Environment

- The word Environment is derived from the French word "Environ" which means "surrounding". Our surrounding includes biotic factors like human beings, plants, animals, microbes, etc. and abiotic factors such as light, air, water, soil, etc.

- Environment is a complex of many variables, which surrounds human as well as the living organisms. Environment includes water, air and land and the interrelation ships which exist among and between water, air and land and human beings and other living creatures such as plants, animals and micro organisms.

- The environment consists of an inseparable whole system constituted by physical, chemical, biological, social and cultural elements, which are interlinked individually and collectively in myriad ways.

- The environment is an important issue even when society is faced with economic crises, wars, and unending social problems. It matters because Earth is the only home that humans have, and it provides air, food, and other needs.

- The environment is living (biotic) or non-living (abiotic) things and their interaction.

Components of Environment

There are four major components:

1.Hydrosphere- Hydrosphere includes all water bodies such as lakes, ponds, rivers, streams and ocean, etc.

2.Lithosphere- Lithosphere means the mantle of rocks constituting the earth's crust. It includes soil, earth rocks, mountain, etc.

3.Atmosphere- It cover the air; which contains gases like oxygen, carbon dioxide, etc. and which protects the solid earth and human beings from the harmful radiations of the sun.

4.Biosphere- It is known as the life layer, it refers to all organisms on the earth's surface and their interaction with water and air. It consists of plants, animals and micro-organisms, ranging from the tiniest microscopic organism to the largest whales in the sea.

Basic concept of EIA

Review: Definition of EIA

✓ **Environmental Impact Assessment is**

A formal process for identifying:

- likely effects of activities or projects on the ENVIRONMENT, and on human health and welfare.

- means and measures to mitigate & monitor these impacts

Environment is broadly interpreted: physical, biological, and social.

In EIA, the term "impacts" is used instead of "effects of activities."

What is an impact?

Basic concept of EIA

What is an impact?

The impact of an activity is a deviation (a change) from the **baseline situation** that is caused by the activity.

! To measure an impact, you must know what the baseline situation is.

The **baseline situation** is the existing environmental situation or condition in the absence of the activity.

The baseline situation is a key concept in EIA.

More...

The baseline situation

In characterizing the baseline situation, many **environmental components** MAY be of interest

The components of interest are those that are likely to be affected by your activity—or upon which your activity depends for its success

Water	*Quantity, quality, reliability, accessibility*
Soils	*Erosion, crop productivity, fallow periods, salinity, nutrient concentrations*
Fauna	*Populations, habitat*
Env Health	*Disease vectors, pathogens*
Flora	*Composition and density of natural vegetation, productivity, key species*
Special ecosystems	*Key species*

Types of impacts & their attributes

The EIA process is concerned with all types of impacts and may describe them in a number of ways

Direct & indirect impacts

Short-term & long-term impacts

Adverse & beneficial impacts

Cumulative impacts

* Intensity
★ Direction
★ Spatial extent
★ Duration
★ Frequency
★ Reversibility
★ Probability

But all impacts are NOT treated equally.

What is an activity?

We are discussing the impacts of activities.
What are activities?

