

IAS 2022

GOOD
practice
24

**INITIATIVES FOR
BLUE ECONOMY**





An Institute for Civil Services

OUR CLASSROOM & ONLINE COURSES

GS FOUNDATION

- ☑ 1 Year IAS Foundation
- ☑ 3 & 2 Year IAS Foundation
- ☑ GS Mains Foundation

OPTIONAL FOUNDATION

- ☑ Political Science
- ☑ History
- ☑ Geography
- ☑ Public Administration
- ☑ Anthropology

MAINS COURSES

- ☑ GS Mains Advance
- ☑ Applied GS
- ☑ Ethics Integrity & Aptitude
- ☑ Essay Writing
- ☑ GS Paper 2
- ☑ GS Paper 3

TEST SERIES

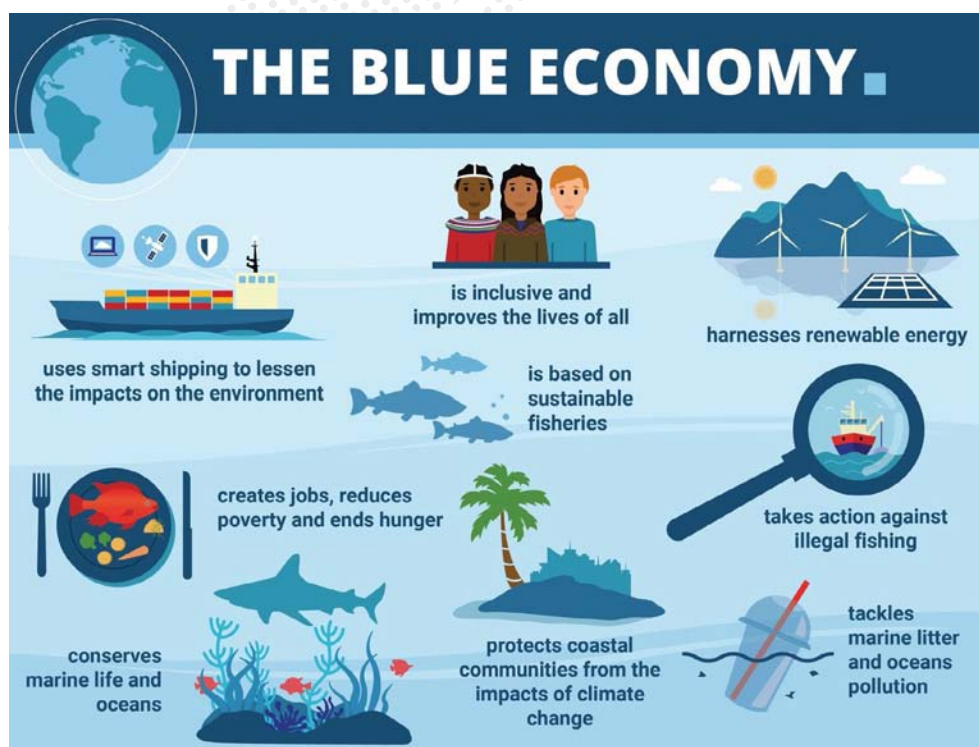
- ☑ Prelims Test Series
- ☑ GS Mains Test Series
- ☑ Essay Test Series
- ☑ Ethics Test Series
- ☑ Optional Test Series
 - Political Science
 - Geography
 - History
 - Public Administration
 - Anthropology

Visit:  www.iascore.in

INITIATIVES FOR BLUE ECONOMY

WHAT IS BLUE ECONOMY?

- According to the World Bank, the blue economy is the “sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem.” Blue Economy will aid in achieving the UN Sustainable Development Goals, of which one goal, 14, is “Life Below Water”.
- An important challenge of the blue economy is to understand and better manage the many aspects of oceanic sustainability, ranging from sustainable fisheries to ecosystem health to preventing pollution. Blue economy challenges us to realize that the sustainable management of ocean resources will require collaboration across borders and sectors through a variety of partnerships, and on a scale that has not been previously achieved.



