

# Summary of Report of Activities and Work Plan for 2021-2022 IORA Regional Centre for Science and Technology Transfer (RCSTT)

Presented to:

**Eleventh Bi-Annual Meeting of the Committee of Senior Officials (CSO)**

14-16 June 2021

# Introduction

The following programmes were proposed and endorsed at the 22nd Meeting of the Committee of Senior Officials (CSO), 15-16 December 2020. The status is as follows:

# Completed Programmes

1. **Close Cooperation with the Working Group on the Blue Economy**

Per to the 22nd Meeting of the Committee of Senior Officials (CSO), 15-16 December 2020, RCSTT was requested to work closely with the Working Group on the Blue Economy on its upcoming climate change- related activities. Accordingly, RCSTT started to work closely to align its action plan with the agenda of Working Group on the Blue Economy. In the Second Meeting of the WGBE held on 12 April 2021, the proposal of holding a series of webinars on the effects of climate change on marine environment of the Indian Ocean was submitted and noted. The first phase of the above series was completed as:

"The First Webinar on the Effects of Climate Changes on the Indian Ocean Marine Environment" 10 May 2021, Online (Completed)

# Collaboration with Water Research Commission (WRC)

1. As it was indicated in the RCSTT Brief Report submitted to the 22nd Meeting of the CSO, 15-16 December 2020, considering the termination date of the initial MOU between the RCSTT and WRC, the two parties have reached to an agreement to renew the existing MOU with slight modifications for 5 more years. The details related to the MOU signing arrangement will be announce in due time. (Completed)
2. On the recommendation of participants in the Workshop on Salts and Chemicals Extraction from Saline Waters for IORA Countries, October 15-17, 2019 Tehran – I.R. Iran, a project was defined on “Dual Purpose Desalination” by RCSTT (Under Process) and later on, due to the close relationships between RCSTT and WRC, a join meeting was held between RCSTT’s scientific panel and WRC’s experts and both parties agreed to work on the project in the discussed and defined framework. (Completed)

# Programmes under Process

1. The Second Webinar in the Workshop Series on "Effects of Climate Change on the Indian Ocean Marine Environment" focused on “Oxygenation and Acidification” (tentatively) September 2021 (TBF)
2. The Third Webinar in the Workshop Series on "the Effects of Climate Change on the Indian Ocean Marine Environment" focused on “Ecology of Marginal Seas” (tentatively) December 2021 (TBF)
3. The International Desalination Innovation Forum, 23-25 August 2021, Shandong Province, China (TBF)
4. A Comprehensive Study on Dual Purpose Desalination (simultaneous desalination and salt production) (TBF)
5. The Workshop on the Effects of Climate Change on the Marine Environment of the Indian Ocean (Pending)

# Future Programmes: Under Consideration

* IORA Workshop on Desalination and Climate Resilience, A Nexus Approach for IORA
* Cooperation with Sistan University: A Conference on Water and Innovation, I.R. Iran, 2021-22 (TBF)

