

Ninth Session of the IOC Regional Committee for the Central Indian Ocean (IOCINDIO-IX)
Dhaka, Bangladesh, 28–30 March 2023

Template for national Report (deadline for submission: 14 March 2023)

Please, provide a brief description of the country programmes related to the IOCINDIO Work programme based on the IOC global functions.

NB: Feel free to provide additional programmes even if different of the below listed.

Country: I.R. of IRAN

Presenter(s) full names and position: Dr. Maryam Ghaemi, Director of the Persian Gulf Oceanography Center of Iranian National Institute for Oceanography and Atmospheric Science (INIOAS)

Full contacts address of the presenter(s):

Email: Maryam.ghaemy@gmail.com; mghaemi@inio.ac.ir

Tel: +98 917 702 6815

Fax: +98 (77) 33563969

Names of members of national delegation attending IOCINDIO-VIII: Maryam Ghaemi

IOC Function A: Ocean Science and Research

IOCINDIO Programme: Effects of human induced changes: Ocean acidification, eutrophication, hypoxia, harmful algal blooms (HABs) in coastal waters of the North-western Indian Ocean

Projects Titles & Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/international	Results/impacts
<p>Persian Gulf and Gulf of Oman Oceanographic Monitoring Program (PGGOOMP)</p>	<p>Research Cruises using the Persian Gulf Explorer (Iranian Research Vessel)</p>	<ul style="list-style-type: none"> • Persian Gulf (PG) • Strait of Hormuz (SH) • Gulf of Oman (GO) 	<ul style="list-style-type: none"> • Funding sources: INIOAS • Budget: 200000\$ per year 	<ul style="list-style-type: none"> • Multidisciplinary field data collection (physical, chemical and biological oceanography, marine geology, satellite oceanography and atmospheric science) from offshore stations in a specified monitoring network with a defined timetable • Understanding of the ocean for sustainable management • Trend in climate pressures on the marine environment (extreme climate events and pressures from changes in ocean physical and chemical changes) • Study of the changes in nutrient inputs to the marine environment of the PG and GO • Ocean acidification and deoxygenation in the PG and GO • Exploitation for the protection of sensitive ecosystems of the PG and the GO • Creating basic knowledge and scientific understanding of the ocean for the sustainable exploitation of biotic and non-biotic resources of the PG and the GO • Assessment of the effects of human activities and climate changes on the marine ecosystems of the PG and the GO • Create an up-to-date data bank of the PG and the GO • Report to the stakeholders and policy-makers to make wise decisions and measures to protect the marine environment • Publications

<p>Iran's Coastal Monitoring Program (ICMP)</p>	<p>Research Cruises and Oceanographic monitoring including in-situ measurement, water and sediment sampling for the determination of various chemical, physical, biological and pollution in coastal area of the Persian Gulf and the Gulf of Oman</p>	<p>Coastal area of the Persian Gulf and Gulf of Oman</p>	<ul style="list-style-type: none"> • Funding sources: INIOAS • Budget: 100000\$ per year 	<ul style="list-style-type: none"> • Multidisciplinary field data collection from sensitive coastal area include: coral reefs, mangrove areas, wetlands, intertidal area, sea turtle monitoring, etc. • Investigating the effects of Ocean acidification on the sensitive coastal ecosystems of the PG and GO • Trend in climate pressures on the marine environment (extreme climate events and pressures from changes in ocean physical and chemical changes) • Assessment of the changes in anthropogenic nutrient inputs to the coastal area through river run-off and coastal eutrophication • Exploitation for the protection of sensitive coastal ecosystems of the PG and the GO • Report to the stakeholders and policy-makers to make wise decisions and measures to protect the marine environment • Create an up-to-date data bank of the coastal ecosystems of the PG and the GO • Publications
<p>Iranian Harmful Algal Blooms Defense Committee</p>	<p>Compilation, approval and implementation of the comprehensive plan to combat the red tide phenomenon</p>	<ul style="list-style-type: none"> • Persian Gulf • Strait of Hormuz • Gulf of Oman 	<ul style="list-style-type: none"> • Iranian Fisheries Science Research Institute (IFSRI) • Iranian National Institute for Oceanography and Atmospheric Science (INIOAS) • Iran's Ports and Maritime Organization (PMO) • Iran Fisheries Organization (IFO) • Department of Environment • Iran's Ministry of Agriculture • Iranian Space Agency (ISA) 	<ul style="list-style-type: none"> • Red tide monitoring • The control operation of the red tide in the southern coasts of the country with special planes • Monitoring, coping, diagnosis of toxicity, socio-economic effects, setting up the HAB room • Daily satellite monitoring of the waters of the Persian Gulf and the Sea of Oman and the preparation of online satellite photos and the prediction and prevention of the spread of red tide

IOC Function B: Observing Systems & Data

IOCINDIO Programme: Ocean observations, coastal zone management, circulations and fisheries.