SCHEMES TO SUPPORT BLUE ECONOMY

1. Ocean Services, Modelling, Application, Resources & Technology (O-SMART)

■ Need of the Scheme

- ▶ As the resources on land are not adequate enough to meet the future demands, India is also embarking on blue economy for effective and efficient use of the vast ocean resources in a sustainable way, which would require a great deal of information on ocean science, development of technology and providing services. Further, the coastal research and marine biodiversity activities are important to be continued also in the context of achieving United Nations Sustainable Development Goal-14 to conserve and sustainably use the oceans, seas and marine resources for sustainable development. This has been envisaged under the (O-SMART) scheme.

■ About the scheme

- ▶ The umbrella scheme "Ocean Services, Technology, Observations, Resources Modelling and Science (O-SMART)", started for implementation during the period from 2017-18.
- ▶ The scheme was initiated under the Ministry of Earth Science (MoES).
- ▶ The scheme encompasses a total of 16 sub-projects addressing ocean development activities such as Services, Technology, Resources, Observations and Science.
- ▶ The scheme encompasses seven sub-schemes namely
 - Ocean Technology
 - Ocean Modelling and Advisory Services (OMAS)
 - Ocean Observation Network (OON)
 - Ocean Non-Living Resources
 - Marine Living Resources and Ecology (MLRE)
 - Coastal Research and Operation
 - Maintenance of Research Vessels.

■ Significance of the Scheme

- ▶ The services rendered under the O-SMART will provide economic benefits to a number of user communities in the coastal and ocean sectors, namely, fisheries, offshore industry, coastal states, Defence, Shipping, Ports etc.
- ▶ Implementation of O-SMART will help in addressing issues relating to Sustainable Development Goal-14, which aims to conserve use of oceans, marine resources for sustainable development.
- ▶ This scheme (O-SMART) also provides necessary scientific and technological background required for implementation of various aspects of Blue Economy.
- ▶ The State of Art Early Warning Systems established under the O-SMART Scheme will help in effectively dealing with ocean disasters like Tsunami, storm surges.
- ▶ The technologies being developed under this Scheme will help in harnessing the vast ocean resources of both living and non-living resources from the seas around India.

- ▶ In the next five years (2021-26) this scheme would provide further comprehensive coverage through strengthening the ongoing activities towards delivering cutting edge technology applicable for marine domain, forecast and warning services to various coastal stake holders, understanding biodiversity towards conservation strategy for marine living organisms and understanding coastal processes.

■ Objectives of the Scheme

- ▶ To generate and regularly update information on Marine Living Resources and their relationship with the physical environment in the Indian Exclusive Economic Zone (EEZ)
- ▶ To periodically monitor levels of sea water pollutants for health assessment of coastal waters of India, to develop shoreline change maps for assessment of coastal erosion due to natural and anthropogenic activities
- ▶ To develop a wide range of state-of-the art ocean observation systems for acquisition of real-time data from the seas around India
- ▶ To generate and disseminate a suite of user-oriented ocean information, advisories, warnings, data and data products for the benefit of society
- ▶ To develop high resolution models for ocean forecast and reanalysis system
- ▶ To develop algorithms for validation of satellite data for coastal research and to monitor changes in the coastal research
- ▶ To develop technologies to tap the marine bio resources
- ▶ To develop technologies generating freshwater and energy from ocean
- ▶ To develop underwater vehicles and technologies
- ▶ To support operation and maintenance of 5 Research vessels for ocean survey/monitoring/technology demonstration programmes
- ▶ Establishment of state of the art sea front facility to cater to the testing and sea trial activities of ocean technology
- ▶ To carryout exploration of Polymetallic Nodules (MPN) from water depth of 5500 m in site of 75000 sq.km allotted to India by United Nations in Central Indian Ocean Basin, to carryout investigations of gas hydrates
- ▶ Exploration of polymetallic sulphides near Rodrigues Triple junction in 10000 sq. km of area allotted to India in International waters by International Seabed Authority/UN and
- ▶ Submission of India's claim over continental shelf extending beyond the Exclusive Economic Zone supported by scientific data, and Topographic survey of EEZ of India

Indian Tsunami Early Warning Centre (ITEWC)

