

FORESTRY

Forestry

- Forestry is a primary profession as in the raw materials are obtained from nature i.e. Land. Other primary professions are mining, fishing, etc.
- Forests are continuous areas of land dominated by trees.
- there are two main types of forests:
 - Productive forests (1/3rd of Pakistan)

- Protective forests (2/3rd of Pakistan)
- Productive forests are natural
- Protective forests are planted by man
- Productive forests have high density
- Protective forests have relatively less density as they are planted by spacing / linearly.
- Productive forests have high commercial value
- Protective forests have low commercial value
- Productive forests examples are timber for construction, etc.
- Protective forests examples are:- to prevent soil erosion, for pleasant environment, etc.
- Productive forests are planted at western and northern mountains
- Protective forests are planted on the banks of rivers and around fields.

Importance

- They reduce air pollution by absorbing pollutants like nitrogen and they provide oxygen.
- They provide natural habitat to wild life e.g. Food, nesting sites, etc.
- They prevent soil erosion as their roots hold soil and their leaves intercept rain.
- They increase the fertility of soil through decomposition of leaves.
- They reduce flooding by regulating water supply.
- They provide employment to those who work in forest departments ...
 - ... as well as to those who work in wood – based industries
- They attract tourism due to their scenic beauty.
- One of their products are ephedra, which is used in pharmaceutical industry.
- Their products are also used in chemical industry as well like resin for varnishes.
- They are used as raw material in wood – based industry e.g. Timber is used in construction industry, in flooring, in making cupboards, etc.
 - ... in furniture industry for making tables, chairs, etc.
 - ... in sports goods industry in making bats, rackets, etc.
 - ... in transport industry in making wooden carts, bus bodies, boats, railway sleepers, etc.
- Wood is used in agriculture as well e.g. Making agricultural implements like animal shed, fences, wooden plough, gates, etc.
- Mazri, another minor product of trees, is used in making packing material and baskets
- Contributes to GDP/GNP therefore to national income.
- Wooden pulp is used in paper industry.
- It helps to restrict imports as it fulfils local demand of timber / wood in wood – based industries therefore save foreign exchange.
- It is used as fuel for cooking / heating (both domestically and commercially)

Factors / Determinants

Soil

- If soil is alluvial, then better growth of trees e.g. Mangroves thrive well in the alluvium of deltas.
 - However, if the soil is thin, then less / low / stunted growth of trees e.g. Alpine forests have stunted growth due to thin soil of mountain peak.

Rainfall

- If rainfall is high, then better growth of trees e.g. Coniferous grow well in rainy areas of Murree.
 - However, if rainfall is low, then stunted growth e.g. Only bushes are found in deserts due to rainfall there.

Temperature / Sunlight

- If temperature is very high or very low then low / slow growth e.g. Alpine forests in low temperature of mountain peaks and bushes in high temperature in deserts.
 - However, if the temperature is warm – hot then better growth e.g. Coniferous grow well in

warm temperature of mountain valleys.

Altitude / Height

- Above 4000 metres :- Alpine (only in north of Pakistan)
- Between 1000 – 4000 metres :- Coniferous (Both northern and western mountains)
- Less than 1000 metres :- Subtropical / Thorne / Dry / Scrub forest (at coastal level / sea level in Pakistan like mangroves). Grown in Potowar Plateau.

Forest Products

- Main products are timber and firewood.
- Minor products are resin, mazri and ephedra.
- Timber is used for paper, furniture, sports good industries, etc.
- Firewood is used for cooking / heating
- Resin is used for varnishes
- Mazri is used for making packing material and baskets
- Ephedra is used for making medicines
- there is an increase in demand of timber due to high population, growth of wood – based industries, demand abroad of sports goods, etc.

Aforestation / Forestation

- Forestation / Aforestation is the planting of trees for the first time.

Deforestation

- Deforestation is the cutting or clearing of trees and forests.

Re-forestation

- It is the replantation of seeds after their deforestation / cutting / cleaning.

Causes of Deforestation

- To grow more food crops because of growing population
- For exploration and exploitation of minerals
- For construction of infrastructure like motor ways, highways, dams, etc.
- Urbanization – that is the extension of cities due to more rural – urban migration.
 - More residential areas and more commercial areas.
- Over – grazing by sheep and goats as they graze right from the bushes or grass. In a way they cause soil erosion.
- Used as fire-wood and fuel wood as less gas is available in northern areas e.g. In heating, cooking (at both domestic and commercial level)
- Demand of timber in wood – based industries e.g. Paper, sports, furniture industry, etc.

Effects of Deforestation

- No roots to hold soil and no leaves to intercept rain therefore causes soil erosion.
 - Therefore loss of nutrients for agriculture
- Siltation in reservoirs of dams
 - So less production of HEP / irrigation
- More floods therefore greater destruction like loss of life, loss of livestock, crops destroyed, roads washed away, etc
- Silt is deposited on farm – land due to flooding. If fertile, then better crop next year, but if infertile, then bad quality crop.
- Low rainfall due to less transpiration.
 - So low crop yield especially in barani (rain dependant) areas.
- Loss of natural habitat so loss of wild life
- Shortage of wood for being used as fuel.
- People may have to travel more to collect wood
- Loss of timber for wood based industries like sports goods industry.