# Completed Programmes

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| Name of Event/Activity | **1- The First Webinar on the Effects of Climate Changes on the Indian Ocean Marine Environment** |
| Status | **Achieved** |
| Objective | The aim of this workshop was to provide a general overview of the impacts of climate changes on the marine environment |
| Activity dates | *Planned dates:* May 10, 2021  *Actual dates:* 10 May, 2012 |
| Progress | The workshop was attended by about 150 participants and speakers from 15 IORA Member States including Australia, Bangladesh, India, Iran, Madagascar, Malaysia, Maldives, Mauritius, Oman, Seychelles, Sri Lanka, South Africa, Tanzania, and, UAE and Yemen.  And four Dialogue Partners i.e. China, Egypt, Germany and Korea attended the webinar too.   * Status of Report: The related reports were prepared in due time and circulated among the participants and the other interested experts and scientists by RCSTT. * Further, the IORA Secretariat circulated the reports among all the Member States and Dialogue Partners.   Status of Accountability Report:   * There is no accountability report because the workshop funded by RCSTT and the Iranian Institute for Oceanography and Atmospheric Science (INIOAS) as their service to their region. |
| Outcomes | **Some major points among others:**   * Following the suggestion of the 22nd Meeting of the IORA CSO in December 2020, RCSTT worked closely with the Working Group on the Blue Economy and presented the related report in the second meeting of WGBE. * The unprecedented participation of experts and scholars from the region indicates that this workshop is timely responding to the collective concerns that pervade our region about the very important issue of climate change as a cross cutting subject, affecting all six priorities of IORA, including science and technology. * That encourages the RCSTT to align its future plan with the issue of climate change |
| Next Step | **What is the way forward according to the Organizer?**  RCSTT reaffirms its commitment to work with the group of blue economy on the issue of climate change and its interplay with science and technology |
| Visibility | The high participation of 150 people shows that the webinar draws the attention of IORA region and beyond. The workshop outreached the countries like South Korea and Australia from east and south Africa from the west end of the region. |

* + 1. **Programme under Process**

1. **The Second Webinar in the Workshop Series on "Effects of Climate Change on the Indian Ocean Marine Environment" focused on “Oxygenation and Acidification” (tentatively) September 2021 (TBF)**

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| Project title: | The Webinar on “Oxygenation and Acidification” |
| IORA forum where discussed: | WGBE |
| IORA Member States with whom you are currently cooperating: | **Iran, Oman, South Africa, Germany** |
| IORA Member States with whom you would like to cooperate: | FSU and GIZ, Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), the Regional Education and Research Centre on Oceanography for West Asia (RCOWA) under the auspices of UNESCO, and IOC Regional Committee for the Central Indian Ocean (IOCINDIO) for their outstanding work. |
| Expected starting date: | September 2021 (TBF) |
| Expected date for completion: | September 2021 (TBF) |
| Project summary: Describe the project in under 150 words.  Your summary should include the project topic, goals, planned activities,  timing and location:  ***(Summary must be no longer than the area/box provided. Cover sheet must not exceed one page)*** | The workshop series entitled as "Effects of Climate Change on the Indian Ocean Marine Environment" will focus on the effects of climate change on the physical, chemical, biological and meteorological properties of the Indian Ocean and adjacent seas. The workshops will aim to bring together scientists and policymakers with an interest in climate change and marine environments. Participants from IORA region will have the opportunity to discuss and formulate new issues and research areas focused on the followings:   * [Atmospheric](https://www.epa.gov/climate-indicators/sea-surface-temperature)-oceanic parameters * Extreme events * Dissolved gases * [Coastal flooding](https://www.epa.gov/climate-indicators/coastal-flooding). * [Ocean acidity](https://www.epa.gov/climate-indicators/ocean-acidity) * Marine ecosystem |
| Problem Solving: State the problems your project may encounter? i.e. why is the project required? | In this programme, by exchanging and sharing their knowledge, the participants can learn about the marine environment in the region and how to properly manage the climate change effects on the  marine environment and the marine ecosystems. |

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| Benefit: How will people benefit from this project? How will the project promote women’s economic empowerment? | The benefits of adaptation consist of avoided damage by adjusting to climate change, while the benefits of mitigation consist of the avoided damage due to less climate change. Adaptation involves planning for climate impacts, building resilience to those impacts, and improving society’s capacity to respond and recover. This can help reduce damages and disruptions associated with climate change.  Given that women are the more vulnerable group, increasing their involvement in awareness campaigns and building their capacities on disaster risk management could also increase their resilience to climate change driven disturbances. | | |
| A. Visibility |  | | |
| Longevity: Will the project be continued, or will similar activities continue in the future beyond the project timeline? | The Webinar will be followed by the Third Webinar in the Workshop Series on "the Effects of Climate Change on the Indian Ocean Marine Environment" focused on “Ecology of Marginal Seas” (tentatively) December 2021 (TBF) | | |
| Summary of Proposed Budget (USD): |  |  |  |
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1. **The Third Webinar in the Workshop Series on "the Effects of Climate Change on the Indian Ocean Marine Environment” focused on “Ecology of Marginal Seas” (tentatively) December 2021 (TBF)**

