



ICG/IOTWMS-XIV.1
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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

**FOURTEENTH SESSION OF THE INTERGOVERNMENTAL COORDINATION GROUP
FOR THE INDIAN OCEAN TSUNAMI WARNING AND MITIGATION SYSTEM**

Banten, Indonesia
17-19 November 2024

DECISION ICG/IOTWMS-XIV.1

The Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS),

Having met for its 14th Session from 17-19 November 2024 in Banten, Republic of Indonesia;

Recalling Resolution XXIII-12 that established the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS);

Acknowledging with appreciation the contribution and continued support of the Government of Australia for the UNESCO-IOC ICG/IOTWMS Secretariat Office since 2005;

Acknowledging with appreciation the contribution and continued support of the Government of Republic of Indonesia through Agency for Meteorology, Climatology and Geophysics (BMKG) for the UNESCO-IOC Indian Ocean Tsunami Information Centre (IOTIC) since 2017 with the current support to the period 2023 to 2027;

Acknowledging with appreciation the support from UNESCAP Trust Fund for Tsunami, Disaster and Climate Preparedness for the UNESCO-IOC projects on “Strengthening tsunami early warning in the North-West Indian Ocean through regional cooperation” and “2024 Capacity assessment of tsunami preparedness in the Indian Ocean”;

Having reviewed the progress made in the implementation of the IOTWMS since the 13th Session of the ICG/IOTWMS (28 November to 1 December 2022, Bali, Republic of Indonesia);

Having considered the reports of:

1. ICG/IOTWMS Chair
2. IOC Secretariat
3. IOTIC
4. 16th Meeting of the ICG/IOTWMS Steering Group
5. 16th and 17th Meetings of the TOWS-WG
6. UN Ocean Decade and Ocean Decade Tsunami Programme
7. UNESCAP Makran Project
8. ICG NEAMTWS, ICG PTWS, UNESCAP, IRIDeS
9. TSP Australia, TSP India and TSP Indonesia
10. 2nd UNESCO-IOC Global Tsunami Symposium
11. 2024 Capacity Assessment of Tsunami Preparedness
12. Working Group 1 on Tsunami Risk, Community Awareness, and Preparedness

13. Working Group 2 on Tsunami Detection, Warning and Dissemination
14. Working Group 3 on Tsunami Ready Implementation
15. Sub-regional Working Group for the North-West Indian Ocean
16. Task Team on IOWave23 Exercise

1. **Noting with appreciation** the 22 Member State reports provided as part of the 2024 Capacity Assessment of Tsunami Preparedness in the Indian Ocean;
2. **Noting with appreciation** the outcomes of the Working Group on Tsunamis and Other Hazards related to Sea-Level Warning and Mitigation Systems (TOWS-WG) in guiding the activities of the ICG and its Working Groups and Task Teams;
3. **Recognizing** the progress towards establishing National Tsunami Warning Centres (NTWCs) in all countries around the Indian Ocean since the Indian Ocean Tsunami of 26 December 2004;
4. **Reaffirming** that the IOTWMS is a coordinated network of national systems and capacities, and is part of a global network of early-warning systems for all ocean-related hazards;
5. **Reaffirming further** that each Member State has the responsibility to issue warnings within its respective territories;
6. **Recalling** the *Mauritius Declaration* adopted at the intergovernmental coordination meeting held at Grand Baie, 14–16 April 2005 to openly share and exchange tsunami-relevant real-time observational data in accordance with the UNESCO-IOC Oceanographic Data Exchange Policy;
7. **Considering** the outcomes of the 3rd UN World Conference on Disaster Risk Reduction (13–18 March 2015, Sendai, Japan), the Sendai Framework for Disaster Risk Reduction 2015–2030 (A/CONF.224/CRP.1);
8. **Considering** the WMO International Network for Multi Hazard Early Warning Systems (IN-MHEWS) initiative;
9. **Taking into account** the Summary Statement of the International Conference to commemorate the 10th anniversary of the Indian Ocean Tsunami: ‘The Indian Ocean Tsunami Warning and Mitigation System 10 years after the Indian Ocean Tsunami: Achievements, Challenges, Remaining Gaps and Policy Perspectives’ (24-25 November 2014, Jakarta, Indonesia; (IOC/BRO/2015/2);
10. **Noting** the Summary Statement of the symposium ‘Advances in Tsunami Warning to Enhance Community Responses’ (12–14 February 2018, Paris, France) that identified the current status of operational tsunami warnings and community resilience and future avenues for improvement (IOC/BRO/2018/3);
11. **Noting** the decision by the UN General Assembly, as part of the Omnibus Resolution for Oceans and the law of the sea (A/RES/72/73), to “proclaim the United Nations Decade of Ocean Science for Sustainable Development for the 10-year period beginning on 1 January 2021;
12. **Noting** the UN Ocean Decade Tsunami Programme (ODTP) and its two primary goals of 1) Improved accuracy and timelines of the tsunami warnings through enhance and new observing systems and 2) 100% of at-risk Communities resilient and prepared for the tsunami threat by 2030, and the publication of the Research Development and Implementation Plan (RDIP);
13. **Noting** the UN Secretary-General’s Early Warnings for All initiative, which called for every person on Earth to be protected by early warning systems by 2027;
14. **Noting with appreciation** the successful effort of the Republic of Indonesia through its Agency of Meteorology, Climatology and Geophysics (BMKG) to host the 2nd UNESCO-IOC Global Tsunami Symposium, Banda Aceh, Indonesia, 10-14 November 2024 with 682 in-person

participants representing 32 countries, 170 virtual participants and many social media viewers;

