollution in an efficient way.

## Types of pollution:

① Air pollution
② Water pollution
③ Solid pollution

## ⇒ Ways to control Air ~~water~~ pollution:

① Cyclone separator:




**Procedure:** In this cyclone separator the large dust particles accelerate towards the wall and move downwards where the go out as dust. This procedure is used to separate dust particles which are > 10mm. The cyclone rotates at a speed of 16m/s.

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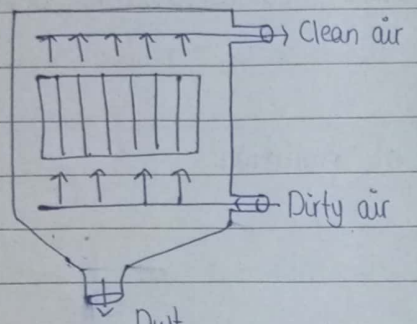
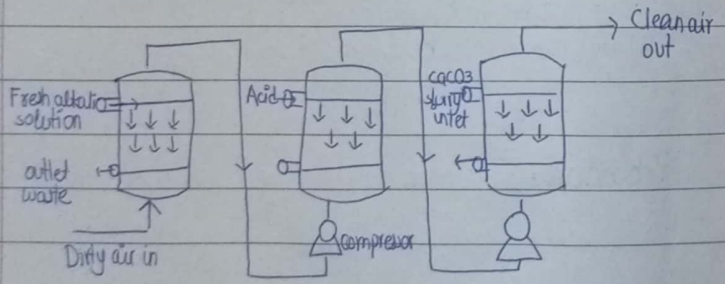
## (iii) Filter bag unit:




**Procedure:**

In this filter bag unit a filter bag of diameter 0.1 to 0.35 m is used which separates dust particles between 5 - 10 mm. Dirty air passes through the filter bag and dust particles get trapped.

## (iii) Liquid scrubbers




**Procedure:**

They utilize the phenomenon of absorption to remove gaseous pollutants from air steam. A wide variety of scrubbers are available for use e.g lime, magnesium oxide, and sodium hydroxide are typically used.

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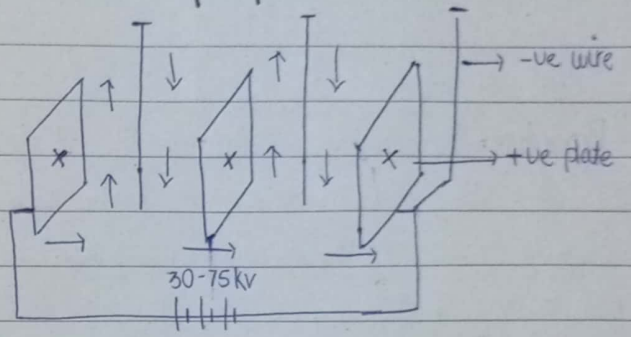
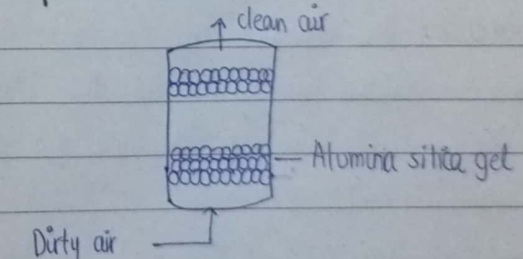
## (iv) Electrostatic precipitators:




**Procedure:**

These are the devices which use electrostatic field to induce a charge on dust particles and collect them on a grounded electrode. They are usually operated dry but wet systems are also used.

## (v) Absorption column:




**Procedure:** It consists of a chamber which contains alumina silica gel which helps to remove undesired hydrocarbon

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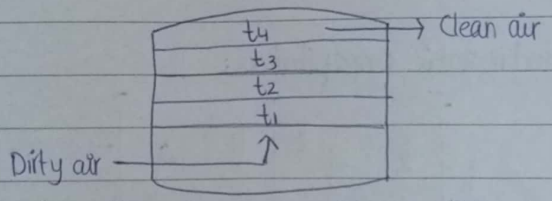
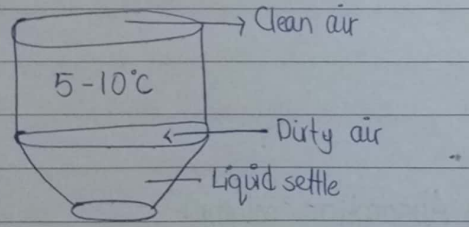
(vi) Thermal precipitator:




**Procedure:** This chamber consists of different ~~chamber~~ zones each having different temperatures. With each increasing temperature the density decreases and fine particles separate from air.