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| Project title: | The Third Webinar on in the Workshop Series on "the Effects of Climate Change on the Indian Ocean Marine Environment" focused on “Ecology of Marginal Seas” December 2021 (TBF) |
| IORA forum where discussed: | WGBE |
| IORA Member States with whom you are currently cooperating: | Iran, South Africa, Germany |
| IORA Member States with whom you would like to cooperate: | All the interested countries and in cooperation with the following international organizations:  -Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO),  -The Regional Education and Research Centre on Oceanography for West Asia (RCOWA) under the auspices of UNESCO,  -IOC Regional Committee for the Central Indian Ocean (IOCINDIO) for their outstanding work |
| Expected starting date: | December 2021 (TBF) |
| Expected date for completion: | December 2021 (TBF) |
| Project summary: Describe the project in under 150 words. | The workshop series entitled as "Effects of Climate Change on the Indian Ocean Marine Environment" will focus on the effects of climate change on the physical, |

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| Your summary should include the project topic, goals, planned activities,  timing and location:  ***(Summary must be no longer than the area/box provided. Cover sheet must not exceed one page)*** | chemical, biological and meteorological properties of the Indian Ocean and adjacent seas. The workshops will aim to bring together scientists and policymakers with an interest in climate change and marine environments. Participants from IORA region will have the opportunity to discuss and formulate new issues and research areas focused on the followings:   * [Atmospheric](https://www.epa.gov/climate-indicators/sea-surface-temperature)-oceanic parameters * Extreme events * Dissolved gases * [Coastal flooding](https://www.epa.gov/climate-indicators/coastal-flooding). * [Ocean acidity](https://www.epa.gov/climate-indicators/ocean-acidity) * Marine ecosystem | | |
| Problem Solving: State the problems your project may encounter? i.e. why is the project required? | In this programme, by exchanging and sharing their knowledge, the participants can learn about the marine environment in the region and how to properly manage the climate change effects on the marine environment and the marine ecosystems. | | |
| Benefit: How will people benefit from this project? How will the project promote women’s economic empowerment? | The benefits of adaptation consist of avoided damage by adjusting to climate change, while the benefits of mitigation consist of the avoided damage due to less climate change. Adaptation involves planning for climate impacts, building resilience to those impacts, and improving society’s capacity to respond and recover. This can help reduce damages and disruptions associated with climate change.  Given that women are the more vulnerable group, increasing their involvement in awareness campaigns and building their capacities on disaster risk management could also increase their resilience to climate change driven disturbances. | | |
| Longevity: Will the project be continued, or will similar activities continue in the future beyond the project timeline? | The Webinar will be followed by the Workshop on the Effects of Climate Change on the Marine Environment of the Indian Ocean which has been postponed due to  Covid-19 Pandemic and will be organized (in person) when the pandemic is suppressed. | | |
| Summary of Proposed Budget (USD): |  |  |  |
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1. **International Desalination Innovation Forum**