15. **Noting** the outcomes of the 2nd UNESCO-IOC Global Tsunami Symposium in the Banda Aceh Statement on Global Tsunami Warning and Mitigation System: Building Sustainability for the next decade through Transformation and Innovation, UNESCO and its partners call on States and civil society to drastically step up their investments and efforts to achieve 100% of Tsunami Ready Communities across the world by 2030;
16. **Recalling** IOC Resolution XXVI-6 on Data Buoy Vandalism: Impact and Responses, IOC Resolution XXVI-7 on Global Coordination of Early Warning and Mitigation Systems for Tsunamis and Other Sea-Level Related Hazards;
17. **Acknowledging** the contributions of seismic data through the CTBTO;
18. **Reaffirming** that participation in ICG activities should be self-funded by the Member States;
19. **Encouraging** Member States to promptly inform the Secretariat of all changes to the TNC/TWFP/NTWC contacts through official channels;
20. **Noting** the continued diminishing engagement by some Member States in the activities of the ICG/IOTWMS and **urging** all Member States to participate more actively;
21. **Encouraging** Member States to make voluntary contributions to the IOC Special Account set up for the ICG/IOTWMS to support activities identified in the Budget and Programme to underpin successful implementation of the IOTWMS and capacity development for Member States;
22. **Noting with appreciation** the efforts of IOTWMS Tsunami Service Providers (TSPs) Australia, India, and Indonesia, including the issuing of public bulletins over the IOC Public Email List server and the GTS;
23. **Noting** the importance of the national status of tsunami warnings to be available on the TSP public websites and **urging** Member State National Tsunami Warning Centres to ensure national tsunami warning status is reported back to the TSPs in a timely manner via the agreed web reporting protocols during tsunami events, tests and exercises;
24. **Noting** the importance of clarifying the earthquake hazard and tsunami potential of the Makran Subduction Zone;
25. **Encouraging** Member States to continue to acquire new datasets such as the Global Navigation Satellite System (GNSS), seismic, paleo-tsunami and other geological data to enhance tsunami hazard assessment and the timeliness and accuracy of tsunami warnings in the North-West Indian Ocean;
26. **Noting** the importance of seismic data for timely and accurate determination of tsunami threats by TSPs, and the progress made in bilateral exchange of seismic data among some Member States;
27. **Urging** Member States, especially in the North-West Indian Ocean region, to provide all relevant seismic data in real-time to TSPs and other Member States;
28. **Encouraging** Member States to acquire high-resolution coastal bathymetry and topography data to improve characterisation of tsunami and other coastal hazards and risks and promote sharing of this data to the extent possible;
29. **Noting** with concern the continued instances of tsunami buoy vandalism in the IOTWMS region, and **encouraging** Member States to promptly inform the UNESCO-IOC Secretariat such occurrences of tsunami buoy vandalism to facilitate incorporation in the Global Vandalism Report of the Data Buoy Cooperation Panel (DBCP);
30. **Encouraging** Member States to consider contributing any education or outreach materials related to data buoy vandalism to the DBCP for inclusion in a tool kit of regionally relevant

materials to counter vandalism;