- The Indian Tsunami Early Warning Centre (ITEWC) was established at Indian National Centre for Ocean Information Services (INCOIS).
- INCOIS, an autonomous body under Ministry of Earth Sciences which continues to provide timely tsunami advisories to stake holders and has functioned flawlessly since its establishment in October 2007.
- The ITEWC is also providing tsunami services to 25 Indian Ocean Countries as part of the Intergovernmental Oceanographic Commission (IOC) of UNESCO framework.
- INCOIS has introduced several innovative concepts in tsunami modeling, mapping of coastal inundation, Decision Support System, SOPs to meet the emerging challenges and provide accurate and timely tsunami early warnings.

- The ITEWC, INCOIS regularly conducts workshops, training sessions and tsunami mock exercises to create awareness and preparedness about the tsunamis. In addition to workshops and trainings for disaster managers.
- ITEWC is also coordinating with coastal States/UTs to implement Tsunami Ready Programme, a concept introduced by UNESCO, at community level.
- Odisha has implemented the programme in two villages (Venkataipur and Noliasahi) and based on the national board recommendation, IOC (UNESCO) recognized these villages as Tsunami ready communities.

State of Art Early Warning Systems

- The State of Art Early Warning Systems established under the O-SMART Scheme will help in effectively dealing with ocean disasters like Tsunami, storm surges.
- Besides, the state-of-the art early warning systems setup for oceanic disasters viz., Tsunami, storm surges, are also providing round the clock services for India and countries of the Indian Ocean, which have been recognized by UNESCO.

Tsunami Ready Programme

- The Tsunami Ready Recognition Programme is an international community-based recognition programme developed by Intergovernmental Oceanographic Commission (IOC) of UNESCO.
- It aims to build resilient communities through awareness and preparedness strategies that will protect life, livelihoods and property from tsunamis in different regions.
- On 5 December 2017, the United Nations declared that a Decade of Ocean Science for Sustainable Development would be held from 2021 to 2030.

Polymetallic Sulphides (PMS)

- It is a seabed mineral. It is a potential source of precious metals such as gold and silver, and the base metals such as copper, zinc, and lead. A higher base metal content characterizes PMS compared to other seabed minerals such as polymetallic nodules and cobalt crusts.
- Surface data from 75 sites nearly three thousands sample suggests that the sulphide deposits are comparable to land-based deposits of these base metals in their grade.
- The most gold-rich seafloor to date is found in territorial waters of Papa New Guinea at conical seamount with maximum concentration up to 230 grams per ton (g/t) with an average concentration of 26g/t. The concentration of gold in the sea bed is almost ten times the average of economically mineable gold deposits on land.
- In 2016, MoES signed a 15 years contract with the International Seabed Authority (ISA) for exploring PMS in the Indian Ocean.
- The ISA has allotted ten thousand square kilo-metres area with 15years plan of work for exploring PMS along the Central Indian Ridge and Southwest Indian Ridge region of the Indian Ocean.

■ How the Scheme is working so far?

- The Cabinet Committee on Economic Affairs gave its approval for continuation of the umbrella scheme "Ocean Services, Modelling, Application, Resources and Technology (O-SMART)" of Ministry of Earth Sciences, for implementation during the period from 2021-26 at an overall cost of Rs. 2177 crore.

- ▶ Currently, five lakhs fishermen community are receiving this information daily through mobile which includes allocation of fish potential and local weather conditions in the coastal waters. This will help in reducing the search time for fishermen resulting savings in the fuel cost.
- ▶ India has been recognised as Pioneer Investor with International Seabed Authority (ISA) for conducting extensive research on deep sea mining of Poly Metallic Nodules (PMN) and hydrothermal sulphides in the allotted area of the India Ocean.
- ▶ The technology development for desalination using low temperature thermal desalination installation of such facility in Lakshadweep islands is also a significant achievement.
- ▶ Moreover, India's ocean related activities are now extended from the Arctic to Antarctic region covering large ocean space which have been monitored by through in-situ and satellite-based observation.
- ▶ India has taken leadership role in implementing Indian Ocean component of Global Ocean Observing System in Intergovernmental.