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| Project title: | **International Desalination Innovation Forum**  Shandong Province, China (to be fixed) Proposed by**:**   1. Institute of Seawater Desalination and Multipurpose Utilization (ISDMU), MNR, China   To be organized in cooperation with:   1. The IORA RCSTT Coordination Centre on Desalination Technologies   **3.** IORA RCSTT  **(See Annex No. 4 for more details)** | | |
| IORA forum where discussed: | **IORA AG and the Related Working Groups** | | |
| IORA Member States with whom you are currently cooperating: | **All Member States** | | |
| IORA Member States with whom you would like to cooperate: | **India and Sri Lanka** | | |
| Expected starting date: | 23 August, 2021 | | |
| Expected date for completion: | 25 August, 2021 | | |
| Project summary: Describe the project in under 150 words.  Your summary should include the project topic, goals, planned activities, timing and location:  ***(Summary must be no longer than the area/box provided. Cover sheet must not exceed one page)*** | The forum is designed to share the fundamental and practical knowledge on seawater desalination and multipurpose utilization by leading engineers and scientist for better development of desalination innovation and application.  **Topics:**   1. The application of conventional desalination technologies such as SWRO, MED, MSF in different countries and regions. 2. The development and application of novel seawater desalination technologies. 3. Desalination techniques standardization. 4. Current situation and development trend of international chemical resources extraction technology from concentrated seawater (current situation and development trend of extraction technology, market share of products and major production enterprises, etc.) 5. Enhance the cooperation between engineers and scientist across the world 6. Seawater desalination and United Nations Sustainable Development Goals | | |
| Problem Solving: State the problems your project may encounter? i.e. why is the project required? | Seawater desalination is becoming an increasingly viable option for countries that have limited access to fresh surface water supplies to meet increasing demand. Meanwhile, the brine is also a potential source of valuable Chemicals. The salt products and the increased water recovery from the integrated process could reduce the cost of the overall process and the possible environmental risks from the brine disposal. | | |
| Benefit: How will people benefit from this project? How will the project promote women’s economic empowerment? | The forum is designed to share the fundamental and practical knowledge on seawater desalination and multipurpose utilization by leading engineers and scientist for better development of desalination innovation and application. | | |
|  | IORA funding | Self-funding | Total |

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| Summary of Proposed Budget (USD): | **Not Finalized** | **Not Finalized** | **Not Finalized** |

1. **A Comprehensive Study on Dual Purpose Desalination (simultaneous desalination and salt production)**

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| Project title: | **A Comprehensive Study on Dual Purpose Desalination (simultaneous desalination and salt production)**  (As follow-up of the Workshop on Salts and Chemicals Extraction from Saline Waters for IORA Countries, held on 15-17 October, 2019) |
| IORA forum where discussed: | To be discussed in the AG Meetings and its related Working Groups |
| IORA Member States with whom you are currently cooperating: | **Iran, South Africa** |
| IORA Member States with whom you would like to cooperate: | **Oman and Italy** |
| Expected starting date: | **TBF** |
| Expected date for completion: | **TBF** |
| Project summary: Describe the project in under 150 words.  Your summary should include the project topic, goals, planned activities,  timing and location:  ***(Summary must be no longer than the area/box provided. Cover sheet must not exceed one page)*** | **The Related IORA Priority Area**: Academic, Science and Technology Cooperation  **Topic:** In general, this proposal is organized to cover all technological, environmental, and social aspects of these integrated processes in a comprehensive feasibility study.  **Aims and Objectives:** Through facilitating the cooperation of the scientists and technologists of the IORA Member States, the following objectives will be obtained:   1. Providing information on the current technological status of the simultaneous water desalination and salt extraction from desalination brine in the IORA Member States. 2. Seeking the latest technologies on the process of dual- purpose desalination. 3. Identification of advanced technologists in the related area in IORA Member States for technology transfer. |
| Problem Solving: State the problems your project may encounter? i.e. why is the project required? | Several IORA Member States have faced shortage of freshwater under the impact of climate change. Therefore, water desalination from seawater/saline waters are on their water production agenda. Amongst, some Member States have to use desalination technology to obtain fresh water. The activities related to desalination are an important element of global sustainability and should be carried out with utmost care not to harm environmental balance. |
| Benefit: How will people benefit from this project? How will the project promote women’s economic empowerment? | By carrying this project, the Member States would be able to find sustainable technological processes for producing fresh water as well as the valuable salts from saline waters. |