31. **Noting** the successful outcomes of Phases 1, 2a and 2b of the UNESCAP funded project “Strengthening tsunami early warning in the North-West Indian Ocean through regional cooperation”;
32. **Further noting** the implementation of Phase 2c of the NWIO UNESCAP project involving training in inundation and evacuation mapping in support of implementation of the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) in the region;
33. **Noting** the role of IOTIC to facilitate, guide, and support Member States in the implementation of the UNESCO-IOC TRRP in coordination with the UNESCO-IOC Secretariat for the ICG/IOTWMS;
34. **Noting with appreciation** the work of the Steering Group in overseeing the 2024 Capacity Assessment of Tsunami Preparedness and the comprehensive nature and value of the assessment;
35. **Noting** the value of basin-wide tsunami exercises and drills and the successful conduct by Member States of Exercise IOWave23 with multiple scenarios including a non-seismic (volcanic) source involving participation from 20 Member States, 9 out of which have engaged communities including people with disabilities, all genders, elderly, youth and private sector;
36. **Recognizing** the valuable recommendations from the IOTWMS-IOTIC Post-IOWave23 Webinar, 12 - 13 December 2023, on Lessons Learnt during Exercise Indian Ocean Wave 2023;
37. **Encouraging** Member States to conduct further exercises and drills at the national level involving communities at least once per year;
38. **Noting with appreciation** the recognition of 48 communities in India and Indonesia as UNESCO-IOC Tsunami Ready;
39. **Encouraging** all Member States to implement the TRRP in vulnerable communities with UNESCO-IOC recognition to meet the UN Ocean Decade Tsunami Programme goal of 100% at-risk communities resilient and prepared for tsunamis.
40. **Recognizing** the Palu, Sunda Strait, Hunga Tonga-Hunga Ha’apai, and South Sandwich Island tsunami events as being complex from an early warning perspective, the current technical limitations of producing timely and accurate forecasts for tsunamis from near-field non-seismic and complex sources (e.g. aerial landslides, submarine landslides, volcanoes) and the value of in situ observations;
41. **Further noting** the efforts of the UNESCO-IOC TOWS-WG to develop a better understanding of the threat from tsunamis generated by non-seismic and complex sources and develop guidance on best practices to monitor and warn for such events;
42. **Recognizing** tsunamis generated by non-seismic and complex sources are often near-field threats where natural warnings signs are important to understand to facilitate effective community responses;
43. **Encouraging** all Member States to continue reviewing their national tsunami warning chains with a view to minimising the number of steps and ensuring clear authorization of responsibilities amongst stakeholders, especially for near-field tsunami threats;
44. **Encouraging** Member States to emphasise to Disaster Management Organisations (DMOs) the role they play in strengthening the national warning chain to ensure optimal community response, and stress the importance that all agencies participate in regional tsunami governance and technical forums;
45. **Encouraging** Member States to enhance community preparedness for near-field tsunamis, with emphasis on self-evacuation based on natural signs, including tsunamis generated by non-seismic and complex sources;

46. **Encouraging** NTWCs and DMOs to continue to develop and routinely review Standard Operating Procedures (SOPs) and provide copies to the UNESCO-IOC Secretariat for the ICG/IOTWMS;
47. **Encouraging** the involvement of national and international broadcast media in warning dissemination, SOP training activities, workshops, and exercises;
48. **Urging** Member States to ensure DRR based spatial planning is also taken into consideration at the city, province, and national level with respect to overall preparedness and sustainable resilience;
49. **Urging** Member States to consider nominating new participants to training activities and workshops to ensure that more in-country experts are trained and available to handle tsunami warning operations and emergency response to the tsunami threat;
50. **Urging** Member States to sample sea level data at one-second intervals and transmit this in real-time, given the critical need to resolve and understand the near-field threat to high at-risk communities where a tsunami may arrive within 5-30 minutes.
51. **Noting** the extensive task to achieve the outcome 100% of at-risk communities resilient and prepared for tsunamis, **further recognizing** the roles of the ICG/IOTWMS and its work plans are to support the capacity development of Member States to help them achieve this, depending on their risk assessment and national priorities;
52. **Noting** the success of Regional Working Group for North-West Indian Ocean in regional cooperation of Member States facing similar risks, resources and capacity;
53. **Noting** the approval of the UN ODTP Research Development and Implementation Plan by the 32nd Session of the IOC Assembly and publication of the White Paper on Challenge 6 of the UN Ocean Decade "Increase Community Resilience to Ocean Hazards";
54. **Noting** the annual success of the World Tsunami Awareness Day (WTAD) held on 5 November with the support of UNDRR and UNESCO-IOC in developing community awareness;
55. **Urging** Member States to advise UNESCO-IOC IOTIC and UNESCO-IOC ICG/IOTWMS Secretariat of their plans two months before the WTAD event each year, so that a more coordinated and targeted approach can be developed to further maximize outcomes;

Decides to:

1. Include the instructions from 57th Session of the IOC Executive Council, and the recommendations from TOWS-WG XVI and XVII in the work plans of the ICG for the next inter-sessional period;
2. Extend the TSP services to include tsunamis generated by non-seismic and complex sources;
3. Accepts the reports of IOWave23 Exercise, IOTWMS Service Definition Version 5, NTWC User's Guide Version 3, incorporating any feedback received from the Member States in four weeks and submission to IOC for publication as an UNESCO-IOC document;
4. Instructs the Steering Group to finalize the 2024 Capacity Assessment Report and Executive Summary in four weeks, for further review by the Member States, incorporate feedback if any, and endorse the final report for publication as an UNESCO-IOC document;
5. Continue existing Working Group 1 with modified Terms of Reference as attached in Annex 1, with Chair Dr. Weniza (Indonesia) and Vice-chair Dr. Mahendra S Ranganalli (India);
6. Continue existing Working Group 2 with modified Terms of Reference as attached in Annex 2, with Chair Mr. Padmanabham Jijavarapu (India) and two Vice-chairs: Dr. Robert Greenwood (Australia) and Mr. Yedi Dermadi (Indonesia);

