Geography

Forests

Characteristics of Productive Forests:

- Mainly natural forests
- Tree Density
- Forest Canopy is closed
- Have great commercial value
- Used in extraction of timber and other products

Characteristics of Protection Forests:

- Mainly planted by people
- Have little value
- Main function is to protect the soil from erosion
- Keep environment pleasant by lowering the temperature and providing shade

Importance of trees:

- Help to maintain the environment
- Regulate the supply of water, therefore reducing floods
- Decomposition of leaves helps in humus formation
- Provide raw materials to industries
- Promote tourism
- More employment opportunities in forest departments
- Supply of fruit

Alpine Forests	❖ Have stunted growth ❖ Roots spread sideways to get nutrition from ground ❖ Have upward branches	Used as fuel wood only
Coniferous Forests	❖ Survive in low temperatures ❖ Conical in shape ❖ Sloping branches ❖ Less leaf fall leads to less humus formation	❖ Important source of timber ❖ Attract tourists ❖ Add to scenic beauty of the area ❖ Prevents erosion
Tropical Thorn Forests	❖ Low height ❖ Deep roots in search of water ❖ Scanty vegetation	Used as firewood
Sub-Tropical Scrub Forests	Tropical thorny leaves	❖ Watershed protection ❖ Supplying firewood ❖ Grazing purposes
Riverain Forests		
Mangrove Forests		

Irrigated Forests		

Determinants

Determinants are the factors that affect the type of vegetation.

List of determinants:

- Altitude
- Aridity
- Amount of precipitation
- Edaphic factors

Mangrove trees can survive in salt water because:

- The trees' internal tissues can exhibit a high tolerance to salt
- Their root functions as filters, that strain most of the salt they absorb, then taking them up to their leaves and then excreting the salt on the surface

There are many factors on why mangrove trees are vanishing:

- The cutting of mangroves for firewood
- Sea-water pollution
- The removal of sand from beaches
- The reclamation of beaches for construction of roads and buildings

What can be done for the sustainable development of mangrove trees?

- There should be no construction of dams and barrages on the upstream of the River Indus, as it stops the supply of nutrient rich silt

- People should not throw their waste in areas where mangroves are present, since it poisons the mangrove trees
- There should be strict punishment for those who cut down mangrove trees
- The government should make sure that no cutting-down of mangrove trees take place when a road has to be constructed
- Mangroves trees should be planted on the coastal areas to ensure that marine habitat is not affected by tropical cyclones

Forest products include:

- Timber
- Fuel Wood
- Resin
- Mazri
- Ephedra

Timber

Mainly used for construction, furniture, agricultural implements.etc

Resin

A fluid found in the tissue of a plant (Chir), that becomes solid when exposed to air. It is used for making varnishes

Mazri

Another product of trees used for making mats, baskets, and for packing purposes

Ephedra

A medical scrub used by pharmaceutical industries

Causes of Deforestation

- Urbanization
- Building of roads

- Timber for industries
- Fuel wood
- Clearing of land for farming
- Overgrazing of land
- Mining

(First 4 are related. Last 3 are related)