(vii) Cold chamber:




**Procedure:** This chamber used low temperatures to separate the pollutant particles for air. The volatile gas get liquified at this temperature and get separated from air.

## ⇒ Ways to control solid pollution:

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① Composting:

It is microbiological biodegradation of organic matter via erobic or anerobic conditions. This process is most applied for readily biodegradable solids such as sludge, paper etc.

② Incineration:

In this process solid are burned in large furnaces thereby reducing the volume of solid waste which enter landfills as well as reducing groundwater contamination.

## ⇒ Ways to control water pollution:

① Physical treatment systems:

Processes which rely on physical forces to help in removal of pollutants. These include screening, filtration, sedimentation. Screening and filtration used to separate coarse solids from water. With sedimentation suspended air particles are removed from water.

② Chemical treatment systems:

Use chemical reactions to remove pollutants from water. These processes are chemical precipitation, absorption and disinfection processes. Chemical precipitation utilize the addition of chemicals to water to bring about precipitation of dissolved solvents. The solid is then removed by process called filtration or sedimentation.

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### ③ Biological water pollution control methods:

Utilize biological activity to remove pollutants from water streams. These methods used for control of biodegradable organic chemicals. These systems consists of microorganisms consisting mainly of bacteria convert carbonaceous matter. Two main types of microorganisms that are aerobic and anaerobic are used in treatment.

**Q NO. 6**

## Biodiversity loss:

Biodiversity loss refers to the decline or disappearance of biological diversity which encompasses the variety of life forms on Earth, including plants, animals, fungi, and the microorganisms and the ecosystems they form.

### → Causes of biological diversity loss:

There are various factors which contribute to loss of biodiversity.

#### ① Pollution:

Various types of pollution that are air, water, soil contribute to biodiversity loss. With populated air the organisms don't have a safe space to live, with water pollution they don't have access to clean drinking water and with soil pollution the food they eat is contaminated.

#### ② Habitat loss:

It occurs due to deforestation, mining, agriculture and industrial activities. These activities deprive the organisms of their habitat.

#### ③ Fragmentation:

Fragmentation is the turning of wild areas into small lands for the purpose of urbanization.

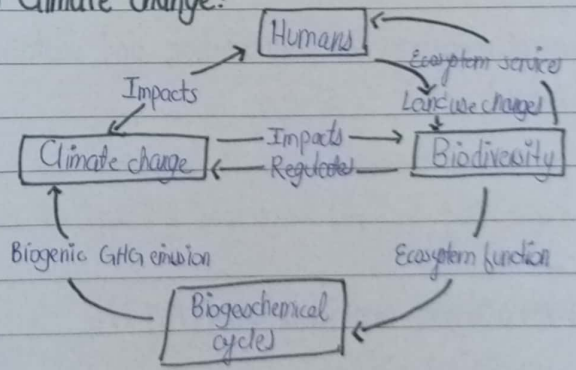
#### ④ Hunting:

Due to hunting of organisms specifically animals and plants for food and medicinal use the variety of biodiversity is decreasing.

#### ⑤ Over-exploitation of prefferd species:

The organisms which are more in use are overly exploited without the thought of their conservation.

#### ⑥ Climate change:



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② Natural disasters:

Natural disasters such as earthquakes, floods, tornadoes and hurricanes are also a big cause of biodiversity loss.

## Convention on Biodiversity:

The convention of biodiversity (CBD) was signed on 5 June 1992 with 30 ratifications and effective from 5 June 1993.

- Objectives:

① Focuses on conservation of biodiversity
② Sustainable use of its components
③ Fair+ equitable sharing of benefits arising from utilization of genetic resources.

- Key provisions:

① Objectives (Art 1):

The article 1 describes the basic objectives of the convention.