Projects Titles & Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/international	Results/impacts
Persian Gulf and Gulf of Oman Oceanographic Monitoring Program (PGGOOMP)	<ul style="list-style-type: none"> • Data Management • Research Cruises 	<ul style="list-style-type: none"> • Persian Gulf • Strait of Hormuz • Gulf of Oman 	<ul style="list-style-type: none"> • Funding sources: INIOAS • Budget: 200000\$ per year 	<ul style="list-style-type: none"> • Creating valuable diverse datasets in different oceanographic disciplines and data types • Report of the activities on the Iranian National Center for Ocean Data (INCOD)
Iran's Coastal Monitoring Program (ICMP)	<ul style="list-style-type: none"> • Data Management • Research Cruises 	<ul style="list-style-type: none"> • Coastal area of the Persian Gulf and Gulf of Oman 	<ul style="list-style-type: none"> • Funding sources: INIOAS • Budget: 100000\$ per year 	<ul style="list-style-type: none"> • Creating valuable diverse datasets in different oceanographic disciplines and data types • Report of the activities on the Iranian National Center for Ocean Data (INCOD)
Iran Ocean Acidification Observing Network (IrOA-ON)	<ul style="list-style-type: none"> • Data Management • Research Cruises 	<ul style="list-style-type: none"> • Persian Gulf • Strait of Hormuz • Gulf of Oman 	<ul style="list-style-type: none"> • Funding sources: INIOAS • Budget: 10000\$ per year 	<ul style="list-style-type: none"> • Ocean Acidification (OA) monitoring • Improve our understanding of ecosystem response to OA • Acquire and exchange data and knowledge necessary to optimize modelling for OA and its impacts • Report of the activities on the Global Ocean Acidification Observing Network (GOA-ON) data portal and Iranian National Center for Ocean Data (INCOD) • Publications
Iran's Fisheries Projects	<ul style="list-style-type: none"> • Develop and expand research in different fields of fisheries and marine sciences 	<ul style="list-style-type: none"> • Iran territorial waters of north, south and inland waters 	<ul style="list-style-type: none"> • Funding sources: Iranian Fisheries Science Research Institute 	<ul style="list-style-type: none"> • The best fisheries research activity and the biggest fisheries productions in the middle east and western Asia in 2025 • Stock assessment of mesopelagic fishes • Research on Tuna fishes • Research on Lobster • Seaweed culture • Sea cucumber • Study on Cuttlefish and Squid • Breeding and rearing of <i>Barbus shrpeyi</i>

				<p>(Barbus-Benny)</p> <ul style="list-style-type: none"> • Breeding and rearing of <i>Epinephelus coioides</i> (Grouper) • Breeding and rearing of <i>Acanthopagus latus</i> (Yellowfin seabream) • Diagnosis of white spot syndrome virus (WSSV) • Stock assessment of Marine fishes • Stock assessment of demersal resources • Domesticated the <i>Litopenaeus Vannamei</i> • Artificial breeding and rearing of local shrimp species • Brood stock production of Penaeids • Apply biotechnological methods to produce biological products and improve their quality and quantity in terms of health and diseases • Identification, conservation and rehabilitation of fisheries stocks and sensitive ecosystems
Iran's ICZM program	<ul style="list-style-type: none"> • Coastal management • The project of scrutinizing the national ICZM plan for Hormozgan province at early 2014 with collaboration of the province authorities. Selecting the Hormozgan province as the first place for implementing Iran's ICZM plan. 	<ul style="list-style-type: none"> • Iran's coastal zones along the Persian Gulf, Gulf of Oman and southern Caspian Sea 	<ul style="list-style-type: none"> • Funding sources: Iran's Ports and Maritime Organization 	<ul style="list-style-type: none"> • The outcomes of the Hormozgan ICZM and the lessons learned from it benefit the procedure of the implementation of the ICZM plan in other coastal provinces of Iran along the Persian Gulf, Oman Sea and southern Caspian Sea. • Providing the ground for development of the coastal areas via suitable human activities like ecotourism, aquaculture, small ship building, etc. • Protection of the human settlements and installations along the coastlines of country against the natural hazards • Preservation of the invaluable coastal habitats of coastal provinces and enhancing its bio-diversity • Strike a balance between the conflicting interests of different parties in coastal zone on the basis of coastal ecological capabilities and long-term developmental needs