7. Continue existing Working Group 3 with modified Terms of Reference as attached in Annex 3, with Chair Ms. Suci Dewi Anugrah (Indonesia) and Vice-Chair Dr. Ali Khoshkholgh (Iran);
8. Continue existing Regional Working Group for the North-West Indian Ocean with modified Terms of Reference as attached in Annex 4, and with Chair Ms. V Sunanda Manneela (India) and Vice-chair Mr. Nasser Al Ismaili (Oman);
9. Continue the Steering Group with modified Terms of Reference as attached in Annex 5, with TSP Representatives and NTWC Representative to be confirmed;
10. Establish a new intersessional Task Team on Indian Ocean Wave 25 Exercise (IOWave25) reporting to the Steering Group with Terms of Reference as attached in Annex 6, and with Chair Dr. Ajay Kumar Bandela (India) and Vice-chair Ms. Septa Anggraini (Indonesia) ;
11. Establish a new intersessional Task Team on New/Emerging Technologies for Observations and Forecasting under the WG2 as per the TOR in Annex 7 and with Chair: Dr. Wahyu Widodo Pandoe (Indonesia);
12. Decides to set up a Task Team on MediumTerm Strategy (MTS) to prepare a draft MTS 2025-2030 considering key elements and approach as detailed in Annex 8 and with Chair Dr. Yuelong Miao (Australia) and Co-chair Dr. Harkunti Rahayu (Indonesia);
13. Request the Steering Group to supervise the work of the Task Team and to finalise the MTS 2025-2030 by early half of 2025;
14. Continue the Terms of Reference of the Indian Ocean Tsunami Information Centre (IOTIC), as attached in Annex 9;
15. Hold inter-sessional activities as integrated meetings to optimize resources if available;
16. Dissolve the IOWave23 Task Team;
17. Dissolve Task Team on Scientific Tsunami Hazard Assessment of the Makran Subduction Zone;
18. Instructs the Steering Group, Working Groups and Task Teams to consider the recommendations of the ODTP RDIP, IOWave23, 2024 Capacity Assessment and 2nd Global Tsunami Symposium into their work plans;
19. Continue the capacity development initiatives related to SOPs, TEMPP, TRRP and on-the-job training for warning centre operators by TSPs;
20. Request the Steering Group to explore if there is a need of expanding sub-regional working groups to address regional gaps and strengthen collaborations;
21. Develop the summary statement of the 2nd UNESCO-IOC Global Tsunami Symposium together with the Program Committee for publication as a UNESCO-IOC document.

Requests Working Group 1 to:

1. Develop guidelines for Tsunami Ready Critical Infrastructure in collaboration with WG3 and share with the TOWS-WG in their next meeting
2. Probabilistic Tsunami Hazard Assessment for Indian Ocean including non-seismic sources.
3. Develop Inclusive People Centred Early Warning DMO SOPs for near field tsunami.
4. Develop draft assessment tool for the downstream warning process.

Requests Working Group 2 to:

1. Trial dissemination of maritime bulletins to respective NAVAREA operators in the Area of Service (AoS) for the upcoming communication test and for full operational implementation in 2025.
2. Develop a Standard Operating Procedure (SOP) document for TSPs to address Tsunami-Generating Volcanic Events (TGVEs).
3. Develop an optimal notional observing network design to meet the objectives of ODTP, facilitate the strategic and coordinated submission of projects to the UN Ocean Decade and potential funding sources.

4. Utilise and promote the use of multi-purpose sea level monitoring stations to support MHEWS in enhancing data coverage and reducing costs.
5. Utilise exercises and communication tests as an opportunity to simultaneously monitor data availability and quality.

Requests Working Group 3 to:

1. Encourage Member States to establish National Tsunami Ready Board (NTRB) or consider including its role, responsibilities, and functions in the existing disaster management coordination mechanism.
2. Review the guidance on Tsunami Ready Equivalency of ICG/PTWS.
3. Review national tsunami preparedness programmes in the Member States and prepare guidance on similar initiatives to the UNESCO-IOC Tsunami Ready Recognition Programme as contribution to the UN Decade Tsunami Program.
4. Encourage members to identify potential communities for implementing the Tsunami Ready Recognition Program
5. Continue the capacity development on Tsunami Ready for the Member States and national Tsunami Ready facilitators.
6. Encourage the Member States to explore possibilities for implementation of Tsunami Ready for critical infrastructure.

Requests Sub-regional Working Group for North-West Indian Ocean to:

1. Progress data sharing amongst the North-West Indian Ocean countries, and with the TSPs
2. Formulate a regional Paleo-tsunami study proposal for possible funding and contribution to the UN Ocean Decade Tsunami Programme
3. Extend the inundation and evacuation maps, as developed for the pilot areas under the UNESCAP project, to the other areas of NWIO region in line with the results of the hazard assessments towards implementation of the UNESCO-IOC Tsunami Ready Recognition Programme.
4. Facilitate on-the-job training for National Tsunami Warning Centre representatives.

