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Item **3.4.6** of the Provisional Agenda

PROPOSAL TO ESTABLISH THE INTERNATIONAL TRAINING CENTRE ON OPERATIONAL OCEANOGRAPHY HOSTED BY THE INDIAN NATIONAL CENTRE FOR OCEAN INFORMATION SERVICES (INCOIS) OF MINISTRY OF EARTH SCIENCES, AS A UNESCO CATEGORY 2 CENTRE

Summary

This document conveys the proposal submitted by India for the establishment of a Category 2 UNESCO International Training Centre on Operational Oceanography, to be hosted by the Indian Centre for Ocean Information (INCOIS) of the Ministry of Earth Sciences was brought to the attention of the IOC Secretariat in April 2017. The fact-finding mission report implemented by the IOC is provided as an addendum to this document.

Financial implications: None.

The proposed decision is referenced IOC-XXIX/Dec.3.4.6 in the Action Paper (document IOC-XXIX/2 Prov.)

1. Background

1 71% of the earth surface is covered by the oceans and seas and they account for 96% of all water on the earth's surface. The oceans and seas provide 2/3 of the value of all of the natural services, and an estimated 80% of the world biodiversity lives in the oceans. The oceans are a cradle of life and supporting life on the earth by providing food and economic benefits, decreasing impacts of climate change and making communication between continents easier.

2 In view of the importance of the oceans as the very basis of the earth's overall sustainability, including the well-being of humanity, and in understanding that only through cooperative and coordinated efforts we may advance our understanding of the Oceans behavior and nature, as well as develop effective measures for the marine environment protection and exploitation, the UN decided in 1960 to establish under the auspices of UNESCO the Intergovernmental Oceanographic Commission (IOC). It is today a focal point in UN for ocean observations, ocean services, mitigation of marine natural hazards and data exchange, and in accordance with the UN Convention on the Law of the Sea (UNCLOS), IOC is a competent international organization for marine science.

3 IOC promotes international cooperation in marine research, oceanographic services, observation systems and marine hazards mitigation. Capacity development is an essential component of IOC's mission. It enables all Member States to participate and benefit from ocean research and services. By applying knowledge gained through capacity development efforts, Member States, in particular developing countries are able to improve their institutional capacity, governance, management and decision-making process, increase the trained manpower, etc. in order to foster sustainable development of the marine environment.

4 One important requirement to address this objective is to improve the operational oceanographic capabilities of Member States through training and transfer of manpower and technology.

5 Over decades, ocean science has steadily evolved from the understanding of different aspects of oceans to the science of predicting the behavior of oceans. This change in approach was facilitated largely by the advances in ocean observations, understanding of theoretical aspects of oceans and improvements in ocean modeling capabilities. Increasing demands from a vast array of ocean users also motivated this transition. Thus, the modern-day ocean science is being reshaped and the 'operational oceanography' has become an integral part of ocean science and management.

6 Operational oceanography integrates scientific knowledge spread across different disciplines of science and technology, and involves skills in ocean observations, remote sensing and ocean modeling. Examples of the final products reaching the stakeholders are the warnings of natural hazards (tsunami, ocean state, cyclone landfall, harmful algal blooms, etc.), fishing zone advisories, shipping route advisory for safe navigation, oil spill monitoring, climate forecasts etc. Such information helps the users like fisherman, port and shipping agencies, marine industries, administrative authorities etc. to make optimal use of their time and effort for proper planning.

7 The South Asia and Eastern Africa countries washed by the waters of the Indian Ocean, which is home for approximately 2.6 billion people or about 39% of the world's population with living and non-living resources of immense value, have limited access to modern research and advances in technology and a great potential and capabilities in meeting challenges posed by global climate change and "Blue Economy" strategy. The increasing prominence of the Indian Ocean becomes even more important at the time of the implementation of the Second International Indian Ocean Expedition (IIOE2, 2015-2020); the success of which will to a large

extent, depend on the readiness of the Member States bordering the Indian Ocean to respond effectively to the objectives of the expedition.