■ Way Forward

- ▶ While conducting research the conservation aspect of the biodiversity should be taken care of properly. The uncontrolled exploitation of Poly-metallic nodules can harm the oceanic biodiversity.
- ▶ A disaster prone infrastructure should be developed to provide services even in the case of natural calamities.
- ▶ Adequate fund allocation to R & D is necessary for the success of any scheme.

2. Atmosphere and Climate Research - Modelling Observing Systems and Services (ACROSS)

ACROSS scheme pertains to the atmospheric science programs of Ministry of Earth Sciences (MoES) and addresses different aspects of weather and climate services.

Need of the Initiative

One of the mandates of the Ministry of Earth Sciences is to observe weather, climate and ocean parameters and carry out R&D activities to develop and improve capability to forecast weather, climate and hazard related phenomena for societal, economic and environmental benefits including addressing science of climate change and developing climate services. The increased incidence of extreme weather events due to Global Climate change and the risk associated with severe weather has prompted MoES to formulate many target oriented programs, which are carried out in an integrated manner through IMD, IITM, NCMRWF and INCOIS. As a result, these activities are put together under the umbrella scheme "ACROSS".

■ About the Initiative

- ▶ ACROSS scheme pertains to the atmospheric science programs of the Ministry of Earth Sciences (MoES).
- ▶ The scheme was initiated in 2017.
- ▶ It addresses different aspects of weather and climate services, which includes warnings for cyclone, storm surges, heat waves, thunderstorms etc.
- ▶ The scheme is being implemented by the Ministry of Earth Sciences (MoES) through its units namely
 - India Meteorological Department (IMD)
 - National Centre for Medium Range Weather Forecasting (NCMRWF)

- Indian Institute of Tropical Meteorology (IITM)
- Indian National Centre for Ocean Information Services (INCOIS)
- ▶ Each institute has a designated role for accomplishing the above tasks through the following eight schemes:
 - Commissioning of Polarimetric Doppler Weather Radars (DWRs)-IMD
 - Upgradation of Forecast System-IMD
 - Weather & Climate Services-IMD
 - Atmospheric Observations Network-1 MD
 - Numerical Modelling of Weather and Climate –NCMRWF
 - Monsoon Mission III- IITM/NCMRWF/INCOIS/IMD
 - Monsoon Convection, Clouds and Climate Change (MC4)- IITM/NCMRWF/IMD
 - High Performance Computing System (HPCS)-IITM/NCMRWF

■ Objective of the Scheme

- ▶ The objective of the ACROSS scheme is to provide a reliable weather and climate forecast for betterment of society. It aims at improving skill of weather and climate forecast through sustained observations, intensive R & D, and by adopting effective dissemination and communication strategies to ensure its timely reach to the end-user of all services like Agro-meteorological Services, Aviation service, Environmental monitoring services, Hydro-meteorological services, climate services, tourism, pilgrimage, mountaineering etc.,

■ Significance

- ▶ The scheme will provide improved weather, climate, ocean forecast and services, and other hazard related services thereby ensuring transfer of commensurate benefits to the end -user through various services like Public weather service, Agro-meteorological Services, Aviation services, Environmental monitoring services, Hydro-meteorological services, climate services, tourism, pilgrimage, power generation, water management, Sports & adventure etc.
- ▶ The whole process from generation of forecast to its delivery requires considerable manpower at every stage, thereby generating employment opportunities to many people.

■ How the scheme is working so far?

- ▶ The Cabinet Committee on Economic Affairs gave its approval for continuation of the umbrella scheme “Atmosphere & Climate Research-Modelling Observing Systems & Services (ACROSS)” along with its eight sub-schemes to the next finance cycle of five years i.e. 2021-2026 at an estimated cost of Rs.2,135 crore.
- ▶ A sizable number of scientific and technical staff along with requisite administrative support, thereby generating employment.
- ▶ To ensure last-mile connectivity of the weather based services to the end -user, a large number of agencies like the Krishi Vigyana Kendras of Indian Council of Agricultural Research, Universities and local municipalities are roped in thus generating employment opportunities to many people.