Requests Task Team IOWave25 to:

1. Plan and conduct the IOWave25.
2. Consider performing exercises outside of working hours, in particular during the night or weekend, but being careful to take into consideration difficulties and possible issues of involving the public in such drills.
3. Encourage the Member States to ensure the participation of the community, especially those recognized as UNESCO-IOC Tsunami Ready Community to participate in IOWave25.

Requests UNESCO-IOC Secretariat for the ICG/IOTWMS:

1. In collaboration with IOTIC, prepare a proposal for Phase 3 of the Makran Project focussing on Tsunami Ready implementation and submit to UNESCAP;
2. Support the Steering Group and Working Groups to build linkages of ICG and IOTWMS Member States activities with the Ocean Decade Tsunami Programme.
3. Facilitate publication of UNESCO-IOC documents including IOWave23 Exercise, 2024 Capacity Assessment, IOTWMS Service Definition Version 5, NTWC User's Guide Version 3 and the report of 14th Session of ICG IOTWMS.
4. Liaise with NAVAREA Coordinators WWNWS Sub-Committee about piloting NAVAREA Maritime Products and to eventual implementation.

Requests the UNESCO-IOC IOTIC to:

1. Create a capacity development work plan jointly with IOTWMS Secretariat for the intersessional period based on the priority needs of the Member States, where possible, utilizing the facilities of

- ITCOcean, INCOIS in India, and the STC, BMKG in Indonesia.
2. Organize jointly with IOTWMS Secretariat at least one TEMPP Training and one SOP Training during the intersessional period.
 3. Organize jointly with IOTWMS Secretariat and BMKG at least two in-country training programmes on implementation of UNESCO-IOC Tsunami Ready Recognition Programme, prioritising SIDS, LDCs and Africa.
 4. Publish "*The Unforeseen Threat*", developed by IOTIC, WG-1, and U-INSPIRE Indonesia by considering additional input from WG-2, as a UNESCO-IOC document.
 5. Propose mechanisms in consultation with the Steering Group to strengthen the structure, organisation, and management of the IOTIC through possible voluntary contributions from the Member States.
 6. Continue to implement the work plan under the IOTIC-BMKG Program including preserving past tsunami information for future preparedness and youth engagement.

Requests UNESCO-IOC TOWS-WG to complete and harmonise the KPI Framework for the global tsunami warning and mitigation system to facilitate monitoring and reporting of implementation of the IOTWMS and progress towards Member State goal of 100% of at-risk communities resilient and prepared for tsunamis;

Requests the UNESCO-IOC Executive Secretary to prepare the Executive Summary Report of the 14th Session of the ICG/IOTWMS within 30 days;

Elects Mr. E. Pattabhi Rama Rao (India) as ICG/IOTWMS Chair and Dr Yuelong Miao (Australia) and Dr. Harkunti Pertiwi Rahayu (Indonesia) as Vice-chairs for the next intersessional term commencing at the end of the session;

Expresses its gratitude to the Government of the Republic of Indonesia for kindly hosting the 14th Session of the ICG/IOTWMS in Banten;

Accepts with appreciation the kind offer of the Government of the Sultanate of Oman to host the 15th Session of the ICG/IOTWMS in 2026;

Accepts with appreciation the kind offer of India as a backup option to host the 16th Session of the ICG/IOTWMS in 2028.

Financial Implications: Extrabudgetary only

Annex 1 to Decision ICG/IOTWMS-XIV.1

Working Group 1
Tsunami Risk, Community Awareness and Preparedness

Terms-of-Reference

Liaise with other working group(s) and task team(s) within the ICG/IOTWMS and with working groups from the other ocean basins through the TOWS-WG to:

1. Assist, develop and strengthen the overall capacity and capability of Member States in tsunami hazard, risk assessment and mitigation, community awareness and preparedness, including for tsunamis generated by non-seismic and complex sources and multi-hazard framework.
2. Encourage Member States to mainstream tsunami Disaster Risk Reduction into sustainable development to help achieve resilient communities in the region.
3. Support implementation of IOWave Exercises.
4. Identify areas of priority for action following assessments, exercises, and real tsunami events.
5. Provide advice on user requirements and utility of tsunami warning products and services.
6. Provide advice to and collaborate with the UNESCO-IOC Indian Ocean Tsunami Information Centre (IOTIC) on education, awareness and preparedness including for non-seismic and complex sources.
7. Provide special attention to the needs of SIDS, LDCs, Africa in the work program
8. Develop WG1 work plans in line with the broad objectives of ODTP RDIP, Ocean Decade Challenge 6, EW4ALL
9. Promote collaboration among academia, research institutions and disaster management offices to encourage multidisciplinary and multi sectoral interaction in ensuring tsunami risk knowledge are streamlined to risk reduction strategies.

The Working Group will be composed of members nominated by Member States with expertise in disaster management, an invited IOTIC representative, and other invited observers as required, with a chairperson and two vice-chairpersons to be elected by the ICG.

