Severe Drought in Amazon Rainforest

Why in news?

Recently number of rivers have dried due to intense drought in Amazon rainforest, damaging the jungle ecosystem and having a profound impact on the indigenous communities living in that area.

Amazon Rainforest
• Amazon Rainforest is a moist broadleaf tropical rainforest that covers *40% of South America.* • It is the *largest tropical rainforest in the world,* covering over 5.5 million square kilometres, covers an area twice the size of India. • **Countries** - 8 South American countries - Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, Suriname, as well as French Guiana, a department of France. • Majority of the forest area is in *Brazil (60%)*, followed by Peru (13%), Colombia (10%), and minor presence in other countries. • **Rivers-** The basin is drained by the *Amazon River, the world's largest river* in terms of discharge, and the second longest river in the world after the Nile. • **National Parks-** Yasuni National Park (Ecuador), Mamiraua Sustainable Development Reserve (Brazil), Tumucumaque National Park (Brazil), Amacayacu National Natural Park (Colombia) etc.,

What is the significance of Amazon rainforest?

- **Rich biodiversity** - The Amazon rainforest is home to
  - 1/3 of the world's species
  - 1/4 of the world's freshwater
  - 1/5 of the world's forests
  - 48 billion tons of carbon dioxide in its trees
  - 200 indigenous and traditional communities
- **Lungs of the planet-** As it provides the essential environmental world service of continuously recycling carbon dioxide into oxygen.
- **Incredible ecosystem**- It is home to numerous natural species such as endangered pink dolphin, red bellied piranha etc.,
- **Limiting Climate Change**- It act as an excellent *carbon sink* as an estimated 150-200 billion tons of carbon are stored in the amazon’s forests and soils.
- **Climatology** - It has the *highest rainfall rate* in the world and is responsible for 75% of its own rainfall.
- It also influences the rainfall pattern in the countries nearby.
- **Medicinal hub-** The indigenous tribes have used many plants to insects to cure diseases which is carried forward for many years.

What caused the severe drought?

- **Onset of El Nino**- It refers to an abnormal warming of surface waters in the equatorial Pacific Ocean.
- **Extreme heat-** Drought is exacerbated by a decrease in humidity and a lack of rainfall, damaging the vegetation, fauna and local communities that depend on natural resources.
- **High water temperatures**- Northern tropical Atlantic Ocean is witnessing unusually high water temperatures.
- Due to warmer ocean waters, heated air rises into the atmosphere, which then reaches the Amazon rainforest. The warm air inhibits the formation of clouds, causing rainfall to drop sharply.
- **Deforestation**- Destruction of vast areas of vegetation contributes to rising temperatures and reduction in evapotranspiration, which is a crucial process for water balance in the region.
- **Land degradation**- Cheap land is provided to cattle ranchers of other states by rampant deforestation, it affects the forest biome.
- **Mining**- Disorganised mineral extraction has created banks of land that are harmful to navigation and which, in the critical scenario of drought, have caused many vessels to run aground.
- **Hydroelectric dams**- It is due to the decomposition of organic matter in reservoirs created by dams, which releases methane, a potent greenhouse gas, into the atmosphere.
    - The impact is heavy in *Madeira river.*
- **Increase CO2**- Deforestation associated with the construction of dams, as well as soil degradation and erosion resulting from the alteration of aquatic and terrestrial ecosystems, can increase emissions of carbon dioxide (CO2) and other pollutants.

What are the impacts of severe drought?

- **Water level-** *Rio Negro*, one of the world's largest rivers by discharge level has dropped to its lowest point in at least 121 years.
- **Navigation**- It has left many boats and houseboats stranded, cutting for transportation and supplies for remote villages.
- **Wildfire**- The drought triggered large wildfires that have destroyed vast areas of forest and emitted huge amounts of carbon dioxide into the atmosphere.
- **Air pollution**- The smoke from the fires has made the air quality hazardous for human health and reduced visibility.
- **Biodiversity-** The drought has killed more than 140 dolphins, including *pink dolphins and tucuxis, also known as grey dolphins*.
- **Food scarcity-** The low volume of the rivers affects the human supply, causing a lack of drinking water and food in all the small villages.
- **Water pollution**- Dead animals have polluted the water, making it unsafe for drinking and cooking.
- **Health**- Children in the region get affected with diarrhoea, fever and vomiting due to unsafe drinking water availability.
- **Electricity disruption**- Drought affected the operation of major hydropower dam in

the region, which provides electricity for millions of people.

- **Global warming**- A study be Nature revealed that the Amazon has become slower at recovering from longer periods of drought over the past 20 years and is nearing its tipping point.
- Beyond the tipping point, it would transform from a lush green forest into a drier open savanna, releasing a large amount of stored carbon, which would, in turn, exacerbate global warming.

What lies ahead?

- The Amazon rainforest is a vital ecosystem that supports biodiversity, regulates climate, and provides essential services for humanity. It is important to protect it from further degradation and restore its resilience.
- Extreme drought in amazon and its devastating effects can be combated by adopting strict measures to curb deforestation and illegal mining in the region.

Deforestation in Amazon

Causes of deforestation

Consequences faced due to deforestation

- **Forest Fires-** In 2022 there had been forest fire in Amazon thereby impacting the ecosystem and the wildlife.
- **Irreversible Ecological disaster-** Leads to loss of incredible rich ecosystem and loss of wildlife species.
- **Disturb Indigenous tribes-** Affects the traditional life of tribes, and new diseases are brought in by illegal loggers, farmers, ranchers.
- It also leads to loss of traditional forest rights of tribal population.
- **Increase in CO2 emission**- Reduction of forest land leads to decrease in carbon sink capacity and hence increase the CO2 emission and impacts the environment and planet.
- **Change in water cycle-** Clearance of green rich vegetation negatively impacts the water cycle and triggers the cycle of desertification.
- **Land displacement-** It disturbs the indigenous people of their traditional land and leads to exploitation in the name of commercialization.

Estimates place the current deforestation level of the Amazon at 17%, and its tipping point at 20-25%. If the tipping point is surpassed, the largest rainforest on Earth could become—at best—a dry grassland.

Steps taken to protect Amazon rainforest

- **Technological Advancements-** Satellites like *DETER, PRODES* detect real time deforestation data which is useful to frame policy and to deal with the issue of

deforestation.

- **Protected Areas-** Over half of the Brazilian Amazon is now designated as national parks or indigenous lands.
- **Industry Cooperation-** Both cattle and soybean industry adopted well to the restrictions placed on protecting Amazon rainforest.
- **Improved enforcement-** Enhanced law enforcement by the governments in protecting the rainforest.
- **Amazon Sustainable Landscapes Program**- It is a joint initiative by World Bank and other institutions to conserve and protect the Amazon rainforest.
- **International Incentives**- United Nations launched REDD+ (Reducing Emission from deforestation) and Forest degradation program.
- **Conservation projects-** There many initiatives like ***Amazon Watch, Rainforest Trust, Rainforest Action Network*** etc., to protect the Amazon rainforest.
- **Amazon Sacred Headwaters initiative-** It is to build a shared vision among indigenous peoples, NGOs, the philanthropic community, social entrepreneurs and governments

References

1. Indian Express- Severe Drought in Amazon rainforest
2. Britannica- About Amazon rainforest

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