■ Way Forward

- ▶ It should identify the key societal needs for fundamental climate research to tackle 21st Century problems across climate resilience, adaptation and mitigation.

- ▶ It should focus on the scientific priorities where ACROSS can make a unique contribution through its national, coordinated and integrative activities.
- ▶ Although the focus should be on providing the bedrock climate science, the strategy should demonstrate a clear pathway to applications, i.e. climate services.
- ▶ A short synthesis of community to engage with potential and fundamental climate research institutions.

3. Deep Ocean Mission (DOM)

Deep Ocean Mission will be a mission mode project to support the Blue Economy Initiatives of the Government of India. Ministry of Earth Sciences (MoES) will be the nodal Ministry implementing this multi-institutional ambitious mission.

■ Need of the Initiative

Oceans, which cover 70 per cent of the globe, remain a key part of our life. About 95 per cent of Deep Ocean remains unexplored. For India, with its three sides surrounded by the oceans and around 30 per cent of the country's population living in coastal areas, ocean is a major economic factor supporting fisheries and aquaculture, tourism, livelihoods and blue trade. Oceans are also storehouse of food, energy, minerals, medicines, modulator of weather and climate and underpin life on Earth. Considering importance of the oceans on sustainability, the United Nations (UN) has declared the decade, 2021-2030 as the Decade of Ocean Science for Sustainable Development. India has a unique maritime position. Its 7517 km long coastline is home to nine coastal states and 1382 islands. The Government of India's Vision of New India by 2030 enunciated in February 2019 highlighted the Blue Economy as one of the ten core dimensions of growth.

■ About the Initiative

- ▶ It aims to explore deep ocean for resources and develop deep sea technologies for sustainable use of ocean resources.
- ▶ "Deep Ocean Mission" was started under the Ministry of Earth Sciences (MoES) on at an estimated cost of Rs. 4077.0 crore for a period of 5 years to be implemented in a phase-wise manner.
- ▶ Indian Space Research Organisation (ISRO) is one of the collaborators of the Ministry of Earth Sciences for implementation of Deep Ocean Mission (DOM).

■ Objectives

- ▶ Development of technologies for deep sea mining, underwater vehicles and underwater robotics;
- ▶ Development of ocean climate change advisory services;
- ▶ Technological innovations for exploration and conservation of deep sea biodiversity;
- ▶ Deep ocean survey and exploration;
- ▶ Proof of concept studies on energy and freshwater from the ocean; and
- ▶ Establishing advanced marine station for ocean biology

■ Components of the scheme

The Deep Ocean Mission consists of the following six major components.

- ▶ **Development of Technologies for Deep Sea Mining, and Manned Submersible:** A manned

submersible will be developed to carry 3 people to a depth of 6000 metres in the ocean with suite of scientific sensors and tools. Only a very few countries have acquired this capability. An Integrated Mining System will be also developed for mining Polymetallic Nodules from 6000 m depth in the central Indian Ocean. This component will help the Blue Economy priority area of exploring and harnessing of deep-sea minerals and energy.

- ▶ **Development of Ocean Climate Change Advisory Services:** A suite of observations and models will be developed to understand and provide future projections of important climate variables on seasonal to decadal time scales under this proof of concept component.
- ▶ **Create awareness** amongst the public, students, academicians and user communities about the various fields of Earth system science as well as on the achievements and services rendered by MoES.
- ▶ **Technological innovations for exploration and conservation of deep-sea biodiversity:** Bio-prospecting of deep-sea flora and fauna including microbes and studies on sustainable utilization of deep sea bio-resources will be the main focus. This component will support the Blue Economy priority area of Marine Fisheries and allied services.
- ▶ **Deep Ocean Survey and Exploration:** The primary objective of this component is to explore and identify potential sites of multi-metal hydrothermal sulphides mineralization along the Indian Ocean mid-oceanic ridges. This component will additionally support the Blue Economy priority area of deep-sea exploration of ocean resources.
- ▶ **Energy and freshwater from the Ocean:** Studies and detailed engineering design for offshore Ocean Thermal Energy Conversion (OTEC) powered desalination plant are envisaged in this proof of concept proposal. This component will support the Blue Economy priority area of off-shore energy development.
- ▶ **Advanced Marine Station for Ocean Biology:** This component is aimed as development of human capacity and enterprise in ocean biology and engineering. This component will translate research into industrial application and product development through on-site business incubator facilities. This component will support the Blue Economy priority area of Marine Biology, Blue trade and Blue manufacturing.