- Increase in air pollution due to less oxygen in atmosphere.
- Gullying (dissection) / bad land due to soil erosion
- More landslides / landslips as no trees / roots to stop them
- Import of timber due to its shortage so loss of foreign exchange and negatively effects Balance of Trade.

Solutions

- Selective cutting so that small / young trees should not be wasted.
- Heavy machinery be restricted in forest on small plants (do not cut small plants)
- Reforestation to compensate for deforestation
- Land reserved for fuel wood plantation so that expensive wood / forests can be protected for wood – based industries.
- Forestation on hill slopes which will reduce soil erosion, silting and flooding e.g. Terraced farming, contour ploughing and strip farming.
- Awareness about the benefits of trees through media, NGO's and educational institutions.
- Nurseries for more plants.
- Forest laws be strictly implemented.
- Some afforestation projects have been started e.g.:-
 - Agha Khan Rural Support Program has started an afforestation project in Balochistan which has planted over 80,000 plants.
 - Tarbela / Mangla project – which is planting trees on privately owned bad-lands
 - Rechna Doab Afforestation Project is planting trees between River Chinab and River Ravi.

Sustainable Forestry

- To ensure forests are available for future by selective cutting.
 - By reforestation of trees which do not need irrigation.
 - More areas of forests
 - Reforestation of trees from where they have been cut down.
 - Maintain forests

Long – term investment

- Forests:-
 - Because trees take many years to grow.
 - Many years before financial return / start production / results are seen
 - High cost of planting
 - Costs during growth.

Types of trees in Pakistan

Alpine

Features

- Stunted growth due to thin soil of mountain peaks.
- Their roots spread sideways to get more nutrients
- They have upward branches to get more sunlight

Main Areas

- Northern Areas (Gilgit Baltistan)

Importance

- Used as fuel wood

Coniferous

Features

- Evergreen to get benefit from short growing season
- Conical in shape to shed snow
- Thick and leathery leaves for less transpiration
- Need less leaves for less transpiration

Main Areas

- Abbotabad
- Murree
- Mansehra
- Quetta
- Kalot

Importance

- Timber for:-
 - Construction, furniture, sports good industries, etc
- They check flooding by regulating water supply
- Conserve soil with the help of their strong roots therefore reduce soil erosion
- Promote tourism due to their scenic beauty
- Reduce air pollution by providing oxygen and removing pollutants

Bela (not natural and also irrigated)

Features

- Planted by man
- Linear plantation
- Same species
- Same size
- Same height

Areas

- Along River Indus and its tributaries like Chenab, Jhelum

Importance

- Reduce temperature by providing moisture to air
- Reduce erosion of banks with the help of their strong roots
- Used for shade
- To reduce air pollution by providing oxygen and removing pollutants
- To reduce flooding

Mangroves

Features

- Broad leaves for more sunlight
- Lathery leaves for less transpiration
- Survive in salty water as their roots filter out salts and their leaves excrete extra salts.

Areas

- Indus (Sindh) and Hub (Balochistan) delta

Importance

- Provide firewood for cooking / heating
- Timber for construction
- Leaves provide food for livestock
- Protection against tsunamis as they absorb shockwaves
- Protection of coast line from flooding
- They are beneficial for fishing industry because:-
 - 1) Breeding ground for fish
 - 2) Protect small fish from predators
 - 3) Provide nutrients to fish

Sub-tropical / Tropical Dry / Tropical Thorn/ Rakh forests

Features

- Small / medium in height
- Usually are rounded bushes
- They have hard wood
- They are deciduous (they shed their leaves in autumn)
- They are thorny

Main areas

- Punjab Plain

- Sindh plain
- Thar desert
- Kharan desert
- Potowar Plateau

Importance

- Protection from floods
- Fire wood e.g. For cooking
- Food for livestock
- They provide shade
- They reduce air pollution by providing oxygen

Irrigated forests

Features

- Planted by man
- Linear (in line) plantation
- Equally spaced
- Same species
- Same height / age / size
- They are regularly supplied with water

Main areas

- Changa Manga
- Chicha Watni
- District Sahiwal
- Bhawalpur
- Thal desert
- Buddu barrage
- Taunsa barrage

Importance

- Promote tourism due to scenic beauty
- Provide wood for transport industry like railway sleepers, bus bodies / chassis, carts, etc.
- Firewood for domestic use
- Growing population so more need of wood (e.g. Construction of houses)
- More demand of wood in wood based industry e.g. Timber in paper, sports goods, furniture

industry, etc.

- To reduce timber imports
- Too many trees are being deforested due to too many trees being cut down, so more

demand of these trees to be planted.

- To replace areas where forests cannot be replanted due to soil erosion / urbanization
- To reduce water logging
- To prevent erosion of banks and slopes