Effect of deforestation

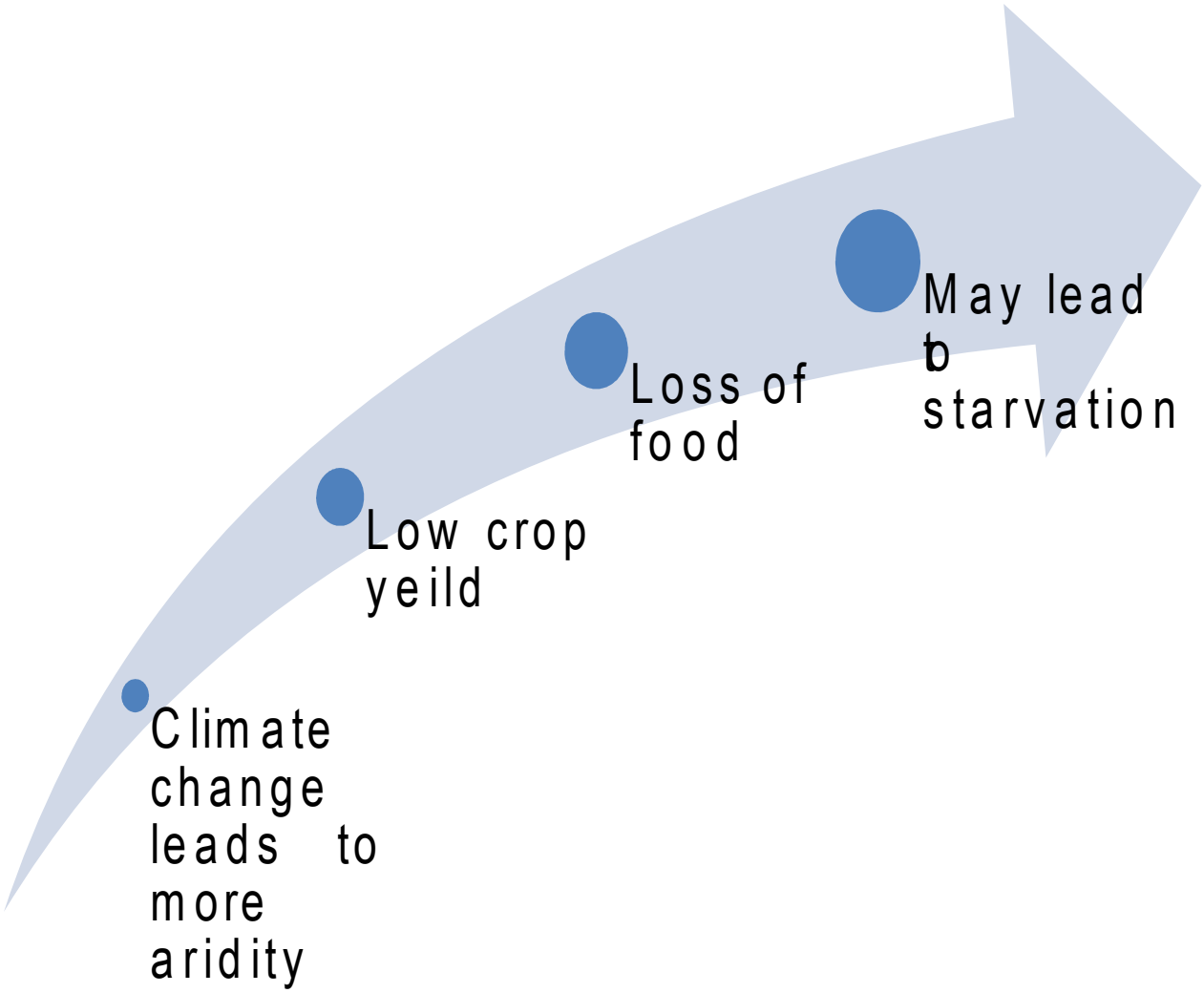
Deforestation has an overall affect on:

