TOPIC OF THE DAY (DATE: 08.01.2024)

PRITHVI VIGYAN (PRITHVI)" SCHEME

WHY IN NEWS?

Recently, The Union Cabinet, led by Prime Minister, has sanctioned the "Prithvi Vigyan (Prithvi)" scheme, a significant project of the Ministry of Earth Sciences.

About "Prithvi Vigyan (Prithvi)" scheme

- The comprehensive scheme "Earth Sciences" approved by the Union Cabinet is a significant initiative under the Ministry of Earth Sciences, to be implemented during the period 2021-26. This scheme, with a total cost of Rs 4,797 crore, encompasses five ongoing sub-schemes, each focused on different aspects of Earth sciences.
- The government stated that PRITHVI stands for "Promoting Research in Earth Systems Science, Technology, & Human Resource Development," and includes five existing sub-schemes

Sub-Schemes:

Atmosphere and Climate Research-Modeling Observational System and Services (ACROSS):

- Focus: Conducting and enhancing long-term observations of the atmosphere.
- Objective: Record signals of important changes in the Earth's atmosphere.

Ocean Services, Modeling Applications, Resources and Technology (O-SMART):

- Focus: Exploration and sustainable exploitation of marine resources.
- Objective: Develop technology for marine resource exploration and its sustainable exploitation for social applications.

Polar Science and Cryosphere Research (PACER):

- Focus: Exploration of Earth's polar regions and cryosphere.
- Objective: Enhance understanding of polar science and cryosphere research.

Seismology and Geology (SAGE):

- Focus: Study of seismic activities and geological processes.
- Objective: Improve understanding of seismology and geology for better hazard prediction.

Research, Education, Training and Outreach (REACHOUT):

- Focus: Promoting research, education, training, and outreach activities.
- Objective: Transform scientific insights into practical services for social, environmental, and economic benefits.

Objectives of the Prithvi Vigyan (Prithvi) scheme:

Long-term Observations:

- Conduct and enhance long-term observations of the atmosphere, oceans, geosphere, cryosphere, and solids of the Earth.
- Record signals of important changes in the Earth system.

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Modelling Systems:

- Develop modelling systems to understand and predict weather, ocean, and climate hazards.
- Understand the science of climate change.

Exploration:

- Explore Earth's polar regions and high seas.

Technology Development:

- Develop technology for the exploration and sustainable exploitation of marine resources for social applications.

Components of the Earth System

1.***Atmosphere***: Examining the composition, structure, and dynamics of the Earth's atmosphere, including weather patterns and atmospheric circulation.

2. ***Hydrosphere:*** Investigating the distribution, movement, and properties of water on Earth, encompassing oceans, rivers, lakes, and groundwater.

3. ***Geosphere:*** Understanding the Earth's solid components, including its rocks, minerals, and the processes shaping its surface, such as tectonics and erosion.

4. ***Cryosphere***: Analyzing frozen components of the Earth, like glaciers, ice caps, and permafrost, and their role in climate and hydrological systems.

5. ***Biosphere***: Studying the interactions between living organisms and their environment, examining ecosystems, biodiversity, and the impact of human activities on life.

Impact and Future Prospects:

1. Addressing Major Challenges:

- *Weather and Climate:* The scheme contributes to improved weather forecasts and climate models, aiding in disaster preparedness and resource planning.
- *Oceanography:* Enhancing our understanding of oceans leads to better management of marine resources and prediction of ocean-related events.
- *Cryospheric Studies:* Insights into the cryosphere help in assessing the impact of climate change on ice-covered regions and sea-level rise.
- *Seismology:* The scheme contributes to earthquake prediction and mitigation strategies.

2. Sustainable Resource Utilization:

- *Living Resources:* The scheme explores sustainable practices for agriculture, forestry, and fisheries, promoting biodiversity conservation.
- *Non-living Resources:* Sustainable management of minerals, water, and land resources ensures long-term benefits without compromising the environment.

3. National Development and Environmental Conservation:

- *Balanced Approach:* By balancing economic development with environmental conservation, the scheme aims to ensure long-term prosperity without degrading the Earth's systems.
- *Policy Formulation:* Findings from the scheme can inform policy decisions related to land use, resource management, and environmental protection.