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|  | Therefore, the environmental problems of brine discharge to the environment diminish**.** | | |
| Visibility | The Issue is highly regarded by the researchers from the perspective of environmental consideration. That will boost IORA’s visibility in the Academia and NGOs and  the people who are interested in the environmentally sound technologies. | | |
| Longevity: Will the project be continued, or will similar activities continue in the future beyond the project timeline? | The project can be continued as workshops and/or expert meetings in the future. | | |
| Summary of Proposed Budget (USD): | IORA funding | Self-funding | Total |
| **USD 30000/-** | **USD 30000/-** | **USD 60000/-** |

1. **The Workshop on the Effects of Climate Change on the Marine Environment of the Indian Ocean (Pending)**

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| Name of Event/Activity | **The Workshop on the Effects of Climate Change on the Marine Environment of the Indian Ocean** |
| Status | **Pending** |
| Objective | **Main Objectives:**   * To promote sharing information and knowledge on the effects of climate change and ocean acidification on various aspects of the marine environment and ecosystems; * To enhance capacities and skills of IORA Member States on the sustainable management and conservation of the marine biodiversity; * To increase awareness and resilience of IORA Member States on climate change driven disasters and damages; * To design an action plan to address the impacts of climate change on marine environment and ecosystems, as well as its implications on food security.   **Who is the target audience?**  Experts/scientists/researchers in the various fields of climatology and weather systems and related studies from IORA Member States |
| Activity dates | ***Planned dates:*** The event has been postponed to a later date due to force major of Covid-19 Pandemic. |
| Progress | RCSTT reaffirms its commitment to hold the workshop as soon as the pandemic is over. |

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| Expected Outcomes | **Expected Outcomes:**   * To establish a network of experts in the IORA countries for exchanging the knowledge and experience on the climate change in the Indian Ocean environment. * Influencing policy decisions related to the marine environment in the region and promoting the mainstreaming of climate change mitigations and adaptation measure across the various sectors in the Indian Ocean environment. * Sharing the action points to combat climate change and achieve sustainable development in the Indian Ocean margin.   **Is there a gender component? If yes, what is the expected outcome?**  Climate change affects negatively the livelihood of the vulnerable groups of population including women living out of small size fisheries, in the marginal areas. Every attempt to mitigate the challenge of climate change will improve the life of these groups |

* + 1. **Future Programmes**

**1- IORA Workshop: Desalination and Climate Resilience, A Nexus Approach for IORA**

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| Project title: | **IORA Workshop:**  **Desalination and Climate Resilience, A Nexus Approach for IORA** |
| IORA forum where discussed: | To be discussed in the AG Meetings and its related Working Groups |
| IORA Member States with whom you are currently cooperating: | **Iran and Germany** |
| IORA Member States with whom you would like to cooperate: | **Oman and Italy** |
| Expected starting date: | **TBA** |
| Expected date for completion: | **TBA** |
| Project summary: Describe the project in under 150 words.  Your summary should include the project topic, goals, planned activities,  timing and location:  ***(Summary must be no longer than the area/box provided. Cover sheet must not exceed one page)*** | **IORA Workshop:**  **Desalination and Climate Resilience, A Nexus Approach for IORA**  The overall objective of this event is to identify affordable and practical solutions for environmentally, economically, and socially sustainable green technologies for the desalination of sea water which are state-of-the-art, have already been successfully applied, or are applicable in the Indian Ocean Rim countries. The specific objectives of the workshop are defined as following:   * To facilitate knowledge transfer among experts from technical, social, economic, political and environmental fields working on different desalination and water treatment technologies by using renewable energy solutions. * To create a platform for the exchange and collaboration between scientists, technologists, policy makers and stakeholders from various sectors to discuss the suitability of different green technologies in the fields of desalination and climate resilience, |