✓ **An activity is:**

a desired accomplishment or output

E.g.: a road, seedling production, or river diversion to irrigate land

Accomplishing an activity requires a set of actions
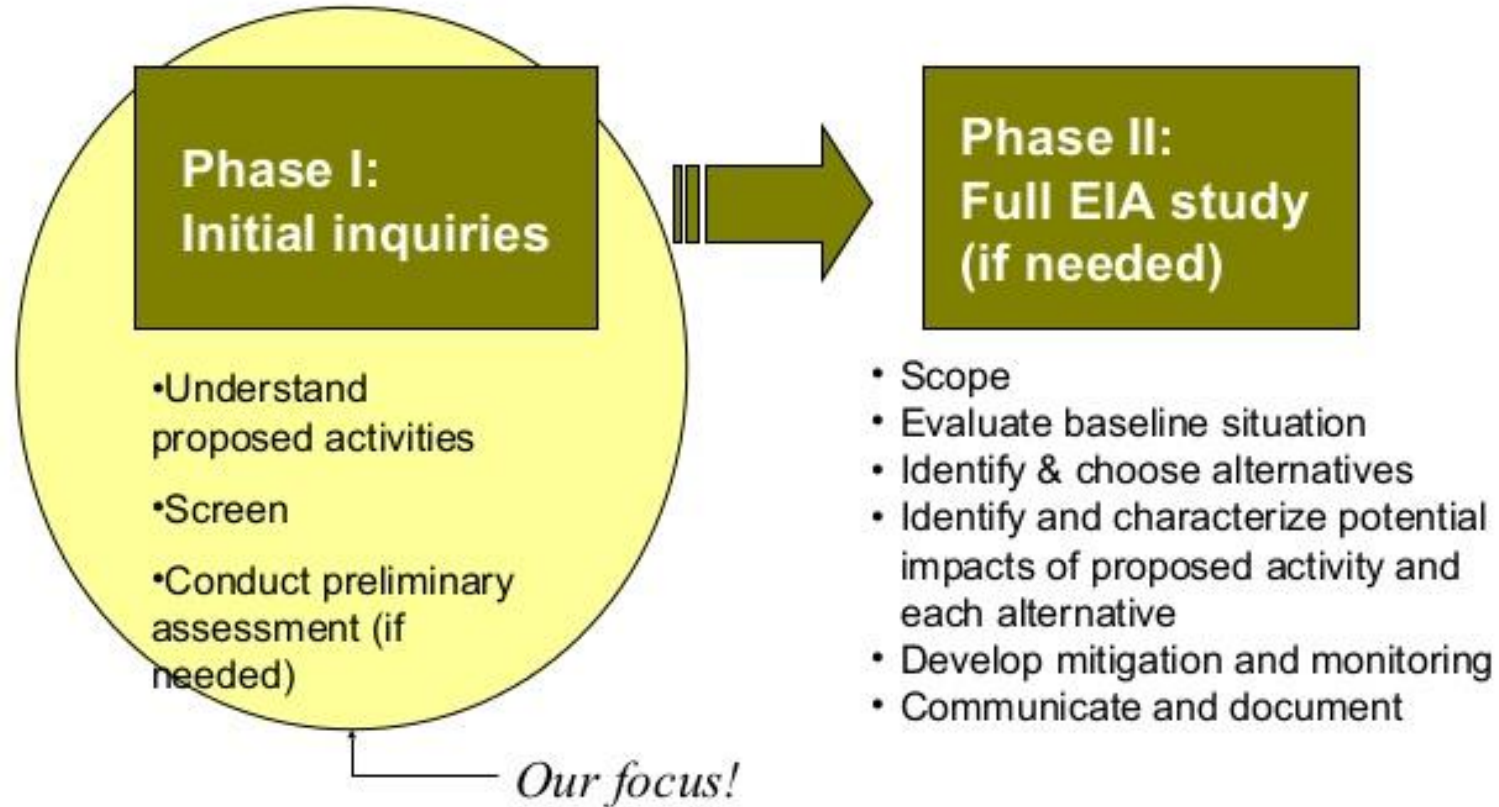
ACTIVITY:
market access road rehabilitation