8 "The Ocean Call" at the 43rd meeting of the Inter-Governmental Oceanographic Commission (IOC) Executive Council of UNESCO, Paris, during 8-16 June 2010 (IOC/EC-XLI/3 Annex IX – page 20), by recalling IOC Resolutions XXIII-10 and XXXIII-11, urged the IOC Member States to finance and undertake Capacity Building Programs with an increased priority. Re- affirming the Principles and Strategy for Capacity Development as expressed in IOC/INF-1211, the IOC suggested that the capacity development needs to be embedded in ongoing national and regional projects that contribute directly to the fulfillment of the larger UNESCO/ IOC mandate. In response to that, in December 2012, Ministry of Earth Sciences (MoES), Govt. of India, had set-up an International Training Centre for Operational Oceanography (ITCOocean) under Earth System Science Organization (ESSO) - Indian National Centre for Ocean Information Services (ESSO-INCOIS), Hyderabad to extend the benefits of operational oceanography to the Indian Ocean Rim (IOR) countries and other developing nations. In the Indian Ocean region, ESSO-INCOIS, is one of the few centres providing value added and comprehensive ocean-service products to a vast array of users (from fishermen folk to marine industries). INCOIS focus areas are mainly (1) Tsunami early warning (2) Marine fishery advisory (3) Ocean state forecast, (4) High waves during severe weather events, (5) Coral bleaching alerts (6) Coastal geospatial applications (7) updates on climate indices etc. INCOIS heavily relies on advances in satellite oceanography, modeling capabilities, vast in-situ observation networks. The well trained manpower at INCOIS helps to synthesize and blend the observations and modeling tools to produce the best available ocean information services to users. Subsequently, UNESCO's Intergovernmental Oceanographic Commission (IOC) endorsed ITCOocean by signing a Memorandum of Agreement (MoA) with ESSO-INCOIS / MoES on 4th July 2013 during the 27th session of the IOC Assembly in Paris. This was later followed up by signing a Letter of Intent (LoI) between MoES and UNESCO on 25th November 2014 stating that "provide the enabling factors for the Indian National Centre for Ocean Information Services (INCOIS) to be developed into a UNESCO Category 2 Centre" under the auspicious of UNESCO, inter alia, for promoting (a) effective exchange of data and information on natural hazards, (b) develop courses for early warning systems for disaster risk reduction, (c) generate scientific methods for capacity development programs in GIS and remote sensing, etc. In 2015, ITCOocean has also been recognized as a Regional Training Centre (RTC) of the Ocean Teacher Global Academy (OTGA) of the International Oceanographic Data and Information Exchange (IODE) to offer training in Operational Oceanography for the benefit of IOR Countries.

2. Mission and Geographic Area of Responsibility

9 Willing to assist UNESCO and its IOC in extending the benefits of operational oceanography and of new methods of capacity development to the countries on the Indian Ocean Rim (IOR), African countries bordering the Indian and Atlantic Oceans, small island countries and the countries elsewhere to cope effectively with new opportunities and to face the new challenges successfully, the Government of India through its Ministry of Earth Sciences (MoES), offers facilities of the Indian National Centre for Ocean Information Services (ESSO-INCOIS) to host a UNESCO Category 2 Training Centre for operational oceanography for the countries on the Indian Ocean Rim, countries in South Asia and Africa.

10 The mission of the Centre will be to assist the Member States in the development and optimization of oceanographic scientific base, related technology and information systems and to create a vast pool of trained ocean scientists to cater the growing demands of operational oceanography services.

3. Objectives

11 The main objectives of the Centre will be as follows:

- Provide advanced training in operational oceanography for young scientists, technical persons and decision makers/officials from the IOR countries, South Asia, Africa, small island countries, Europe, etc., on a regular basis.

- Define regional and global problems and priorities, the solution of which requires regional and international cooperation and assist in the identification of training, education, and mutual assistance needs, particularly those related to IOC and Centre programmes

- Provide training on generation of data using in situ and satellite platforms, transmission of data to operational centres, data reception and data processing in real- time, usage of data in models and generation of forecasts and dissemination of the same to end users within the shortest possible time.