- The environment
- The climate
- Exposed soil

The Environment

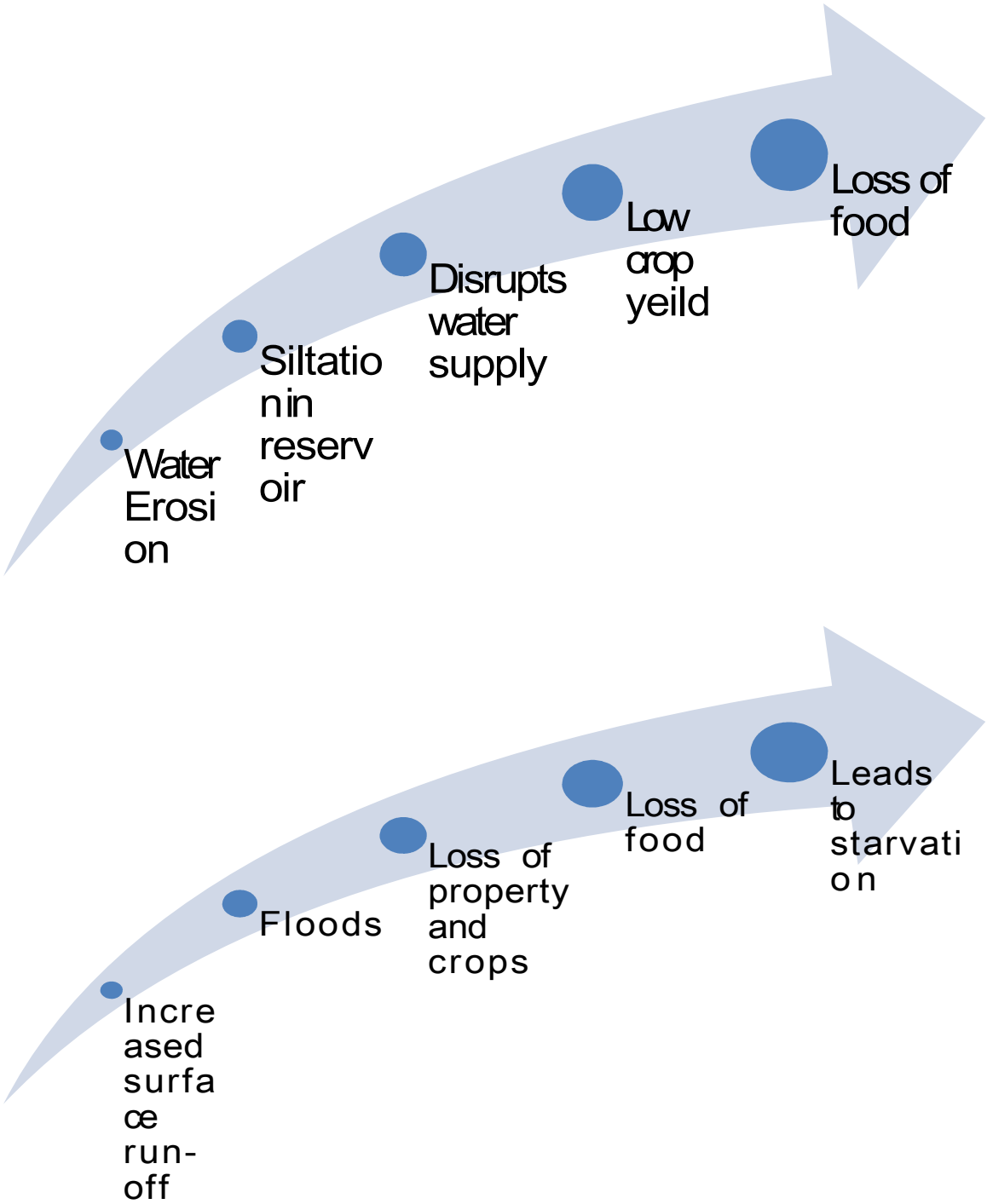
- Species loss
- Habitat destruction
- Air pollution

The Climate



Exposed soil

- Water Erosion
- Wind Erosion
- Increased surface run-off



Solutions to Deforestation

- Supplying irrigation facilities to the deforestated areas

- Only those species of trees should be planted that can grow rapidly
- The governement should reserve land for fuel wood only
- The governement should raise awareness programmes to inspire the young to take care of our trees
- The techniques of planting trees ahould be improved+
- Tres should be planted on the foothill of fountains to provide the residents with food, and stop landslides, and wind erosion
- The government shouls impose strict laws and punishment for those who cut down trees
- Various techniques such as counterploughing, terracing, and strip cultivation should be practised to prevent soil erosion

