INTERGOVERNMENTAL COORDINATION GROUP (ICG)

INDIAN OCEAN TSUNAMI WARNING & MITIGATION SYSTEM (IOTWMS)

Working Group 3 on Tsunami Ready Implementation

14 October 2025

Meeting Report

1. OPENING

Ms Suci Dewi Anugrah, Chair of the Intergovernmental Coordination Group of the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS) Working Group 3 (WG3) on Tsunami Ready Implementation, warmly welcomed all distinguished colleagues to the ICG/IOTWMS Working Group 3 meeting on Tsunami Ready Implementation. She expressed sincere appreciation to the IOTWMS Secretariat for facilitating the session and emphasized the importance of collective efforts to strengthen regional cooperation on the Tsunami Ready programme.

1.1 INTRODUCTIONS, WELCOME AND OPENING REMARKS

Dr Srinivasa Kumar Tummala, Head of the Secretariat for the ICG/IOTWMS, welcomed all participants to the Working Group 3 meeting on Tsunami Ready Implementation. He acknowledged the leadership of the Chair and Vice Chair, and thanked Member States for their continued engagement. He emphasized the importance of WG3's work in advancing the goals of the Ocean Decade Tsunami Programme, particularly in supporting vulnerable coastal communities through the UNESCO-IOC Tsunami Ready Recognition Programme (or equivalent national initiatives). While 100 communities have been recognized globally with 48 of them in the Indian Ocean region, implementation remains concentrated in India and Indonesia. Dr Tummala noted that significant groundwork has been laid across the region, including through the UNESCAP Trust Fund Project, which is now entering Phase 3, and through national trainings supported by the IOTIC–BMKG programme in countries such as Maldives, Seychelles, and Timor Leste. He also highlighted the recent TEMPP and Tsunami Ready training held in Hyderabad in April 2025, which brought together participants from 17 countries. He concluded by expressing appreciation for the collective efforts of Member States, the IOTWMS Secretariat, and IOTIC, and encouraged continued collaboration to build safer, more resilient coastal communities.

Ms Suci Dewi Anugrah highlighted key achievements in the Indian Ocean region, including the designation of 19 Tsunami Ready focal points and the establishment of three National Tsunami Ready Boards in India, Indonesia, and Seychelles. While these milestones mark significant progress, she noted that actual implementation remains limited to only two countries: India and Indonesia. Ms Anugrah called for renewed commitment to expand the programme across the region, referencing the Banda Aceh Statement from the Global Tsunami Symposium, which urges Member States and civil society to drastically step up efforts to achieve 100% Tsunami Ready communities worldwide by 2030. She expressed concern that no new communities have been recognized since the symposium and encouraged participants to use the meeting as

a platform to exchange ideas, identify challenges, and accelerate progress. She concluded by thanking all participants for their presence and dedication to advancing tsunami preparedness and resilience in the Indian Ocean.

The Working Group 3 intersessional meeting participants (Figure 1) were invited to provide brief introductions. The attendees included:

Chair

Ms Suci Dewi Anugrah (Indonesia)

Vice-Chairs

Dr Ali Khoshkholgh (Iran)

Members

Mr Netai Chandra Dey Sarker (Bangladesh TRFP)
Ms V Sunanda Manneela (India, WG-NWIO Chair)
Ms Hidayanti (Indonesia TRFP)
Ms Kian Purna Sinki (Indonesia)
Ms Aminingrum (Indonesia)
Dr Dinar Catur Istiyanto (Indonesia)
Mr Abdul Rosid (Indonesia)
Dr Samad Hamzehei (Iran TRFP)
Mr Majid Noranian (Iran)
Mr Adriamiranto Raveloson (Madagascar TRFP)
Ms Aishath Shiuni Abdul Sattar (Maldives TRFP)
Mr Agnaldo Emanual Bila (Mozambique TRFP)
Dr Yin Myo Min Htwe (Myanmar TRFP)
Mr Tariq Ibrahim Ujjan (Pakistan TRFP)
Mr Mark van Stadem (South Africa TRFP)
Mr Chathura Liyanaarchchige (Sri Lanka TRFP)
Mr Yohanes Taek (Timor Leste)
Mr Saeed Alqemzi (UAE)