Under-exploited Resources of Sardines and Anchovies joint project	<ul style="list-style-type: none"> • Stock assessment 	<ul style="list-style-type: none"> • Joint-resources between Iran – Oman – UAE – Saudi Arabia 	<ul style="list-style-type: none"> • Funding sources: FAO 	<ul style="list-style-type: none"> • Stock assessment and identification of available reserves and determining the number of reserves that can be collected in the Persian Gulf and the Gulf of Oman
<u>IOC Function C: Ocean Hazards</u>				
<u>IOCINDIO Programmes</u>				
<ul style="list-style-type: none"> - Coastal vulnerability assessment for sea level rise and storm surges. - Monitoring with Responsible Response of Oil Spill in inner ROPME Sea. 				
Projects Titles & Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/international	Results/impacts
Establishment of Iranian National Center for Ocean Hazards (INCOH) by the INIOAS	<ul style="list-style-type: none"> • Presenting educational programs and developing public information system to enhance the national capacity for confronting the marine hazards • Measuring, modeling and zoning the risk of rip currents • Tsunami modeling in the Gulf of Oman as well as zoning the risk of inundation 	<ul style="list-style-type: none"> • Persian Gulf • Strait of Hormuz • Gulf of Oman 	<ul style="list-style-type: none"> • Funding sources: INIOAS 	<ul style="list-style-type: none"> • Researches on the risks from Iranian seas marine hazards, including oceanic climate change, tsunami, rip current, waves, oil slick movement, and biological hazards to contribute to strengthen the resilience of vulnerable coastal communities, their infrastructure and service-providing ecosystems
Climate Change Monitoring and Modeling Program (started from 2022)	<ul style="list-style-type: none"> • Monitoring, study and simulation of extreme meteorological phenomena in Iran coastal and marine area • Paleoclimatic studies • Monitoring of 	<ul style="list-style-type: none"> • Persian Gulf • Strait of Hormuz • Gulf of Oman 	<ul style="list-style-type: none"> • Funding sources: INIOAS • Budget: 10000\$ first year 	<ul style="list-style-type: none"> • Modeling the wave regime of Iranian territorial waters • Modeling the Atmosphere and Ocean • Climate Modeling • Atmospheric-Oceanic prediction for mesoscale phenomena • Remote sensing of the atmosphere and

	<ul style="list-style-type: none"> environmental parameters in Iran coastal and marine area Atmosphere chemistry and air pollution monitoring 			<ul style="list-style-type: none"> ocean Investigating Climate Changes Investigating the effects of climate change on the economic growth of Iran and its coastal areas
Implementing the Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) in Iran	<ul style="list-style-type: none"> Iran's PMO is the National Administration for implementing the Convention Aerial safety-environmental patrols have been regularly conducted in Iranian waters using Bell helicopters to monitor Oil Spills since 2010 	<ul style="list-style-type: none"> Iran territorial waters of north, south and inland waters 	<ul style="list-style-type: none"> Iran's Ports and Maritime Organization (PMO) 	<ul style="list-style-type: none"> More effective, faster and smarter actions during incidents caused by oil pollution and reducing irreparable damages to ships, marine facilities, ports, oil unloading and loading facilities
The National Weather and Climate Monitoring System (National Program)	<ul style="list-style-type: none"> IRIMO has operated 30 Argo meteorological stations 	<ul style="list-style-type: none"> National 	<ul style="list-style-type: none"> Islamic Republic of Iran Meteorological Organization (IRIMO) 	<ul style="list-style-type: none"> Observation Forecasting and climatology Research and training with special emphasis on Numerical Weather

IOC Function D: Assessments & information for Policy

IOCINDIO Programmes: 2050 Integrated Ocean Policy Advice for Proactive Planning and Management for IOCINDIO Member States.

Projects Titles & Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/international	Results/impacts
---------------------------	------------	--	---	-----------------

IOC Function E: Governance

IOCINDIO Programme: Blue Economy Business opportunities in the context of climate change adaptation and Disaster Risk Reduction.