Annex 2 to Decision ICG/IOTWMS-XIV.1

Working Group 2
Tsunami Detection, Warning and Dissemination

Terms-of-Reference

Liaise with other working group(s) and task team(s) within the ICG/IOTWMS and with working groups from the other ocean basins through the TOWS-WG to:

1. Coordinate and strengthen the operational implementation of tsunami detection, warning and dissemination, including for tsunamis generated by non-seismic and complex sources, and multi-hazard framework.
2. Support the Tsunami Service Providers (TSPs) delivery of interoperable regional tsunami threat information products to Member States.
3. Support Member States in the development of their national tsunami warning capabilities.
4. Monitor the performance of key observational, warning and communication system components.
5. Support implementation of IOWave Exercises.
6. Identify areas of priority for action following assessments, communications tests, exercises, and real tsunami events.
7. Provide advice to and collaborate with the UNESCO-IOC Indian Ocean Tsunami Information Centre (IOTIC) on capacity development on warning system and services including for non-seismic and complex sources.
8. Provide special attention to the needs of SIDS, LDCs, Africa in the work program.
9. Develop WG2 work plans in line with the broad objectives of ODTP RDIP, Ocean Decade Challenge 6, EW4ALL.
10. In collaboration with UNESCO-IOC IOTIC and UNESCO-IOC Secretariat for ICG/IOTWMS, help strengthen the capacity and capability of Member States.

The Working Group will be composed of members nominated by Member States, Member State representatives for each ICG-designated TSP, at least two representatives of non-TSP National Tsunami Warning Centres, and invited observers, with a chairperson and one or two vice-chairpersons to be elected by the ICG.

Annex 3 to Decision ICG/IOTWMS-XIV.1

Working Group 3
Tsunami Ready Implementation

Terms-of-Reference

Liaise with other working group(s) and task team(s) within the ICG/IOTWMS and with working groups from the other ocean basins through the TOWS-WG to:

1. Monitor and evaluate the implementation of the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) and similar initiatives
2. Promote and provide guidance on how to nationally initiate TRRP and similar initiatives
3. Facilitate the capacity development of TRRP and sharing of experiences between Member States
4. Update Member States on TRRP developments and other related initiatives
5. Explore the possibilities of extending the Tsunami Ready indicators to other sectors such as to critical infrastructures
6. Provide advice to and collaborate with the UNESCO-IOC Indian Ocean Tsunami Information Centre (IOTIC) on capacity building for TRRP
7. Prioritize SIDS, LDCs, Africa and NWIO region in the work program
8. Integrate ODTP RDIP into the WG3 work plan

The Working Group membership will be comprised of ICG/IOTWMS TRRP experts, Member State Tsunami Ready Focal Points (TRFP), invited experts, IOTIC, Secretariat.

Annex 4 to Decision ICG/IOTWMS-XIV.1

Regional Working Group
North-West Indian Ocean

Terms-of-Reference

Liaise with other working group(s) and task team(s) within the ICG/IOTWMS and with working groups from the other ocean basins through the TOWS-WG to:

1. Evaluate capabilities and ascertain capacity building requirements of Member States in the region for providing end-to-end tsunami warning and mitigation services within the framework of the ICG/IOTWMS and within a multi-hazard framework
2. Facilitate cooperation in the establishment and upgrading of seismic, sea level and GNSS stations and networks and communication systems in the region
3. Facilitate the capacity building and the sharing of the tsunami-related data and information in the region
4. Establish and maintain procedures for National Tsunami Warning Centres (NTWCs) across the region to exchange information on national tsunami warnings, observations, and impacts during events.
5. Support the WG3 effort to implement the Tsunami Ready Recognition Program in the region.

The Working Group will be composed of members representing National Tsunami Warning Centres and Tsunami Ready Focal Points from each of the Member States of India, Iran, Oman, Pakistan, United Arab Emirates, and Yemen in the North-West Indian Ocean region and invited experts.

Annex 5 to Decision ICG/IOTWMS-XIV.1

Steering Group

Terms-of-Reference

Coordinate and integrate the work of ICG/IOTWMS in the inter-sessional periods, as implemented through the ICG's various Working Groups and Task Teams to:

1. Oversee the execution of the Decisions and Recommendations of the ICG.
2. Monitor the overall performance of the IOTWMS.
3. Identify areas of priority for action following assessments, communications tests, exercises, and real tsunami events.
4. Ensure the IOTWMS is implemented in line with the guidance of the TOWS-WG for the harmonisation of global tsunami warning and mitigation systems.
5. Identify and assess resource requirements to support implementation of the IOTWMS.
6. Approve out of session documents as delegated by ICG/IOTWMS.