- Substantially contribute to the activities of numerous users and UNESCO/IOC programmes related to climate change, disasters mitigation, data and information exchange and others.

- Promote excellence in integrated multidisciplinary oceanography to improve understanding and management of natural resources.

- Help scientists to be in a state of preparedness for nowcasting and forecasting the behavior of the ocean and address the role of ocean science and technology in delivering information critical to safety, commerce and environmental protection.

- Promote activities of the Centre, of UNESCO and IOC role in marine and coastal matters; raise public awareness concerning the need for sustainable management of the sea and coastal areas; introduce the benefits of national and regional cooperation approach.

- Organize assistance to IOC/UNESCO in mobilizing human, financial, and material resources to respond to the needs of the coastal countries of the region in dealing with emergency situations triggered by marine natural hazards.

- Make recommendations to the governing bodies of the region on policy matters related to the mandate of the Centre and formulate proposals for the protection and sustainable development of the Indian Ocean and its coasts.

4. Ways of Meeting the Objectives

12 The above objectives will be achieved by applying the following approaches:

- Organize joint projects, conferences and training/educational courses to ensure harmonious and mutually reinforcing involvement of the scientists of the region in the ocean studies.

- Supervise and coordinate implementation of activities in consultation with national, regional and international institutions of the Member States of the region to avoid duplication and overlap of efforts by organizing regular exchange of information.

- Engage academic and research community, experts from governmental and non-governmental organizations, industry and decision-makers from the region and from abroad in discussing ways to solve challenging economic and social problems by the organization of forums, consultations and exchange visits.

- Provide shipboard experience and training in operational oceanography using state-of-the-art instrumentation from all available sources and interaction with national and international pool of facilities so as to widen the Science and Technology (S&T) base.

- Make operations of the Centre open and transparent by developing the centre web site and increasing communication exchange of information on its activities in order to make people aware of the progress achieved by the Centre and to discuss common issues and opportunities for collaboration.

5. Response to Strategic Objectives of UNESCO and its IOC

13 Taking into account UNESCO Medium-Term Strategy for 2014-2021 adopted by Resolution 93 of the 37th Session of UNESCO General Conference and IOC Medium-Term Strategy for 2014-2021 adopted by Resolution XVII-2 of the IOC Assembly at its 27th Session, the Centre, when established, will be able to contribute through its mission and objectives to the IOC role in the implementation of the UNESCO global priority Africa, and of such strategic objectives as:

- Strategic Objective 1 on Supporting Member States to develop education systems to foster high-quality and inclusive lifelong learning for all;

- Strategic Objective 5 on Promoting International scientific cooperation on critical challenges to sustainable development; and

- Strategic Objective 9 on Promoting freedom of expression, media development and access to information and knowledge.

14 By meeting objectives presented in section - 4 the Centre will contribute to the goals of scientific research in ocean science, monitoring the oceans and capacity building requirements of several IOC programs such as Climate Change and the Ocean, Indian Ocean Global Ocean Observing System (IOGOOS), Second International Indian Ocean Expedition (IIOE-2), to the implementation of the decisions of the IOC Regional Committee for the Central Indian Ocean (IOCINDIO) and to marine natural hazards warning and mitigation. The Centre will be supporting the establishment of Marine Protected Areas and will help in active participation in the World Ocean Day and other awareness raising efforts.

6. Available Facilities and Plans for the Future

15 INCOIS is already playing its part as a leading operational oceanography institute in the region. Tsunami early warnings from the institute are delivered to 28 Indian Ocean Rim countries on real-time basis, since IOC/UNESCO designated the Centre as Regional Tsunami Service Provider (RTSP). Under the aegis of Regional Integrated Multi-hazard Early warning System for Africa and Asia (RIMES), INCOIS is also providing ocean state forecast and other related warnings to 3 countries (Sri Lanka, Maldives and Seychelles).