■ Significance of the Scheme

- ▶ The technologies required for deep sea mining have strategic implications and are not commercially available. Hence, attempts will be made to indigenise technologies by collaborating with leading institutes and private industries.
- ▶ A research vessel for deep ocean exploration would be built in an Indian shipyard which would create employment opportunities.
- ▶ This mission is also directed towards capacity development in Marine Biology, which will provide job opportunities in Indian industries.
- ▶ In addition, design, development and fabrication of specialised equipment, ships and setting up of required infrastructure are expected to spur the growth of the Indian industry, especially the MSME and start-ups.
- ▶ The outcome of the program is intended to identify potential new resources and develop technology for harnessing them in future, which may generate additional opportunity for livelihoods.
- ▶ The Deep Ocean Mission is related to the Blue Economy.
- ▶ The activities of Deep Ocean Mission will help the components of blue economy such as fisheries, tourism and maritime transport, renewable energy, aquaculture, seabed extractive activities and marine biotechnology.
- ▶ One of the objectives is focussed on studies on deep sea vent conditions and formation of life-friendly molecules and organismal components, which will attempt to throw some light on how life originated on Earth.

- ▶ Rs. 58.77 crore is allocated for a period of 5 years for Deep Sea bio-fouling and origin of life studies.
- ▶ The Deep Ocean Mission will also be examining the effect of climate change and warming on regional sea levels and assessing what impact that would have on coastal regions.

■ Challenges

- ▶ The technologies required for deep sea mining have strategic implications and are not commercially available.
- ▶ Deep sea mining can have a deleterious impact on species that inhabit the bottom of the ocean.
- ▶ There is also the risk of accidents like leaks and spills of fuel that could endanger deep sea life.

■ Way Forward

- ▶ India should focus and invest to develop indigenous technologies via collaboration with “leading institutes and private industries”.
- ▶ Strict protocols by considering biodiversity should be formed.
- ▶ Excessive and negligence on the part of conservation of resources may impact the oceanic ecological balance. The clearance of projects should be done carefully.

4. Polar Science and Cryosphere (PACER)

Polar Science and Cryosphere Research (PACER) scheme comprising the Antarctic program, Indian Arctic program, Southern Ocean program and Cryosphere and Climate program is implemented successfully through National Centre for Polar and Ocean Research (NCPOR), an autonomous institute under the Ministry of Earth Sciences.

■ Need of the Initiative

Once regarded as barren, inhospitable places where only explorers go, the north and south polar regions have been transformed into high profile sites of scientific research. Be it in understanding the role of the polar realm in modulating the global climate or for studying the ecosystem adaptability and survival under extreme conditions, there has been an increasing interest in the science of the polar realm, over the past two-odd decades. The focus areas of scientific studies in the Arctic and the Antarctic have been largely confined to earth, atmospheric and biological sciences. Systematic studies of the cryospheric domain of the Arctic is as yet to be initiated. Considering the significance of the polar ice cap and the sea ice in the polar regions in modulating, if not driving the global climate, it is proposed to initiate during the XII Plan period, a major national mission of cryospheric studies of both the polar regions as well as of the Himalaya.

■ About the Initiative

- ▶ It is being implemented successfully through National Centre for Polar and Ocean Research (NCPOR), an autonomous institute under the Ministry of Earth Sciences.
- ▶ The objective of this scheme is to improve our understanding of Polar Science and cryosphere system.

National Centre for Polar and Ocean Research (NCPOR):

- National Centre for Polar and Ocean Research (NCPOR) is India's premier R&D institution responsible for the country's research activities in the Polar and Southern Ocean realms.
- NCPOR is an autonomous institute under the Ministry of Earth Sciences.
- It also sees the management and upkeep of the Indian Antarctic Research Bases "Maitri" and "Bharati", and the Indian Arctic base "Himadri".