Invited Experts

Dr Yuelong Miao, ICG/IOTWMS Vice-Chair (Australia)
Dr Robert Greenwood (Australia, WG-2 Vice-Chair)
Mr Padmanabham Jijjavarapu (India, WG-2 Chair)

Observers

Mr Rochmy Hamdami Akbar (UNESCO Jakarta)
Ms Dinanti Erawati (UNESCO Jakarta)
Mr Muhammad Qabus Abid Khairullah (UNESCO Jakarta)
Mr Engin Koncagul (UNESCO Jakarta)
Ms Kasumi Ochi (UNESCO Jakarta)
Ms Yinqiu Zheng (UNESCO Jakarta)

UNESCO-IOC

Dr Srinivasa Kumar Tummala (ICG/IOTWMS Secretariat)
Mr Ardito Kodijat (IOTIC)
Ms Nora Gale (ICG/IOTWMS Secretariat)

1.2 ADOPTION OF AGENDA AND MEETING LOGISTICS

Ms Nora Gale of the ICG/IOTWMS Secretariat presented the meeting agenda for adoption. She noted that a revised version had been circulated earlier in the day to reflect minor adjustments due to speaker availability. Key activities to be discussed during the meeting included the development of guidelines for critical infrastructure, the concept of Tsunami Ready equivalency, the PCTWIN project, the UNESCAP and FUST regional programmes, and the survey-based impact assessment tool.

The agenda was adopted without modification and is provided in Annex 1 of this report.

Participants were informed that all presentations and supporting documents would be made available on the official meeting website: https://oceanexpert.org/event/4847. Attendees were encouraged to register on OceanExpert to assist the Secretariat in maintaining accurate participant records and to facilitate networking among workshop members.