Some names of maojor afforestation programmes in Pakistan are:

- Tarbela/Mangla Watershed Management Project (TWMP)
- Rechna Doab Afforestation Project (RDAP)
- Agha Khan Rural Support Programme (AKRSP)

Mineral Resources

Minerals are inorganic natural substances that can be obtaied from the surface of the Earth

Minerals can be formed in 3 ways:

- When magma cools, crystals of minerals appears.
- When mineral-rich fluids evaporate, minerals are formed on the surface
- When crystals form slowly, they form minerals such as gemstones

Mining is a process of digging rocks and minerals from the Earth

There are 3 main types of mining:

- Open-cast mining
- Adit Mining
- Shaft mining

Open-cast mining

The minerals are found underneath the surface. Open-cast mining scoops up these rocks from the surface. They rocks are then stripped off by giant escavators, which then load the minerals on wagons to be carried away

Adit Mining

This type of mining is done where the mineral seam is deposited on a hillside. After the coal is dug out, a passage is created.

Shaft Mining

Veritcal shafts are dug in to the ground. Then horizantal tunnels are dug , to transport the coal from the undergound back to the main point

Examples of some non-mettalic minerals are:

- Coal
- Gypsum
- Limestone
- Soapstone
- Marbel
- Clay
- Flourite
- Barite
- Sulphur
- Rock Salt

How is cement formed?

i. The raw materials (limestone/chalk) are crushed, ground, and mixed
ii. They are heated in a rotary kiln. Coal or oil is used as fuel
iii. The kiln products are ground with $CaSO_4$ to make cement

Some characteristics of metallic minerals are:

- Ecnomically more valulable
- Generally hard and tough
- Can change shape without breaking
- Can be stretched and compressed
- Many are good thermal and electrical conductors
- Many can react with acid and water

The characterisitcs of non-mettalic minerals are exactly the opposite of the characteristics of metallic minerals

Quarrying is an open excavation from which any useful stone is extracted fro building and engineering purrposes

The problems assosciated with mining is:

- Financial constraints
- Lack of technical knowledge
- Lack of experts
- Institutional mismanagement

- Inaccessible mineral deposits
- Low priority given to mineral extraction

Rock Salt	• **Vary from 20 to 100 meters thick** • **Rocks are pink or white in colour** • **Used for cooking, preserving, and manufacturing soda** • **Found in areas of NWFP, and in the northern areas of Punjab** **(found in northern areas)**
Brine	• **Used in chemical and fertilizer industries**
Limestone	• **Widespread in Pakistan** • **Main raw material for cement** • **Used in the manufacture of bleeching powder, glass, soap, and other products.** • **Used to treat sugarcane waste to produce alcohol fuel** • **Can be used to check waterlogging and salinity** • **Found in areas near the River Indus, some areas in Punjab and Balochistan, and in the coastal areas of Sindh** **(ranges from north of Punjab to the coastal areas of Sindh)**

Coal	• **Mainly used in brck kilns, making coke, and for power generation** • **Scarce in Punjab and NWFP. Common in Balochistan, and the coastal areas of Sindh(Scarce in the north, but common in the south)**
Natural Gas	• **Mainly used as a power resource** • **Common in the lower areas of Punjab and in the higher areas of Sindh** **(Found in areas between Punjab and Sindh)**
Mineral Oil	• **Used as a power source, a lubricant for machines, and as a motor fuel**
Gypsum ($CaSO_4$)	• **Found in grey, white and pink colour.** • **Used in the manufacture of paints, fertilizers, and many other products Used to make cement, and plaster of Paris** • **Used to treat waterlogging and salininty** • **Common in the northern and southern areas**
Marble	• **Used in buildings and for making chips and decorative pieces**