■ Components of the Scheme

- ▶ Polar Science and Cryosphere Research (PACER) scheme comprising
 - Construction of polar research vessel
 - Construction of the third research base in Antarctica
 - Indian scientific endeavours in the Arctic
 - Polar expeditions-Antarctica
 - Replacement of Maitri station
 - Southern Ocean

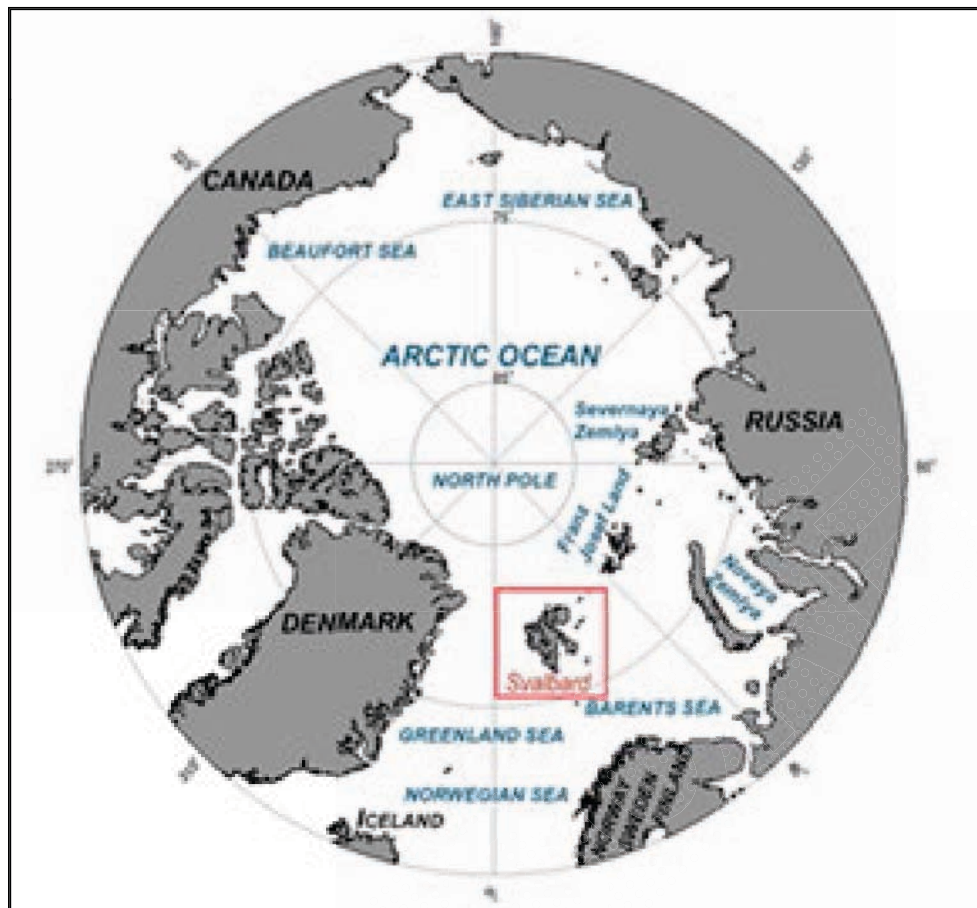
India's achievements in Polar research and exploration

- India launched the first of her Annual Scientific Expeditions to Antarctica way back in 1981.
- This was followed by the country's successful entry to the realms of Southern Ocean research in 2004 and the Arctic, three years later.
- To cater to the requirements of the Indian scientists in both the polar regions, two stations (Maitri and Himadri) have been established to serve as living-cum-research bases in the Antarctic and Arctic respectively.

