Mains Practice Question

Q. Discuss the impact of Global warming on the Himalayan ecology. (150 words)

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Approach:

- Introduce with significance of the Himalayan ecosystem.
- Discuss the impacts of Global warming on the Himalayan ecology
- Give a way forward to reduce such impacts.

Introduction

- The Himalayan ecosystem is fragile and diverse. It includes over 51 million people who practice hill agriculture and remains vulnerable. The Himalayan ecosystem is vital to the ecological security of the Indian landmass, through providing forest cover, feeding perennial rivers that are the source of drinking water, irrigation, and hydropower, conserving biodiversity, providing a rich base for high value agriculture, and spectacular landscapes for sustainable tourism.
- The Himalayan ecosystem is vulnerable and susceptible to the consequences of climate change especially global warming resulting largely from anthropogenic emissions.

Body

Impacts of Global warming on the Himalayan ecology:

- **Impact on agro-ecosystems:**
  - The apple farm workers of the Himalayan region have observed that apple cultivation has shifted to higher altitudes and apple yield mainly in lower altitudes has declined due to inadequate chilling as the temperature at lower altitudes is rising due to warming in Himachal Pradesh.
  - Other impacts - Reduced availability of water for irrigation; Extreme drought events and shifts in the rainfall regime resulting into failure of crop germination and fruit set; Invasion of weeds in the croplands and those are regularly weeded out by the farmers; Increased frequency of insect-pest attacks.
  - These factors have led to loss in agri-diversity and change in crops and cropping patterns.
- **Impact on forest ecosystems:** In the western Himalayan mountains early flowering of several members of Rosaceae and Rhododendrons has often been linked with global warming. Increased incidences of forest fire are another prominent change that is linked with warming of Himalayan region.
- **Flora and fauna:** It increases the risk of extinction of species that have a narrow geographic and climatic range. Threatened and endemic species are the most vulnerable, while invasive species from warmer regions will consolidate at the expense of existing local communities.
- **Impact on water resources:** At high elevations in the Himalaya, an increase in temperature could result in faster recession of glaciers and an increase in the number and extent of glacial lakes - many of which have formed in the past several decades. The rapid growth of such lakes could exacerbate the danger from glacial lake outburst floods (GLOFs), with potentially disastrous effects.

- **Socio-economic and health impacts:** The consequences of biodiversity loss are likely to be the worst for the poor and marginalized people who depend almost exclusively on natural resources. Poverty, poor infrastructure (roads, electricity, water supply, education and health care services, communication, and irrigation), reliance on subsistence farming and forest products for livelihoods, substandard health indicators (high infant mortality rate and low life expectancy), and other indicators of development make Himalaya more vulnerable to global warming as the capacity to adapt is inadequate among the inhabitants.
- **Impact beyond the region:** Ganges, Brahmaputra, Yamuna, and other major river systems originate in the Himalayas. Any changes in the Himalayan glacier dynamics and melting are expected to severely affect about 1.3 billions of people.

Way Forward

- **National Mission for Sustaining the Himalayan Ecosystem (NMSHE)** is a unique mission. It should develop self sustaining knowledge networks which are capable of permanently contributing to the national efforts for sustaining a fragile Himalayan ecosystem. It needs to provide a time bound action program for a long term self sustaining national activity.
- A further strategic approach is needed for detailed research on different ecosystem services and functions to estimate the potential impacts of climate change and global warming. Such research could develop adaptation mechanisms and/or highlight mechanisms that have already been implemented by local people in response to the changing environment.