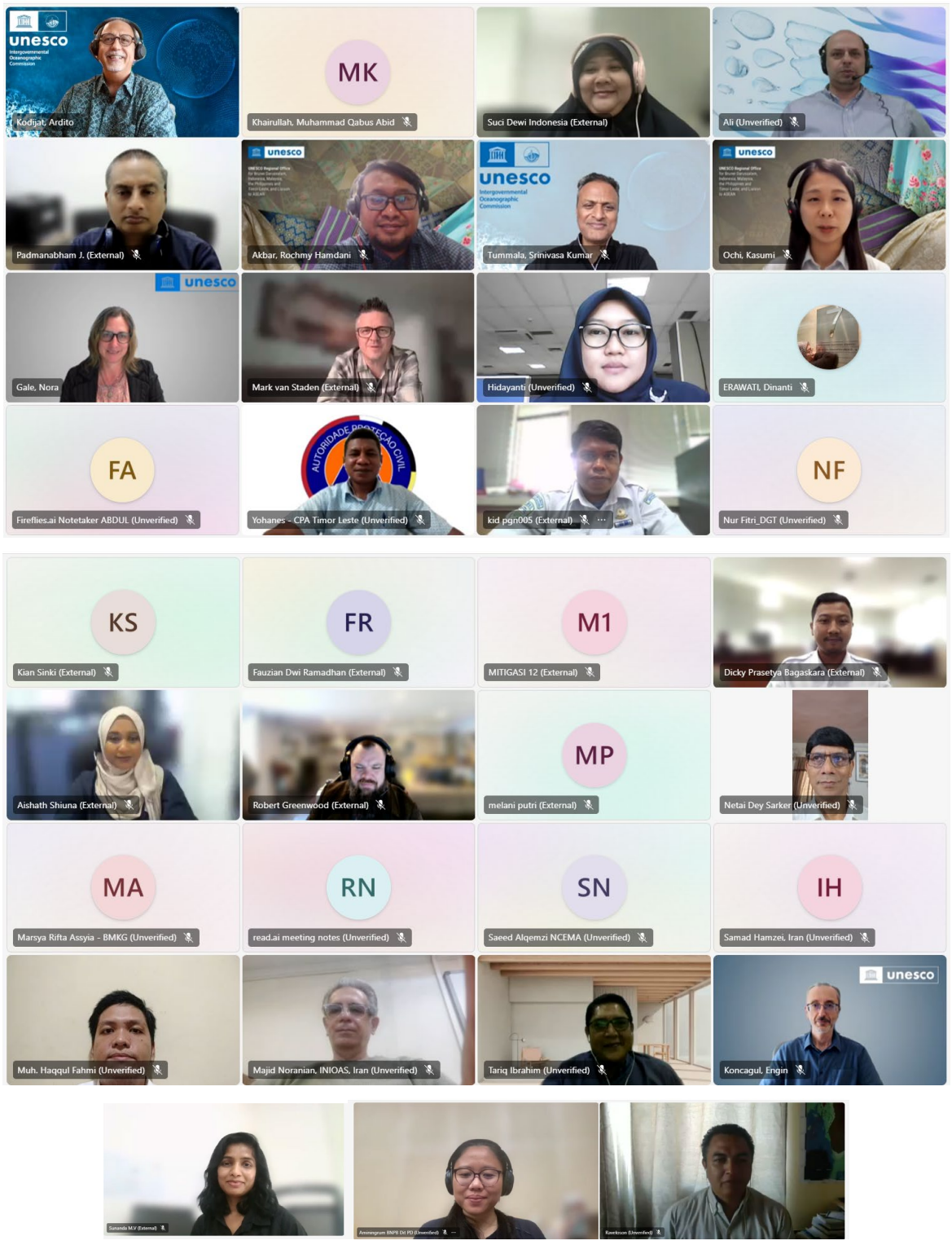

Figure 1. Participants at the ICG/IOTWMS Working Group 3 meeting on Tsunami Ready Implementation held online during 14 October 2025.

2. ACTIVITY UPDATES

2.1 CHAIR REPORT

Ms Suci Dewi Anugrah, Chair of Working Group 3 (WG3) on Tsunami Ready Implementation, opened her report by outlining the background and mandate of the Working Group. WG3 was formally established during the 13th session of the ICG/IOTWMS held in Bali, Indonesia (November 2022), and its continued work was endorsed at the 14th session in Banten, Indonesia (November 2024). During the 14th session, Ms Anugrah and Dr Ali Khoshkholgh were appointed as the continuing Chair and newly appointed Vice-Chair of WG3, respectively.

Ms Anugrah described WG3 as a large and active group, with membership primarily composed of Tsunami Ready Focal Points (TRFPs) designated by the Tsunami National Contacts of Member States. As of the meeting date, 19 focal points had been appointed with some countries nominating more than one. The TRFPs serve as national advocates for the Tsunami Ready programme, liaise with, and provide regular updates on national implementation efforts. In addition, three countries (India, Indonesia, and Seychelles) have established National Tsunami Ready Boards to oversee and coordinate their national programmes.

Ms Anugrah then presented the Terms of Reference (TOR) for WG3, which guide its work and strategic priorities. The TOR include:

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 programme.
8. Integrate ODTP RDIP into the WG3 work plan

In terms of progress, Ms Anugrah reported that 48 communities in the Indian Ocean region have been recognized under the UNESCO-IOC Tsunami Ready programme—22 in Indonesia and 26 in India. These communities represent nearly half of the 100 recognized globally. However, she noted that implementation remains concentrated in only two countries, and there is a need to expand recognition efforts across the region.

Ms Anugrah also highlighted new initiatives being explored by WG3. These include the development of Tsunami Ready guidelines for critical infrastructure, such as airports and ports, which are often located in tsunami-prone coastal areas. Indonesia has already begun piloting this approach at several sites. Additionally, WG3 is reviewing the concept of Tsunami Ready equivalency, which would allow countries with existing national programmes to align with UNESCO-IOC standards without duplicating efforts.

She concluded her report by encouraging Member States to identify pilot communities, continue capacity development, and strengthen regional cooperation. WG3 remains committed to supporting Member States in their efforts to build tsunami-resilient communities and advance the goals of the Tsunami Ready programme.

2.2 SECRETARIAT REPORT

Ms Nora Gale of the ICG/IOTWMS Secretariat presented an overview of the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS), highlighting its governance structure, operational pillars, and recent activities. She noted that IOTWMS is one of four regional systems coordinated by UNESCO-IOC, operating as part of a global "system-of-systems" for tsunami warning and mitigation. The system is supported by three Tsunami Service Providers—Australia, India, and Indonesia—and 25 National Tsunami Warning Centres (NTWCs), each with sovereign responsibility for issuing warnings to their citizens.