② General measures for conservation and sustainable use (Art 6):

The article 6 describes the national strategies and how to integrate those national strategies into sectoral plans and policies.

③ Identification and monitoring (Art 7):

The article 11 describes components imp for conservation

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and sustainable use.

④ In-situ conservation (Art 8):

For insitu conservation of species protection areas along with restoration and rehabilitation centres are made.

⑤ Ex-situ conservation (Art 9):

For ex-situ conservation outside natural habitats are made.

⑥ Incentive measures (Art 11):

- Various kind of social and economic incentives are given to population for adoptation of preventive measures.

⑦ Research and educational training (Art 12):

Various educational programmes and research sessions are given to train and educate people.

⑧ Public education and awareness (Art 13):

Public education and awareness though media is given to conserve biodiversity.

⑨ Exchang of information (Art 17):

Exchange of information between countries is done on various ways to protect and conserve biodiversity.

⑩ Financial mechanism (Art 21)

A financial mechanism is set up as Global environment Facility to provide fund for activities and projects regarding conservation and protection of biodiversity.

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## (B)

### • Desertification:

It is a process by which fertile land becomes desert like typically as a result of various factors. It involves the degradation of land in arid, semi-arid and dry sub-humid areas leading to a loss of vegetation, soil fertility and biodiversity.

### • Causes of desertification:

**① Climate change**

Reduced rainfall and higher temperatures exacerbate the drying of soil and vegetation loss.

**② Deforestation:**

Cutting down tree and vegetation removes the land's natural protection, making it prone to erosion and infertility

**③ Overgrazing**

Excessive overgrazing by livestock damages vegetation cover, exposing soil to erosion.

**④ Unsustainable farming practices**

Over-cultivation and improper irrigation lead to soil degradation and salinization

**⑤ Urbanization**

Expansion of cities and infrastructure can contribute to land degradation

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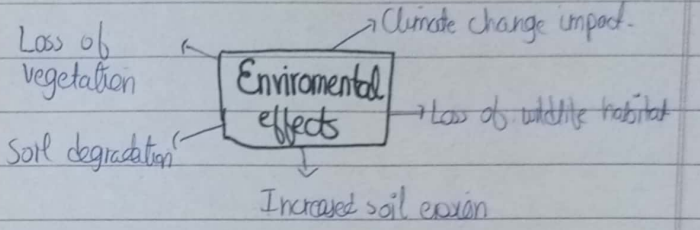
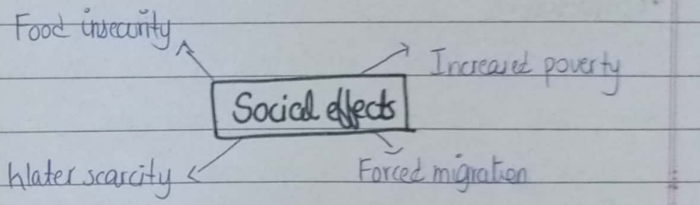
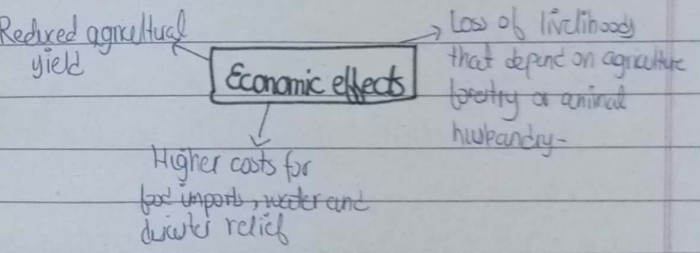
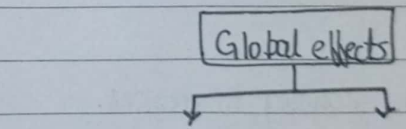
### • Effects of Desertification:




Impact on global food security leading to decreased productivity

Climate feedback loop: Desertification can worse climate change which in turn exacerbates desertification.

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## • UN convention on desertification:

It is a multilateral treaty to combat desertification and mitigate effects of drought through effective actions at all levels supported by international cooperation and partnership agreement.

