Climate Change and Land

The article is based on the recent IPCC report **"Climate change and Land"** published on 8th August and an editorial **"Climate on the Farm"** published in The Indian Express on 10th August regarding the same.

Context

- Intergovernmental Panel on Climate Change (IPCC) recently, on 8th August, released **Special Report on *Climate Change and Land* (SRCCL)** which finds that we must dramatically change the way we use land to limit global warming to safe levels by 2030.
- It is alarmed about the **degrading land resources globally** and its impact on furthering negative effects of climate change. It concluded that better management of the world's farms and forests is necessary to tackle climate change.
- The IPCC report warns that clean energy, clean transport and reduction emissions alone will not cut global emissions enough to avoid dangerous warming beyond 2 degrees Celsius.
- It points out that the global food system is responsible for 21 to 37 per cent of the world's GHG emissions.

Land Use and Climate change

- About a quarter of the Earth's ice-free land area is subjected to ***"human-induced degradation"*** according to the **IPCC report.**
    - **Rapid agricultural expansion** has led to destruction of forests, wetlands and grasslands and other ecosystems thus boosting global warming.
    - **Soil erosion** from agricultural fields, the report estimates, is 10 to 100 times higher than the soil formation rate.
- Land degradation is both cause and consequence of climate change. When land is degraded, it becomes **less productive,** restricting what can be grown and reducing the soil's ability to absorb carbon. This exacerbates climate change, while climate change in turn exacerbates land degradation.
- **Land serves as a sink for carbon,** because healthy ecosystems and soils can absorb carbon from the atmosphere. Between 2007-2016, these sinks removed 28% of total human carbon dioxide emissions from the air — an important barrier to even more severe climate change.
- However, **degraded land does not have the capacity to absorb carbon; it can actually release carbon.** And it's possible that climate change and human activities could damage land to the point where it becomes a net source of carbon emissions.
- **Agriculture, forestry and other types of land use** account for 23% of human greenhouse gas emissions. At the same time natural land processes **absorb carbon dioxide equivalent to almost a third of carbon dioxide emissions** from fossil fuels and industry.
- Land must remain productive to maintain food security as the population increases as well as the negative impacts of climate change on vegetation increase.
- Food security will be increasingly affected by future climate change through yield declines – especially in the tropics – increased prices, reduced nutrient quality, and supply chain disruptions.

Mitigation Strategies

- The report shows that ***sustainable land management*** can contribute to tackling climate change, but is not the only solution. **Reducing greenhouse gas emissions** from all sectors is essential if global warming is to be kept to well below 2ºC, if not 1.5ºC.
- Coordinated action to address climate change can simultaneously **improve land, food security and nutrition, and help to end hunger.**
- The report highlights that climate change is affecting all **four pillars of food security:**
    - availability (yield and production),
    - access (prices and ability to obtain food),
    - utilization (nutrition and cooking), and
    - stability (disruptions to availability).
- More sustainable land use, reducing over-consumption and waste of food, eliminating the clearing and burning of forests, preventing over-harvesting of fuelwood, and reducing greenhouse gas emissions will help to address land related climate change issues.

Significance of the Report

- The report is expected to be a key scientific input into forthcoming climate negotiations, such as the Conference of the Parties of the **UN Convention to Combat Desertification** in Delhi in September and the UN Framework Convention on Climate Change Conference **(COP25)** in Santiago, Chile, in December.
- The report could spur moves to pressure developing countries like India to ramp up their global warming mitigation targets.
- Countries, including India, could do well to pay heed to the IPCC report's recommendations on curbing land degradation and soil erosion by improving knowledge systems.

Way Forward

- The IPCC report presents another alarming picture regarding climate change effects on agriculture and food systems by emphasising its deleterious effects on land use. It also presents some solutions towards sustainable development strategies to effectively mitigate climate change.
- There needs an enhanced commitment from nations more than their pledged **INDCs** (Intended Nationally Determined Contributions) under **Paris Climate Deal.** However, it must not be used to pressurize developing countries to ramp up their global warming mitigation targets.
- India, which seems well on course to meeting its Paris Climate Pact targets, should be careful about taking up commitments that hobble its agriculture sector.

Drishti Input

"Examine the relationship between land use and climate change in the light of food security and global warming"