The Secretariat's work is structured around three key pillars: risk assessment and reduction, detection and warning dissemination, and awareness and response. Ms Gale outlined recent progress in hazard mapping and tsunami risk modeling, including regional workshops and the publication of probabilistic hazard maps. She also noted ongoing efforts to strengthen SOPs and early warning chains, particularly for non-seismic tsunami sources such as volcanic events.

In terms of capacity development, Ms Gale highlighted the delivery of regional and national training programmes, including the Tsunami Evacuation Maps, Plans and Procedures (TEMPP) workshop held in Hyderabad in April 2025, which brought together participants from 17 countries. National trainings were also conducted in Maldives, Seychelles, and Timor-Leste. The Tsunami Ready Recognition Programme (TRRP) continues to expand, with 48 communities recognized in India and Indonesia.

Ms Gale provided updates on the ongoing Exercise Indian Ocean Wave 2025 (IOWave25), which includes four scenarios—three earthquake-based and one volcanic—and runs from 25 September to 5 November 2025. She emphasized the importance of Member State participation, especially from Tsunami Ready communities, and noted that pre-exercise workshops engaged over 400 participants from 23 countries.

The Secretariat also shared findings from the 2024 Capacity Assessment of Tsunami Preparedness, which showed strong progress in national policy development and awareness, but highlighted gaps in community-level planning and dissemination systems. Ms Gale stressed the need for continued investment in downstream preparedness and integration of tsunami planning into broader disaster risk reduction frameworks.

Finally, she summarized key decisions from the 14th ICG/IOTWMS session in Banten and the 19th Steering Group meeting in Jakarta, including the endorsement of new projects such as the Flanders UNESCO Science Trust Fund initiative for SIDS and Africa, and Phase 3 of the UNESCAP Trust Fund Project for the Northwest Indian Ocean. She concluded by outlining the roadmap for 2025–2026 and reaffirmed the Secretariat's commitment to supporting Member States in building tsunami-resilient communities.

2.3 INDIAN OCEAN TSUNAMI INFORMATION CENTRE (IOTIC) REPORT

Mr Ardito M Kodijat, Head of the Indian Ocean Tsunami Information Centre (IOTIC), presented an overview of IOTIC's activities in support of the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP). He began by outlining IOTIC's mandate to support Indian Ocean Member States in tsunami preparedness and mitigation through education, awareness, and capacity building. Operating under the supervision of the UNESCO-IOC Tsunami Resilient Section and the UNESCO Regional Office in Jakarta, IOTIC works closely with the ICG/IOTWMS Steering Group, Working Groups, Task Teams, and the Secretariat.

Mr Kodijat highlighted IOTIC's long-standing partnership with BMKG Indonesia, which hosts the IOTIC-BMKG Programme Office. Under this collaboration, IOTIC has supported regional and national capacity building through workshops, training programmes, and the development of educational materials. These include board games, posters, short animation videos, and online training modules designed to introduce and reinforce the 12 Tsunami Ready indicators.

IOTIC has played a key role in supporting Member States with the establishment of National Tsunami Ready Boards (NTRBs), processing TRRP applications, conducting field verifications, and facilitating

recognition ceremonies. As of 2025, IOTIC has supported the recognition of 48 communities—26 in India and 22 in Indonesia. National trainings have been conducted in Timor-Leste, Seychelles, and Maldives, while regional trainings have included sessions in the Pacific and at the International Tsunami Programme in Hawaii.

Mr Kodijat also presented the latest developments in the Tsunami Ready toolkits, including updates to Manual and Guide 74 (M&G 74). In response to a question from Dr Ali Khoshkholgh, he confirmed that while the current version remains applicable, a revised version—including updates to the application process—is expected to be released early next year. The toolkit includes templates for letters, community profiles, signage, certificates, and a standardized folder structure for TRRP submissions.

Looking ahead, IOTIC will continue supporting TRRP implementation through the FUST and UNESCAP-funded projects in nine countries: Seychelles, Maldives, India, Iran, Pakistan, Sri Lanka, UAE, Oman, and Madagascar. Mr Kodijat concluded by reaffirming IOTIC's commitment to strengthening tsunami resilience across the Indian Ocean region through sustained collaboration, innovation, and community engagement.