It was signed on 14 oct, 1994 and entered into force on 26 Dec 1996. Pakistan signed it on 15 oct 1994.

### → Structure:

Its permanent sectariat is at Bonn, Gamany until 2006 when it moved to UN. It also has a committee on science and technology and a group of experts.

### → Brief ducription:

It distinguishes between developing and developed countries.

According to its Article 5 the affected developing parties give importance to combat desertification, establish strategies to combat, adress causes of desertification.

Article 6 guides developed parties to support efforts of affected parties by providing financial assistance.

### → Categorization according to regions:

I Africa
II Asia
III Latin America and Caribbean
IV North Mediterranean
V Central and Eastern Europe

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### → Compliance mechanisms:

#### ① Article 9:

Affected developing countries and parties member of RIA to prepare NAP to identify causing factors and describe practical measures to combat. It guides to communicate at COP at its report on implementation measures

#### ② Article 27.

COP empowered countries to consider and adopt procedures to resolve issues regarding implementation

#### ③ Article 6(e):

In this article developed parties are to facilitate acces of knowledge, technology to developing parties and place burden of finances on developed countries.

**Q NO.8**

## ① Cartegena Protocol on Biosafety

It was signed on 15 May 2000 and became effective on 11 sep, 2003. Pakistan adopted it on June, 2001.

### • Objectives:

Ensures protection while transfer, handling and use of LMO resulting from modern biotechnology.

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- **Scope of Protocol:**
  - Applies to transboundary movements, transit, handling
  - Excludes organisms modified through traditional breeding methods and living modified organisms (LMO's) that are pharmaceutical for humans.
- **Compliance mechanism:**

**① Advanced information agreement procedures:**

Most strict are reserved for Genetically modified organisms (GMO's) introduced intentially into the environment. Includes seeds, live fish and others having potential to grow and pass on their genes. It ensures importer company to asses risk before agreement. It is applicable to 1st movement for introduction to environment and not applicable to in transit or GMO's for use in lab.

**② System for agricultural commodities:**

The largest shipment containing GM corn, soybean etc for direct use. Approving government use of commodities and communicate decision to world through BCH and also provide detailed information of their decision.

**③ Risk assessment:**

It empowers govt to decide to accept or reject GMO's based on risk assessment. It evaluates the potential adverse effects of GMO's on environment by conservation and sustainable use of biodiversity.

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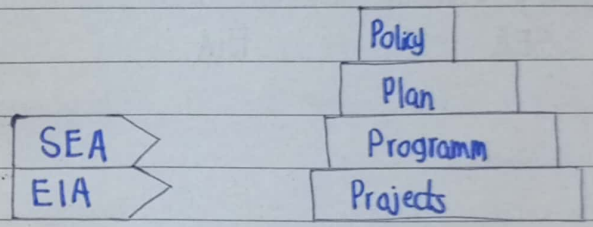
## ② Strategic Environmental Assessment

- **Definition:**

It is a systematic support process, aiming to ensure that environmental and possibly other sustainability aspects are considered effectively in policy, plan and programme making.

- **Positioning SEA in decision making:**




- **Process of SEA:**

Screening
↓
Scoping
↓
Reporting
↓
Consultation
↓
Decision making
↓
Implementation and monitoring

- **Importance of SEA:**
  - It protects the environment

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② It promotes sustainability
③ Improves decision making
④ It prevents problem by identifying early to prevent costs
⑤ Encourages public participation
⑥ It balances between economic development and environmental protection
⑦ Supports legal compliance.

- **Difference between SEA and EIA**

| SEA | EIA |
|---|---|
| ① It takes place at early stage of decision making | Takes place at end stage |
| ② Multistage process with variations | Well-defined process with clear beginning and end. |
| ③ It has a non-legally binding status | It is a legally binding status |
| ④ It focuses on 'Do most good' | It focuses on Do least/no harm |
| ⑤ Emphasizes on meeting goals and protecting environment. | Focuses on minimizing environmental impact. |
| ⑥ Gives early warning of cumulative effects | Has limited opportunity to adress cumulative impacts at projects |
| ⑦ Considers wide range of development alternatives | Has a limited range. |

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## ③ Disaster Risk Management

- **Disaster** is defined as occurence of sudden or major misfortune which disrupts the basic fabric and normal functioning of society or community.
- **Disaster Risk Management**:

Defined as application of of disaster risk reduction policies and strategies to prevent new disaster risks reduce existing disaster risk and manage residual risk contributing to reduction of disaster losses.