■ Significance

- ▶ When delivered the polar research vessel will cater to the scientific and logistics needs of the Indian scientific endeavours in Antarctica, Southern Ocean and Arctic seas.
- ▶ The scientific studies proposed and being carried out by Indian scientists in the Arctic will be contributing significantly to the global community's ongoing efforts in understanding the climate change phenomena.
- ▶ The modern, green station will conserve energy and use additional alternative sources of Wind and solar means to reduce Carbon footprints and save fuel consumption. The modern sewage disposal system will overcome the problems being faced in the current unfriendly procedure, where the sewage water finds way to the drinking water source.
- ▶ The multi-institutional national mission of scientific studies in the Southern Ocean realm would be providing an exhaustive database which could throw light on several as yet-unanswered questions related to the dynamics of the Southern Ocean, the biogeochemical fluxes of carbon, nitrogen, silica and iron and their influence on the trophic structure, the role of the Southern Ocean in modulating the global climate etc

■ How the scheme is working so far?



- ▶ The Polar Science and Cryosphere (PACER) scheme has been approved for continuation during 2021-2026.
- ▶ It executed 39th & 40th Indian Scientific Expedition to Antarctica. 41st Indian Scientific Expedition to Antarctica is ongoing.
- ▶ Various glaciological and geophysical measurements were carried out in coastal Dronning Maud Land (cDML) to understand the modern snow accumulation patterns around the ice rises and the remote contribution to the glaciochemical processes.
- ▶ Field-based studies were conducted in the lakes of Larsemann hills, East Antarctica for understanding of biogeochemical process in supraglacial environments.
- ▶ Clear-air atmospheric observatories containing automatic weather stations, a suite of sensors to measure aerosol and greenhouse gas concentrations has been established at Maitri and Bharati stations.
- ▶ Twenty-three research projects related to glaciology, marine science, polar biology, and atmospheric science were successfully carried out during 2019-20 Arctic Expedition.
- ▶ IndARC mooring system along with Hydrophone system was successfully retrieved and deployed in Kongsfjorden, Svalbard.
- ▶ Glaciological field campaigns were carried out in six benchmark glaciers in Chandra basin of Lahaul-Spiti region of Western Himalaya.
- ▶ Differential Global Positioning System (DGPS) and Ground Penetrating Radar (GPR) survey were conducted.

- ▶ Two new Automatic Weather Station (AWS) systems were installed at Baralacha La, a high elevation site in the arid Spiti region to strengthen infrastructure across the Chandra basin.

■ Way Forward

- ▶ India's acquisition of its first PRV should not be seen in comparison to other emerging states' polar infrastructural developments. India's needs are specific and should be understood from its scientific, economic and strategic perspectives in the polar regions.





An Institute for Civil Services

OUR CLASSROOM & ONLINE COURSES

GS FOUNDATION

- ☑ 1 Year IAS Foundation
- ☑ 3 & 2 Year IAS Foundation
- ☑ GS Mains Foundation

OPTIONAL FOUNDATION

- ☑ Political Science
- ☑ History
- ☑ Geography
- ☑ Public Administration
- ☑ Anthropology

MAINS COURSES

- ☑ GS Mains Advance
- ☑ Applied GS
- ☑ Ethics Integrity & Aptitude
- ☑ Essay Writing
- ☑ GS Paper 2
- ☑ GS Paper 3

TEST SERIES

- ☑ Prelims Test Series
- ☑ GS Mains Test Series
- ☑ Essay Test Series
- ☑ Ethics Test Series
- ☑ Optional Test Series
 - Political Science
 - Geography
 - History
 - Public Administration
 - Anthropology

Visit:  www.iascore.in

TOP 100
ALL INDIA RANKING
CSE 2020

8 9 12 13 14 16 17 19 20
24 26 28 30 31 36 38 41 45 50
51 52 55 56 58 59 67 68 70 71 73
74 76 78 83 84 85 86 89 93 98 100

SUCCESS IS A PRACTICE WE DO!

TOP 100
ALL INDIA RANKING
CSE 2019

3 6 10 11 16 17 21 22 28
30 33 38 39 42 44 46 53 54 59 66 69
70 72 77 78 80 82 84 86 87 94 97 98

TOP 100
ALL INDIA RANKING
CSE 2018

2 3 5 7 27 36 37 40 44 49
51 52 56 58 62 74 81 89 92 94 98 100

TOP 100
ALL INDIA RANKING
CSE 2017

3 10 19 31 33 35 40 41 44 45 48
54 57 63 64 68 71 75 77 80 83 93 97 100