Membership of the Steering Group includes the ICG Chair and Vice Chairs, Chairs and Vice Chairs of the Working Groups, Member State representatives from each TSP and two other NTWCs. Invited observers include a representative from IOTIC, immediate past Chair of the ICG for one term, and other invited observers as required. The Chair of ICG/IOTWMS is the Chair of the Steering Group. The Steering Group will primarily work offline by correspondence but will meet in person at least once a year if resources are available.

Annex 6 to Decision ICG/IOTWMS-XIV.1

Task Team on IOWave25

Terms-of-Reference

Under the direction of the Steering Group:

1. Plan and coordinate the next IOWave Exercise (IOWave25), taking on-board suggestions from the post-IOWave23 lessons learnt workshop, including an increased focus on involving Local Disaster Management Offices (LDMOs) down to community level and implementation of IOTR.
2. Prepare the IOWave25 Exercise Manual in accordance with the Guideline on "How to Plan, Conduct and Evaluate Tsunami Exercises" (IOC Manuals and Guides No. 58) at least 6 months in advance of the exercise.
3. Prepare the Exercise Report for ICG/IOTWMS-XV.

The Task Team will report to the Steering Group and work in collaboration with Working Group 1, Working Group 2, Working Group 3 and IOTIC, and be composed of members nominated by Member States and representatives from TSPs, with a chairperson and vice-chairperson.

Indian Ocean Tsunami Information Centre

Terms-of-Reference

Goal of IOTIC

The overall goal of IOTIC is to support the UNESCO-IOC ICG/IOTWMS Member States in tsunami risk reduction for Indian Ocean at-risk communities through capacity building in tsunami hazard, awareness, preparedness, education, and mitigation measures.

Objectives

- Strengthening the Indian Ocean (national and regional) tsunami disaster risk reduction and emergency response capacity for an effective tsunami early warning system,
- Supporting preparedness against tsunamis of at-risk communities, especially through the implementation of UNESCO-IOC Tsunami Ready Recognition Programme (TRRP).
- Providing resources in tsunami risk reduction, educational, awareness, and preparedness for the Indian Ocean region.

Terms-of-Reference

1. Help reduce the overall tsunami risk across the Indian Ocean by working closely and in coordination with the UNESCO-IOC ICG/IOTWMS, it's Steering Group, Working Groups, Task Teams, UNESCO-IOC ICG/IOTWMS Secretariat, and the TOWS-WG Task Team on Disaster Management & Preparedness (TT DMP) to:
 - a. Contribute to the development of global guidelines in tsunami risk reduction and their implementation in the Indian Ocean.
 - b. Maintain close familiarity of the operations and needs of the Indian Ocean Tsunami Warning and Mitigation System and work closely with the Tsunami Service Providers (TSPs), National Tsunami Warning Centres (NTWCs), and Disaster Management Organisations (DMOs) to assist, as needed, with the socialization, promotion, and capacity building required for an effective tsunami emergency response.
 - c. In coordination with the UNESCO-IOC ICG/IOTWMS Secretariat and as needed, support the ICG/IOTWMS and it's Working Groups and Task Teams to conduct training programmes, workshops, and seminars.
 - d. In collaboration with the UNESCO-IOC ICG/IOTWMS Secretariat develop project proposals and assist with project implementation in support of the ICG/IOTWMS programmes and activities in the Indian Ocean Region.
 - e. Manage tsunami post-event performance surveys and compilation of reports in close collaboration with the UNESCO-IOC ICG/IOTWMS Secretariat under the overall direction of the ICG/IOTWMS Steering Group, assisted by the International Tsunami Information Center (ITIC), UNESCO-IOC Tsunami Unit, and teams of experts nominated by the UNESCO-IOC ICG/IOTWMS Steering Group as required
2. Help Member States of the UNESCO-IOC ICG/IOTWMS reduce their tsunami risk by:
 - a. Serving as the focal point under the guidance of the UNESCO-IOC ICG/IOTWMS to guide, facilitate, and process the implementation of the UNESCO/IOC Tsunami Ready Recognition Programme (TRRP) in the Indian Ocean.
 - b. Serving as the focal point under the guidance of the ICG/IOTWMS, in coordination with the UNESCO-IOC Secretariat, to guide, facilitate, support, and coordinate the activities of the World Tsunami Awareness Day (WTAD) in the Indian Ocean.
 - c. Assisting national stakeholders in the overall improvement of tsunami preparedness and effective tsunami emergency response through tsunami risk assessment, warning guidance and emergency response, education and awareness, tsunami mitigation, and the

- implementation of national initiatives to reach certification against the UNESCO-IOC Tsunami Ready indicators.
- d. Serving as an information resource providing for the development, publication, and distribution of resource materials on tsunami hazard, awareness, preparedness, and education for the Indian Ocean.
 - e. Serving as a technical resource and help foster research and its application to strengthen technical and institutional aspects of tsunami preparedness and tsunami emergency response to prevent loss of life and minimize damage to property.
3. Coordinate activities and exchange materials, resources, and information with other Tsunami Information Centres (TICs) of the other ocean basins (Caribbean Tsunami Information Centre (CTIC), International Information Centre (ITIC), and North-East Atlantic and Mediterranean Seas Tsunami Information Centre (NEAMTIC)) to ensure global consistency and potential use of derived products across all regions.
 4. Share information on programmes, activities, and events, as well as information on tsunami education, awareness, and preparedness resources by managing and maintaining the IOTIC Website and social media channels as platforms for information exchange