	• **Commonly found in NWFP. Scarce in Balochistan, and Sindh**
Clays	**3 types of clay:** • **China Clay: used in ceramic industries** • **Fire Clay: used to make bricks, pottery, and chemicals** • **Fuller's Earth: used to manufacture steel, and int the process of oil refining** • **Extremely rare, and found in the northern area NWFP**
Magnetite	• **Used in the manufacture of cement, fertilizers, and chemicals** • **In the northern area of Balochistan**
Sulphur	• **Used in chemical industries to produce H_2SO_4 , paints, and explosives** • **Common in Balochistan**

Chromite	**Gives hardness and electrical resisitance to steel** **Used to make bridges and railway carriages** **Used to make stainless steel, and engineering tools** **Found in Northern Balochistan**

Iron Ore	• **Used to make steel, as well as the construction and the transport industry** • **Found in the extreme north of Pakistan, and in NWFP. It is also found in Balochistan and in areas near the River Indus**
Copper	• **Used ot make electrical wires and other electrical appliances, escpecially swithces that cary current** • **Copper is found at Saindak which is located in Balochistan**
Manganese	• **Used in making dry batteries, and paints. It is used in making steel, flares, and flash bulbs**
Bauxite	• **Aluminium is obtained from Bauxite** • **It is used in the manufacturing of tins, cans, and many other products** • **It is foun near the border of Kashmir**

Celestile	• **Found in the cavities of sedimentary rock** • **It is used in fireworks and paints** • **It is found in Punjab near the River Indus, and in Sindh, near the end of the River Panjnad**

Fishing Industries

The amount of fish caught in marine fishing is more than that caught in inland fidhing, because the quality and quantity of fish is more, as well as the effective marine fishing techniques

Marine Fishing

- Coastline divided in to Sindh and Makran coast (Sindh coast: 30%) (Makran coast: 70%)
- Mangrove trees are common in these areas
- In Sindh, Karachi is the main fishing center. On the Makran coast, fishing ports are small, like Somniami, and Jiwani. Gwader is the main
- Encourages the construction of ice factories, and modern fish curing yards

Factors on why there has been an increase in marine fishing:

- Has numerous creeks, and sheltered harbours
- Has the advatage of a wider continental shelf than the Makran coast
- Indus delta rich in fish food, that encourages fish catch
- Better export and processing facilties

The types of marine fish are:

- Sharks
- Croakers
- Cat-fish
- Drums
- Skates
- Rays

Inland Fishing

- Practised in rivers, lakes and in dams
- Pactised in Punjab, Sindh, and a few areas of NWFP

The types of inland fish are:

- Manaseer
- Palla
- Thalla
- Rahu
- Trout
- Chines species of Carp

Fish Farms

Main fishing centers:

- Manchar Lake in Dadu District
- Kairi Lake North of Thatta
- Reservoirs at Tarbela and Mangla Dams
- Haleji Lake West of Thata
- River Indus at Sukkur, Kotri, and Thatta

To encourage and improve fishing, the government have taken these steps:

- Introduction of new fishing methods
- Development of value-added products (canned fish and fish processing)
- Guidance and weather information for the fisherman
- The execution of development projects by the Marine Fisheries Department (MFD)

Fishing equipment includes:

- Nets
- Nylon Ropes
- Floats
- Boats
- Winches

There are 3 way in which fish is marketed:

i. First, the bussinessman catches his own fish to avoid port charges
ii. The fish is sold at fish harbours, or it is sent to neighbouring districts
iii. A proportion of the fish is marketed locally. Sold to the local population who are not involved in fishing

What are the fishing facilities that are provided to the fishing industries by the government?

- In 1992, The government of Pakistan completed a project of the Gwader Fish Harbour
- Built to provide fisheries with facilities like:
  - Ice Factories
  - Essential factors for a fishing port
  - Improve loading and unloading facilities for commodities

About 30% of the total fish catch is exported to 30 countries of the world

Japan is the main market. U.S.A, U.K, and France are other markets

80% of the total fish catch pf the Makran Coast for export to the Middle East