ACTIONS:
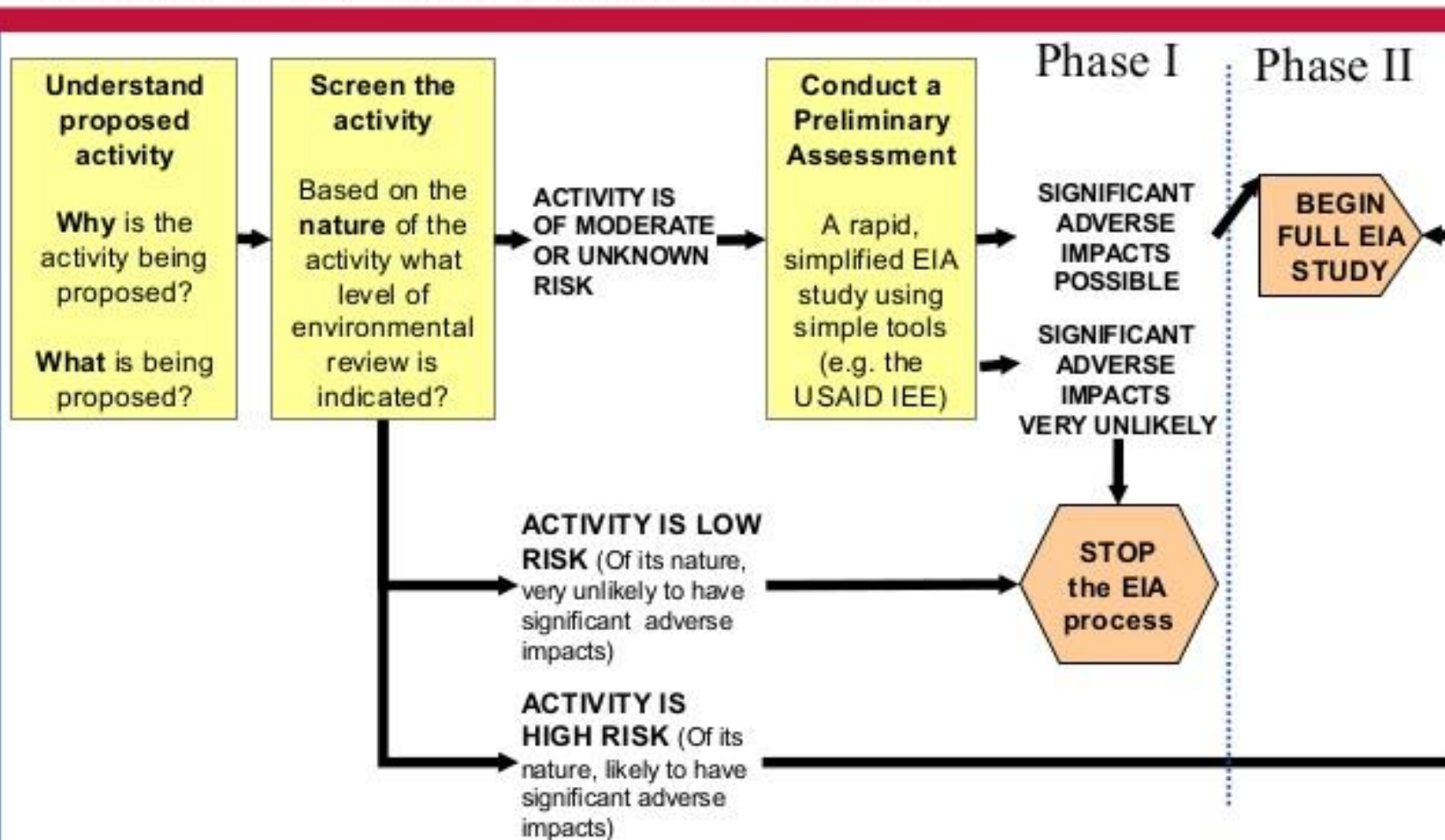Survey, grading, culvert construction, compaction, etc. . .

A project or program may consist of many activities

The EIA process

Phase I: Initial inquiries

- Understand proposed activities
- Screen
- Conduct preliminary assessment (if needed)

Our focus!

Phase II: Full EIA study (if needed)

- Scope
- Evaluate baseline situation
- Identify & choose alternatives
- Identify and characterize potential impacts of proposed activity and each alternative
- Develop mitigation and monitoring
- Communicate and document

Phase 1 of the EIA Process

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The Preliminary Assessment

Typical Preliminary Assessment outline

1. Background (Development objective, list of activities)

2. Description of the baseline situation

3. Evaluation of potential environmental impacts

4. **Mitigation & monitoring**

5. **Recommended Findings**

For each activity it covers, a preliminary assessment has 3 possible findings:

- **The project is very unlikely to have significant adverse impacts. (EIA process ends)**

- **With specified mitigation and monitoring, the project is unlikely to have significant adverse impacts**

- **The project is likely to have significant adverse impacts (full EIA study is required)**

What is mitigation?

Mitigation is. . .

✓ **The implementation of measures designed to reduce the undesirable effects of a proposed action on the environment**

Mitigation is the topic of an upcoming module!

The Full EIA study

The full EIA study has very similar objectives and structure to a preliminary assessment.

However, the full EIA study differs in important ways:

includes the project as proposed, the no-action alternative at least one other real alternative

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! A formal **scoping process** precedes the study to **ID** issues to be addressed

! **Analysis** of environmental impacts is much **more detailed**

! **Alternatives*** must be formally defined. The impacts of each alternative must be identified & evaluated, and the results compared.

! **Public participation** is usually required.

A professional EIA team is usually required.

Who is involved in EIA?

Sponsor of the activity
(usually commissions/conducts the EIA)

Regulatory agencies/ Review authorities

Broad-based public
Communities (men & women)
Civil society
Private Sector

Public consultation is usually only REQUIRED for full EIA studies.

However, it is good practice for preliminary assessments because:

- Predicting impacts is FACILITATED by broad-based public consultation; Judging significance is very difficult without it.

- Transparency and accessibility require disclosure to stakeholders

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Environmental Problems

- The **environmental problems** like global warming, acid rain, air pollution, urban sprawl, waste disposal, ozone layer depletion, water pollution, climate change and many more affect every human, animal and nation on this planet.

Major environmental problems:

- **Air Pollution : Air pollution** is a mixture of solid particles and gases in the **air**. Car emissions, chemicals from factories, dust, pollen and mold spores may be suspended as particles.