Projects Titles & Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/international	Results/impacts
---------------------------	------------	--	---	-----------------

IOC Function F: Capacity Development

IOCINDIO Programme: IOCINDIO Networking Research Infrastructures, Facilities and Human Resources.

Projects Titles & Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/international	Results/impacts
Iran Ocean Acidification Observing Network (IrOA-ON)	Oceanographic monitoring (SDG 14.3) including in-situ measurement and water sampling for the determination of salinity, temperature, pH, dissolved oxygen, dissolved nutrients, Chlorophyll a and phytoplankton were conducted in 4 different stations (northern coasts of the Persian Gulf, Strait of Hormuz, and Gulf of Oman)	<ul style="list-style-type: none"> • Persian Gulf • Strait of Hormuz • Gulf of Oman 	<ul style="list-style-type: none"> • Funding sources: INIOAS • Budget: 10000\$ per year 	<ul style="list-style-type: none"> • Capacity building • Improve understanding of regional OA conditions (achieving SDG 14.3) • Improve our understanding of ecosystem response to OA • Acquire and exchange data and knowledge necessary to optimize modelling for OA and its impacts • Report of the activities on the Global Ocean Acidification Observing Network (GOA-ON) data portal and Iranian National Center for Ocean Data (INCOD)
Capacity development	Establishment of the Union of Coastal and Marine Universities and Research Centers (19 members)	<ul style="list-style-type: none"> • National level 	<ul style="list-style-type: none"> • Permanent secretariat is located in INIOAS 	<ul style="list-style-type: none"> • Networking Research in national level • Capacity building
Data management	Strengthen the INCOD database with new datasets	<ul style="list-style-type: none"> • Persian Gulf • Strait of Hormuz • Gulf of Oman coastal zones 	<ul style="list-style-type: none"> • Funding sources: INIOAS 	<ul style="list-style-type: none"> • Measurement data • Remote sensing data • Modelling data
Software development	Develop websites, software applications and tools based on IODE standards for data management process	<ul style="list-style-type: none"> • Usable for all national marine organizations 	<ul style="list-style-type: none"> • Funding sources: INIOAS 	<ul style="list-style-type: none"> • Website • Applications • Tools
Information management	Develop software systems to access information of experts, scientific resources,	<ul style="list-style-type: none"> • Iranian marine environments 	<ul style="list-style-type: none"> • Funding sources: INIOAS 	<ul style="list-style-type: none"> • Caspian Expert website • Marine Docs website • Metadata Management

	research projects and cruise summary report			<ul style="list-style-type: none"> System • Research project management system • Cruises management system
Marine data products	Produce marine atlases and data catalogue	<ul style="list-style-type: none"> • Persian Gulf • Strait of Hormuz • Gulf of Oman • Indian Ocean • Arabian Sea • Iranian coastal 		<ul style="list-style-type: none"> • Atlas • Data catalogue
Capacity building	Participating in several IODE sessions, training courses and workshops	<ul style="list-style-type: none"> • Regional • National 		<ul style="list-style-type: none"> • Familiarity with the concepts of oceanographic data management • Implementation IODE standards in INCOD data management process
Knowledge sharing	Holding national workshops and training courses to encourage Iranian marine organizations to comply with IODE data management policy	<ul style="list-style-type: none"> • National 	<ul style="list-style-type: none"> • Funding sources: INIOAS 	<ul style="list-style-type: none"> • Social benefit • Public awareness • Focus more on needs of users and their satisfaction
Capacity development in West Asia Region	1st International Conference on Oceanography for West Asia (RCOWA-2017), Tehran, Islamic Republic of Iran	<ul style="list-style-type: none"> • Participants from West Asia Member States 		<ul style="list-style-type: none"> • Knowledge sharing with participation of 350 participants
Capacity development in West Asia Region	2nd International Conference on Oceanography for West Asia (RCOWA-2020), 16-17 September 2020, Tehran, Islamic Republic of Iran	<ul style="list-style-type: none"> • Participants from West Asia and IOCINDIO Member States 		<ul style="list-style-type: none"> • Knowledge sharing
Capacity development in West Asia Region	Workshop on Ocean Acidification (Online), 17- 18 October 2022-Jointly with Institute of Marine Research of Spanish National Research Council (IIM-CSIC)	<ul style="list-style-type: none"> • Participants from Iran, Spain, Oman, Iraq, Morocco, Pakistan and Nigeria 		<ul style="list-style-type: none"> • Knowledge sharing with participation of 85 participants
Capacity development in West	Workshop on	<ul style="list-style-type: none"> • Participants from IORA, 		<ul style="list-style-type: none"> • Knowledge sharing with