Governance

The IOTIC is an UNESCO-IOC entity operating under the overall authority of the Executive Secretary of UNESCO-IOC. The day-to-day management is performed by the UNESCO-IOC National Programme Officer stationed in Jakarta under the supervision of the Director of the UNESCO Office Jakarta and the Head of the UNESCO-IOC Tsunami Unit in Paris. The operational and implementation of programmes and activities of IOTIC is in close coordination with the IOC- UNESCO ICG/IOTWMS Secretariat in Perth. The IOTIC reports to each session of the IOC- UNESCO ICG/IOTWMS and to the inter-sessional meetings of the UNESCO-IOC ICG/IOTWMS Steering Group. IOTIC's activities and work plans are guided by and coordinated with the overall needs and requirements of the UNESCO-IOC ICG/IOTWMS, its Working Groups and Task Teams.

Activities IOTIC:

- Organize regular regional workshops and training programmes to meet the capacity development requirements of the IOTWMS Member States including SOP, TEMPP, TRRP etc.
- Support IOTWMS Member States in implementing the UNESCO-IOC Tsunami Ready Recognition Programme.
- Support studies and assessments on community tsunami awareness and preparedness including preserving past tsunami information for future preparedness and youth engagements.
- Support IOTWMS Member States through the development of public tsunami education, awareness, and preparedness materials, and the adaptation of the materials to the local context and need.
- Manage and maintain the IOTIC Website and social media as a platform for sharing information on the IOTWMS and tsunami education, awareness and preparedness.
- Support, document, and communicate IOWave exercises and World Tsunami Awareness Day (WTAD).
- Support the development and implementation of projects and activities through external funding opportunities.

Annex 8 to Decision ICG/IOTWMS-XIV.1

Medium Term Strategy 2025-2030

Approach for the development of the IOTWMS Medium Term Strategy 2025 – 2030

Use four pillars as adopted in the ODTP and EW4ALL, taking into consideration of similar strategies in other ICGs

- Pillar 1: Disaster risk knowledge
- Pillar 2: Detection, observations, monitoring, analysis and forecasting
- Pillar 3: Warning dissemination and communication
- Pillar 4: Preparedness to respond

Highlight achievements made in current MTS and what remains to be done

Consider all identified gaps and recommendations from

- Capacity Assessment Survey 2024
- 2nd Global Tsunami Symposium
- Learnings from recent events/exercises
- TSP Reports
- WG/TT reports
- TOWS-WG, other ICG reports
- Projects in flight/funded

Also consider

- UN Ocean Decade/Challenge 6 White Paper
- ODTP
- EW4ALL
- New/emerging technologies
- Trend in political, technology, social/economical etc

Do thorough environmental scan (SWOT analysis) against each pillar.

Develop more targeted implementation plan/section

- Should cover short-term and long-term goals and KPIs
- Leverage off ODTP RDIP and EW4ALL

Consider seeking input from external experts for improvement to the Strategy.

Task Team Membership will consist of Chairs of Working Groups, Task Teams, ICG/IOTWMS Secretariat, IOTIC, representatives nominated by Member States at the ICG Session.

Task Team on New/Emerging Technologies for Observations and Forecasting

Terms of Reference

This expert Task Team will establish integrating new and emerging techniques and technologies by:

1. Developing a methodology for gap and sensitivity analysis that combines multiple sensing technologies for tsunami detection and characterisation.
2. Designing optimal notional seismic and sea level networks to enhance the timelines of Tsunami Early Warning by TSPs and NTWCs.
3. Integrating emerging techniques and sensor technologies (e.g. better use of tide gauges; GNSS technology and processing; sensors on SMART Cables) with the existing sensing network to meet tsunami warning service requirements in support of UN ODTP goals.
4. Where possible, include cost-benefit analysis of the potential technologies being considered
5. Undertake to establish direct collaboration between ICG/IOTWMS Member States, with other ICGs, and expert groups (such as International Association of Geodesy (IAG), International GNSS Service (IGS) for the purpose of collaborating on data sharing and research efforts that are adaptable to the tsunami warning systems and operations.
6. Assess the utility and limitations of emergent technologies and techniques, e. g. GNSS and SMART Cable, that have potential to deliver ocean height in real-time.
7. Investigate emerging methods including PTF, AI/ML, real-time data assimilation and modelling etc for suitability to be adopted for operational tsunami warning.
8. Share information and procedures on deployments of new technologies to monitor sea level variations used for tsunami warning purposes, including undersea cable installations being deployed by Indonesia and India.

The Task Team will be open to TSPs, members nominated by Member States, and invited experts.