Conserve Soil for Food Security

Why in news?

India did not sign the agriculture agreement in COP 28 as it would involve significant changes in agricultural policies and farming practice.

Major outcomes of COP28
• **Host-** Dubai, United Arab Emirates • **Loss and Damage Fund-** World Bank will host the L&D facility as a financial intermediary fund (FIF) for an interim period of 4 years.It was 1st announced during COP27 in Sharm el-Sheikh, Egypt. • **Global stocktake**- It is the *first ever global stocktake* that is designed to assess the collective progress towards achieving the purpose of Paris Agreement. • **UAE Declaration on a New Global Climate Finance Framework**- It aims to make finance available, accessible and affordable bridging the trust gap between the Global North and Global South. • **ALTÉRRA-** It is the world's largest private investment initiative to attract more climate investment to Least Developed Countries (LDCs) and Small Island Developing States (SIDS). • **Global Roadmap on Food and Agriculture**- It is a *first of its kind non-binding* global roadmap for food systems to be finalized at COP30 in Brazil, for the first time agriculture was brought into agreement. • **Emirates Declaration on Resilient Food Systems, Sustainable Agriculture, and Climate Action**- Its aim is to promote food security while combatting climate change, *India refrained from signing* as it conflicted with its longstanding policy of not committing to climate.

What are the challenges of food security?

- **Population growth**- Homo sapiens took over 200,000 years to reach a population of 1 billion in 1804, however the next billion was added in just 123 years by 1927.
- **Climate change**- It leads to extreme weather events such as droughts, floods, and heatwaves, which can devastate crops and livestock.
- **Limited natural resource**- Land degradation, water scarcity, and depletion of natural resources pose significant challenges to food production. Soil erosion, pollution, and overexploitation of water resources diminish agricultural productivity and threaten long-term food security.
- **Poverty-** It limits people's access to food by constraining their purchasing power and reducing their ability to produce or purchase food.
- **Income inequality** - It heightens disparities in access to food, with marginalized communities often facing the greatest barriers to food security.
- **Conflict**- It disrupts food production, distribution, and access, leading to food shortages, displacement, and humanitarian crises.

    - **Example-** Gaza and Haiti on the brink of famine due to ongoing war and crisis by criminal gangs respectively
- **Trade barriers**-Practices such as tariffs, and subsidies distort global food markets and can hinder access to affordable and nutritious food.
- **Environmental degradation**- Deforestation, biodiversity loss, and pollution degrade ecosystems and reduce their capacity to support agriculture.
- **Food waste-** Significant amounts of food are wasted or lost throughout the supply chain, from production and processing to distribution and consumption.

Steps taken by India to provide food security
• **Green revolution (1960s)-** It refers to the large increase in production of food grains resulting from the use of high yielding variety (HYV) seeds especially for wheat and rice, Dr. M.S, Swaminathan was the key architect for this movement in India. • **Integrated Management of Public Distribution System (IMPDS)** – The scheme entitles food grains from any Fair Price Shop (FPS) of their choice anywhere in the country. • **National Food Security Act, 2013 (NFSA)** - Provides a legal right to persons belonging to eligible households to receive foodgrains at subsidised price. • **Targeted Public Distribution System (TPDS)** - States were required to identify the poor for delivery of food grains and for its distribution in a transparent and accountable manner. • **Antyodaya anna yojana (AAY)** - Aims at reducing hunger among the poorest segments of the Below Poverty Line population. • **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)** -A food security welfare scheme announced during covid-19 where the centre provides provides ***5 kg of free food grains*** per month to the poor.

What are the impact of food security policy on environment?

- **Soil degradation**- Heavy subsidies on chemical fertilizers, particularly urea, have led to imbalanced use of nitrogen (N), phosphate (P), and potash (K). which made soil deficient in organic carbon.
- **Poor Soil Organic Carbon (SOC)-** The optimal SOC level should be between 1.5% and 2%, but 60% of Indian soils have SOC levels below 0.5% due to excessive use of chemical pesticides.
- **Loss of biodiversity**- The use of HYV seeds displaced indigenous species and agricultural system that has led to loss of biodiversity and agricultural genetic resources aggravating the genetic vulnerability of many valuable gene pools.
- **Groundwater depletion-** Groundwater levels are falling in many Indian states, with critical conditions in Punjab, Haryana, and Rajasthan. This is attributed to free electricity for irrigation, minimum support prices, and unrestricted procurement of paddy, leading to excessive groundwater use.
- **Ecological impact-** The overuse of groundwater has resulted in an ecological crisis, with the water table dropping annually and paddy fields emitting about 5 tons of carbon per hectare.
- **Loss of crop diversity**- Policies have caused a shift in crop patterns, particularly in Punjab where rice cultivation increased from 4.8% in 1960 to over 40% today, replacing other crops like maize, millets, pulses, and oilseeds.
- **India's status-** India, with only 2.4% of the world's geographical area, 4% of global freshwater resources, and 18% of the world's population, is under huge stress, be it

its soils, water, air (GHG emissions) or biodiversity.

What lies ahead?

- The need of the hour is to implement policies that are beneficial to both peasant and the planet to save future generation.
- A holistic approach must be implemented to handle the climate change and extreme weather events are likely to increase causing massive damage to lives and livelihoods.
- Immediate action must be taken to create climate-resilient food systems, restore soil health, halt groundwater depletion, significantly reduce greenhouse gas emissions, and incentivize biodiversity conservation through green credits.

References

1. Indian Express- To ensure a hunger free nation protect soil
2. IGNOU- Green Revolution

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