- **Water Pollution : Water pollution** is the **contamination** of **water** bodies, usually as a result of human activities

- **Solid Waste (garbage) : Solid waste** means any **garbage**, refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded materials including **solid**, liquid, semi-**solid**, or contained gaseous material, resulting from industrial, commercial, mining and agricultural operations.

- **Global Climate Change :** Global warming is the long-term rise in the average temperature of the Earth's climate system. It is a major aspect of climate change and has been demonstrated by direct temperature measurements and by measurements of various effects of the warming.

- **Habitat Destruction/Fragmentation :** Habitat Destruction/Fragmentation Destroying nature and animals' homes. The charcoal production from the degraded forest resources of Ethiopia.
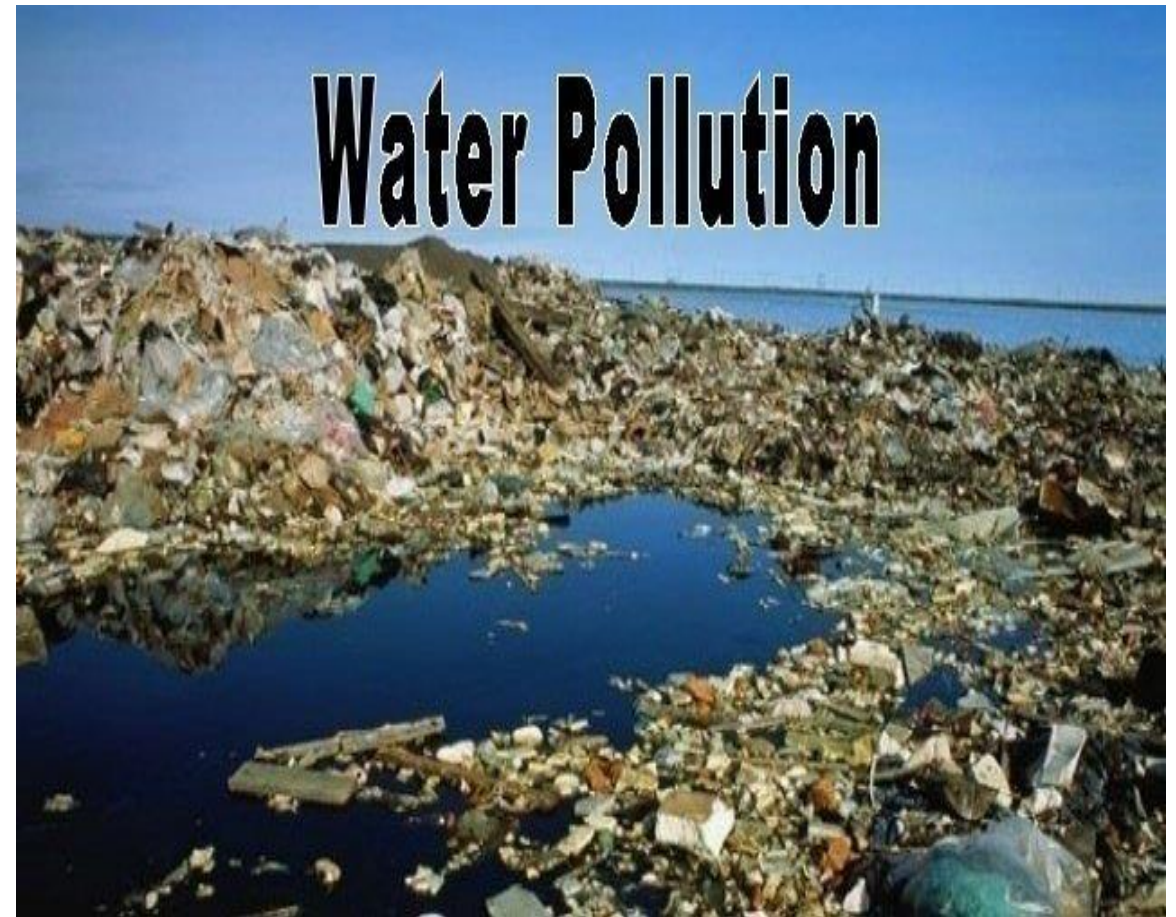
Air pollution

Sustainable Development

- **Sustainable development** is the organizing principle for meeting human development goals while simultaneously sustaining the ability of natural systems to provide the natural resources and ecosystem services based upon which the economy and society depend.

- **Sustainable development** is **development** that meets the needs of the present without compromising the ability of future generations to meet their own needs.
  - The concept of 'needs', in particular, the essential needs of the world's poor, to which overriding priority should be given; and
  - The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.