2.4 TSUNAMI READY IMPLEMENTATION PLANS BY IOTWMS MEMBER STATES

Member States shared updates on their national Tsunami Ready implementation plans, including progress on community recognition, establishment of National Tsunami Ready Boards (NTRBs), and integration of Tsunami Ready indicators into existing disaster risk reduction frameworks. The reports highlighted both achievements and challenges, and underscored the importance of continued regional collaboration, capacity building, and technical support.

Australia

Dr Robert Greenwood and Dr Yuelong Miao reported that Australia does not currently have any communities formally recognized under the UNESCO-IOC Tsunami Ready Recognition Programme. However, its emergency services have well-established procedures that align with the Tsunami Ready indicators.

Australia is now progressing toward implementation through the TRRP equivalency approach, which allows countries to align existing systems with Tsunami Ready standards without undergoing full recognition. A Tsunami Ready focal point has been appointed, and the Australian Tsunami Advisory Group (ATAG) recently agreed to include TRRP implementation in its national workplan. Australia also plans to draw on New Zealand's experience with TRRP equivalency to guide its own efforts.

In response to a question from Dr Ali Khoshkholgh about why Australia has not yet progressed with formal recognition, Dr Greenwood explained that tsunami risk is relatively low in Australia compared to other hazards such as bushfires and cyclones, which receive higher priority in national emergency planning.

Bangladesh

Mr Netai Dey Sarker reported that Bangladesh does not currently have any communities recognized under the Tsunami Ready programme. However, in 2014, the country conducted tsunami hazard and vulnerability assessments, including the development of zoning maps and evacuation routes, as part of its broader cyclone preparedness efforts. While there is no active TRRP implementation at present, these foundational activities may support future engagement with the programme.

India

Ms Sunanda Manneela presented on India's extensive progress in implementing the Tsunami Ready Recognition Programme. India was the first country in the Indian Ocean region to pilot the programme, beginning in Odisha in 2018. Since then, 26 villages in Odisha have been formally recognized as Tsunami Ready, with two receiving renewed recognition in 2024.

Out of India's 13 coastal provinces, Tsunami Ready implementation is now underway in 10, with additional villages identified across states including Kerala, Gujarat, Tamil Nadu, Andhra Pradesh, West Bengal, and

the Andaman & Nicobar Islands. Ms Manneela shared that India's approach leveraged existing cyclone preparedness programmes, particularly in Odisha, and that using tsunami risk maps was an effective tool to help communities understand the hazard and engage with the programme.

Indonesia

Ms Hidayanti presented the status of Tsunami Ready implementation in Indonesia, noting that the country has over 5,000 tsunami-prone villages, with approximately 1,000 assessed as high risk. To date, 22 villages have received official recognition under the UNESCO-IOC Tsunami Ready programme, and an additional 10 villages are currently proposed for recognition.

Indonesia has developed a strategy to accelerate implementation between 2025 and 2026, which includes leveraging communities involved in the national earthquake and tsunami field school programme. This approach aims to build on existing local capacity and awareness.

In response to a question from Dr Tummala regarding the progress of the critical infrastructure initiative, Ms Kian Sinki explained that Indonesia is currently processing verification for key facilities such as airports and ports, as part of efforts to extend Tsunami Ready principles to critical infrastructure.

Iran

Dr Samad Hamzehei presented Iran's progress in implementing the Tsunami Ready programme, with a focus on the coastal cities of Jask and Chabahar. A National Tsunami Ready Board (NTRB) has been established as well as local coordination committees for both locations. Public awareness materials, including brochures and infographics, have been developed to support community engagement.

Iran is actively participating in the Makran tsunami scenario of the IOWave25 exercise, and lectures have been delivered to raise awareness and build capacity.

Mr Ardito Kodijat congratulated Iran on the establishment of its NTRB and advised that the next step is to formally inform UNESCO-IOC. He noted that a template letter is available in the Tsunami Ready toolkit, though other formats are also acceptable.

Madagascar

Mr Raveloson reported that Madagascar has initiated internal discussions between the National Disaster Management Office (NDMO) and the National Tsunami Warning Centre (NTWC) on how to advance Tsunami Ready implementation. Two provinces and three communities along the eastern coast have been identified as potential candidates. The next steps include prioritizing which community to begin with, identifying relevant stakeholders, and defining the activities to pursue.