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|  | including with respect to their affordability and practicality.   * To build networks among different regional stakeholders directly and indirectly involved in green technologies for desalination. * To identify potential collaborators and funding possibilities to develop a nexus desalination project benefitting the IORA region. | | |
| Problem Solving: State the problems your project may encounter? i.e. why is the project required? | One case study will be assessing the details of successful examples of desalination all around the world and especially in IORA-Region, by Member States and/or Dialogue Partners, for improving the efficiency and climate resilience towards water security. Re-known experts will be invited to reflect on the existing desalination technologies and an integrated innovative nexus model that increases the economic feasibility of desalination technologies at lower environmental cost compared to less sustainable alternative solutions that are still widely applied. | | |
| Benefit: How will people benefit from this project? How will the project promote women’s economic empowerment? | With this, the workshop will stimulate the creation of a couple of task-forces which will be tasked to develop technical reports for the Member States to be used as Policy Guidelines, Action Plan and Roadmap. | | |
| A. Visibility | What are the steps to be taken to increase the visibility of the Association?  The event will be noted by the interested audience in the MS and DP and it will be covered by the specialized mass media, as it is about one of the hot issues of environmentally sound technologies for non-conventional water. | | |
| Longevity: Will the project be continued, or will similar activities continue in the future beyond the project timeline? | The project can be continued as workshops and/or expert meetings in the future  With this, the workshop will stimulate the creation of a couple of task-forces which will be tasked to develop technical reports for the Member States to be used as Policy Guidelines, Action Plan and Roadmap.  Some of these Taskforces can be:   1. Climate Change Taskforce (Adaptation and Mitigation) 2. Nexus and SDG Taskforce to work on the positive and negative interlinkages between and amongst resources sphere and socio-economic-political sphere and develop Nexus Innovation and Business Roadmap for the region 3. Roadmap and Action Plan Taskforce   Regional Policy Taskforce to work on the regional two- level Win-Sets | | |
| Summary of Proposed Budget (USD): | IORA funding | Self-funding | Total |
| **Not finalized** | **Not finalized** | **---** |

2- **Cooperation with Sistan and Baluchestan and Iranian research Organization for Science and Technology(IROST)- I.R. Iran**

**Third Conference on Unconventional Water Treatment, I.R. Iran, 2021-22 (TBF)**

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| Project title: | **Cooperation with Sistan University:**  **A Conference on Water and Innovation, I.R. Iran, 2021-22 (TBF)** | | |
| IORA forum where discussed: |  | | |
| IORA Member States with whom you are currently cooperating: | **Iran and South Africa (WRC)** | | |
| IORA Member States with whom you would like to cooperate: | **All the interested Member States and Dialogue Partners** | | |
| Expected starting date: | Extended Abstract Submission April 1, 2021  Deadline for Submission August 1, 2021 | | |
| Expected date for completion: | **2021-22 (TBF)** | | |
| Project summary: Describe the project in under 150 words.  Your summary should include the project topic, goals, planned activities,  timing and location:  ***(Summary must be no longer than the area/box provided. Cover sheet must not exceed one page)*** | The conference topics :  1-Treatment and reclamation of water and wastewater 2-desalination of brackish water, seawater, and saline water   1. Minimization, treatment and reuse of desalination plants wastewaters 2. Decentralized water/wastewater treatment processes 5-Deep groundwater uptake   6-Rainfall/storm water collection and treatment 7-Water collection from fog and humid air   1. Water loss reduction 2. Water, energy and environment nexus 3. Monitoring and control of water resources using satellite technology 4. Covid-19/other infections in water and waste water 12-Water technological innovation system seminars.usb.ac.ir/uwtc | | |
| Problem Solving: State the problems your project may encounter? i.e. why is the project required? | Many IORA Member States in the region suffer from the problem of water tension and aridity. This conference functions as a platform to exchange the knowledge about the recent development of water desalinations. | | |
| Benefit: How will people benefit from this project? How will the project promote women’s economic empowerment? | There is no possibility for living without water. Every economic activity needs water.  Women suffers most from water shortage since they are the provider of the food and health and sanitation for their family. | | |
| Longevity: Will the project be continued, or will similar activities continue in the future beyond the project timeline? | It is expected to build a network of researchers in the field of desalination. | | |
| Summary of Proposed Budget (USD): | ---- |  |  |
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