16 Coastal bleaching alerts and other geospatial applications focus to monitor the health of the ocean around India. INCOIS climate studies are supported by one of the best supercomputing facilities in the region, which helps to disseminate climate indices and re-analysis products to researches and policy makers. All these services activities are well supported by an array of different conventional as well as new generation ocean observation programs. INCOIS, together with its sister organization, National Institute of Ocean Technology (NIOT) maintains a suite of mooring arrays fitted with surface and subsurface sensors, provide support to the international RAMA mooring program, and is an important member of the global Argo, drifter and XBT/XCTD program.

17 INCOIS is a part of several international efforts to observe the Indian Ocean through programs like Ocean Mixing and Monsoons (OMM) program, IIOE 2 and others.

18 INCOIS has an experience in conducting short-term international and national training courses of one to two week duration, covering different aspects of operational oceanography. More than 680 researchers, university students, state and central government officials, including 105 foreign nationals from 34 countries of the Indian ocean region but also from Europe attended the courses.

19 A state of art E-class room is available with the facility to link different centres, organizations and participants across the globe, making the training class room, a truly global classroom and providing seamless access of INCOIS training programmes to all interested participants.

20 UNESCO Category 2 Centre established as a training facility under the aegis of INCOIS will give an opportunity to the South Asian and African states bordering the Indian Ocean to benefit from the expertise and experience of INCOIS in the afore mentioned fields. It is also envisaged to invite world class faculties and trainees from around the world and work out a curriculum for long duration courses (of 3-9 months).

21 The Centre will emerge as a nodal institution in the Indian Ocean region to address the requirements of the ocean community by applying the tools of operational oceanography to the issues of interest.

22 The Centre will be committed to provide assistance in areas of capacity building and training, knowledge sharing and exchange of information, and hence could represent a valuable resource for UNESCO and its IOC by enhancing the impact and visibility of UNESCO's action.

7. Legal Status and Administration of the Centre

23 The Centre operating under the administrative jurisdiction of ESSO-INCOIS and within the legal context of Government of India will form the capacity building and training arm of Ministry of Earth Sciences, Government of India. The Centre shall enjoy: (a) territory of the Republic of India, and (b) the personality and legal capacity necessary for the exercise of its functions, in particular the capacity to contract, to institute legal proceedings and to acquire and dispose movable and immovable property as per the rules and regulations of Government of India.

24 Operations of the Centre will be guided and coordinated by the Governing Board, the composition of which and Terms of Reference will be in accordance with Article 7 of the Model Agreement between UNESCO and a Member State regarding Category 2 Centres presented in Attachment 2 to Document 37 C/18 Part 1.

25 The Director of the Centre will be nominated by the Government of India and the Chairperson of the Governing Board elected by the Board members from among themselves.

26 The administrative composition of the Centre will include Financial and Administrative, Protocol and Documentation, Research and Technical, Education and training, and Public Awareness sections/departments.

27 Director of the Centre will be reporting on regular basis to the Director General of UNESCO, IOC Executive Secretary and Members of the Board on progress achieved. As stipulated by Article 12 of the above mentioned Model Agreement the Centre will be open for the evaluation process when UNESCO/IOC decides.

8. Financial Resources of the Centre

28 As part of INCOIS commitments, the Government of India will be ready to fully bear the salary of the scientists/technical staff and administrative staff and other expenses regarding administrative and institutional purposes as well as be accountable for the operations, management and accounting as per Government India rules and regulations.

29 The Government of India will provide and fully finance appropriate office space and adequate infrastructure facilities for successful working of the Centre. The Government of India will provide necessary financial support for administrative and institutional purposes of the Centre. The Government of India will meet the costs of the feasibility study related to the establishment of category 2 Centre, the costs of the renewal assessment, as well as costs of UNESCO staff participation in a governing board or Centre as appropriate.

30 It is expected that each partner Member State involved in the Centre activities approved by the Governing Board of the Centre, such as training courses, workshops, conferences, etc., will contribute to their implementation.