Asia Region	Effects of Climate Change on the Indian Ocean Marine Environment, 20-22 February 2023 Tehran, Islamic Republic of Iran	IOCINDIO, and West Asia Member States • India, Iran, South Africa, Bangladesh, Mauritius, Malaysia, Maldives, Sri Lanka, Tanzania		participation of 35 participants
Capacity development in West Asia Region	Ocean Governance national courses with the support of International Ocean Institute (IOI) 2022	• Iranian Marine experts and students		• Knowledge sharing
Capacity development in West Asia Region	Workshop on Effects of Climate Change on the Indian Ocean Marine Environment (Online), 10 May 2021 Tehran, Islamic Republic of Iran	• Participants from IORA, IOCINDIO, and West Asia Member States Australia, Bangladesh, China, India, Iran, Madagascar, Malaysia, Maldives, Mauritius, Oman, Pakistan, Seychelles, Sri Lanka, South Africa, Tanzania and Yemen		• Knowledge sharing with participation of 90 participants
Capacity development in West Asia Region	Twelfth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS-XII), Kish, IR of Iran, 9–12 March 2019	• IOCINDIO Member states		• Knowledge sharing
Capacity development in West Asia Region	Regional Training Course on Data Analysis and Ocean Observing Instruments, (Online) 29 - 31 August 2021, Iran	• Participants from IOCINDIO, and West Asia Member States Iran, Iraq, Kuwait, Pakistan, Oman, Egypt, and Japan		• Knowledge sharing

Capacity development in West Asia Region	Regional Training Course on Coastal Desalination Intake and Brine Disposal System-Planning, Design and Implementation, (Online) 27 - 29 October 2021, Iran.	<ul style="list-style-type: none"> • Participants from IOCINDIO, and West Asia Member States Iran, Oman, Kuwait, Yemen, Pakistan, Japan, Iraq, Egypt, Somalia, Russia, Madagascar and Malaysia 		<ul style="list-style-type: none"> • Knowledge sharing with participation of 75 experts of the West Asia Region
Capacity development in West Asia Region	Workshop on" Age-depth modeling of marine and lacustrine sediments using 'clam' and 'Bchron' packages in R statistical software" (Online), 4th January 2021	<ul style="list-style-type: none"> • Participants from IOCINDIO, and West Asia Member States Iran, Iraq, India, Oman 		<ul style="list-style-type: none"> • Knowledge sharing with participation of 33 Participants from West Asia Region
Ocean Literacy	Organizing many courses for School Teachers on the oceanography knowledge (relevant to the UN decade of ocean science for sustainable development)	<ul style="list-style-type: none"> • More than 2000 School teachers from Tehran and coastal Provinces of Iran participated in the courses from 2021 to know 		<ul style="list-style-type: none"> • Teaching More than 2000 School Teachers on the marine and ocean knowledge • Development the concept of sea-based development and economy, marine science, ocean literacy, and marine and coastal environmental protection

ANY OTHER PROGRAMMES/PROJECTS RELEVANT TO IOC, IOCINDIO AND THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT (2021-2030)

Following the IOC-UNESCO Call for Actions for the United Nations Decade of Ocean Science for Sustainable Development (2021–2030), the UNESCO Category 2 Regional Education and Research Centre on Oceanography for West Asia (RCOWA) proposes the programme entitled "The West Asia Blue Waters" to link the science and life and to elevate the ocean literacy amongst people in the region. Under this programme, INIOAS have organized 10-year program in a wide range of different oceanographic disciplines includes 5 projects with the aim of environmental preservation, education, data and information sharing and associating coastal dwellers in ocean and coastal observations:

- West Asia Marine Science and Scientists Hub
- Remotely Sensed Database
- Seagoers
- Clean coast, Clean Sea
- Floating Oceanography School

Various activities on the occasion of the UN Decade of Ocean Science:

- Beach cleanup activities in north and south coasts of Iran
 - Organizing a semi-virtual workshop on marine data and information for sustainable development
 - Holding the meeting of the Iranian National Committee for Oceanography of the Iranian National Commission for UNESCO on World Oceans Day, June 8, 2021
 - Coastal monitoring in north and south coasts of Iran
 - Coral health status evaluation in Chabahar Bay
-