- **Phases of DRM:**

**Predisaster phase**

**Mitigation**

- Means lessening of the negative impacts of natural hazards
- Activities includes implementing building codes and land use planning
- Constructing barriers like flood walls
- Promoting public awareness and education

**Preparedness**

- Ensure effective response to disasters by enhancing readiness of individuals, communities
- Developing + updating emergency plans
- Conducting drills and exercises
- Establishing early warning systems
- Training first responders and volunteers

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## Disaster Phase

- Provides immediate assistance during or immediately after a disaster to save lives
- Activates emergency operations centres
- Deploys search and security teams.
- Provides medical care and shelter.
- Distributes food, water and other essentials
- Conducts damage assessment.

## Post-disaster phase (Recovery)

- Restore, rebuild and improve the conditions of affected community with emphasis to improve further resilience
- Rebuild infrastructure and housing
- Restore services like electricity, water and sanitation
- Provides financial assistance
- Psychological and social support.
- Promote economic recovery and development
- Learn to improve for future preparedness.

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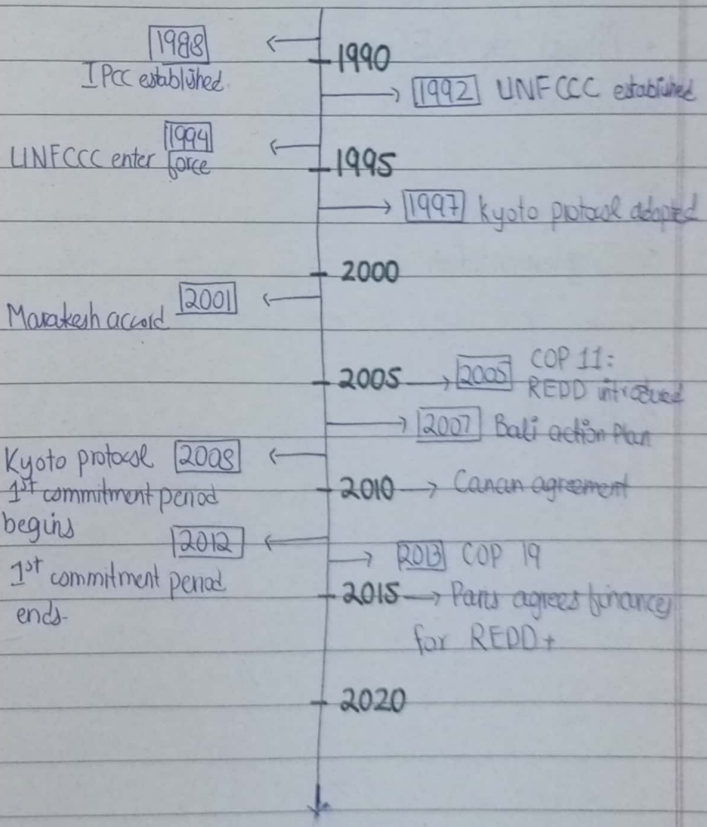
## ④ REDD+

- **Definition**: Defined as reducing emission from deforestation and forest degradation
- **Goal:**

Its overall goal is to reduce forest emission and enhance Carbon stocks in forests.

- **Evolution of REDD+:**



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- **Background:**

It developed from proposal in 2005 by group of contries led by Papua New Guinea calling themselves Coalition for Rainforest Nations. Proposal was taken up in COP 13 and COP 15. Coppenhagen accords in 2009 recognized crucial role of REDD and agreed to establish REDD+. In 2010 REDD became REDD+ in accordance with canun agreement in COP 16.

- **Phases of RED+**

① **Readiness:** It designs strategies and action plan with relevant stakeholders and builds capacity for REDD+ implementation. Also works on policies and measures.

② **Implementation** It includes result based demonstration activities and require additional capacity building and technology development

③ **Result based actions:**

It is implemented at national level and results are fully measured, reported and verified.