Mr Ardito Kodijat noted that Madagascar will be included in an upcoming FUST-supported project on Tsunami Ready implementation in SIDS and Africa and recommended beginning discussions on establishing a National Tsunami Ready Board. He emphasized that this could be a new entity or an existing coordination mechanism, and that guidance is available in the Tsunami Ready toolkit.

Maldives

Ms Aishath Shiuna reported that Maldives is in the process of establishing a National Tsunami Ready Board (NTRB). A meeting with the existing disaster management steering committee is scheduled for 28 October 2025, with the aim of forming the NTRB from existing members. The target is to have the board formally established by 5 November 2025.

Following the board's establishment, Maldives plans to implement the Tsunami Ready programme in the community of Diffushi. Mr Ardito Kodijat noted that Maldives will be part of the upcoming UNESCAP Phase 3 project and highlighted that this will be the first example of integrating the NTRB function into an existing coordination mechanism. He also confirmed that capacity building for the 12 indicators can proceed in parallel with board establishment.

Dr Srinivasa Kumar Tummala congratulated Ms Shiuna on the progress and reiterated that Maldives will receive support through the UNESCAP project. He emphasized that forming a board often involves multiple agencies and requires careful coordination and time.

Pakistan

Mr Tariq Ibrahim presented Pakistan's progress in tsunami preparedness, focusing on the pilot area of Gwadar. Field surveys and consultations have been conducted with local authorities, community leaders, and the Gwadar Development Authority to assess evacuation routes, safe zones, and critical infrastructure. The current evacuation routes were found to be inadequate due to congestion and flood risk, and identified safe zones are insufficient to accommodate the population. Plans are in place to improve infrastructure and launch public awareness campaigns. In the coming months, a community visit to Gwadar is planned to begin implementing the proposed measures.

Mr Ardito Kodijat noted that Pakistan will be part of the upcoming UNESCAP Phase 3 project and emphasized the importance of establishing a National Tsunami Ready Board. Mr Ibrahim agreed and confirmed that Pakistan will begin work on forming the board.

Seychelles

Although Seychelles did not participate in the meeting, Mr Ardito Kodijat reported that the country has already established a National Tsunami Ready Board. This marks an important step toward formal implementation of the Tsunami Ready Recognition Programme.

South Africa

Mr Mark van Staden reported that South Africa is currently evaluating how best to implement the Tsunami Ready programme, similar to Australia's approach. No communities have yet been recognized. During the upcoming IOWave Exercise, South Africa will participate in Scenarios 3 and 4, which will help inform future planning.

Mr van Staden expressed interest in working closely with UNESCO-IOC and indicated he would seek further guidance. Dr Srinivasa Kumar Tummala noted that a useful starting point would be to exchange information from the recent TEMPP training held in Hyderabad (April 2025), where South Africa was involved in tsunami evacuation mapping and planning.

Action: Share information with South Africa on the TEMPP training held in Hyderabad (April 2025), where South Africa was involved in tsunami evacuation mapping and planning. [Secretariat]

Sri Lanka

Mr Chathura Liyanarachchi reported that Sri Lanka has achieved all twelve Tsunami Ready indicators across its 14 coastal districts, though a formal National Tsunami Ready Board has not yet been established. However, a separate national advisory committee on tsunami preparedness is already in place and may serve this function.

Sri Lanka plans to participate in Scenario 4 of the IOWave25 exercise, which will include both hotel and community evacuations. The country will submit a national report and observer evaluations following the exercise.

Mr Ardito Kodijat noted that Sri Lanka will be supported through the upcoming UNESCAP Phase 3 project and expressed confidence that TRRP implementation could be expedited. Dr Srinivasa Kumar Tummala congratulated Sri Lanka on its progress and emphasized that forming a board often involves coordination across multiple agencies, requiring time and careful planning.

Timor Leste

Mr Yohanes Taek of the Civil Protection Authority briefed that Timor-Leste is still in the early stages of Tsunami Ready implementation. While no formal activities have been launched, internal discussions are

underway. Ms Suci Dewi Anugrah noted the existing collaboration between Timor-Leste and Indonesia on the development of the tsunami warning system, which could be extended to support Tsunami Ready efforts.

Mr Ardito Kodijat recalled prior conversations about establishing a National Tsunami Ready Board using an existing coordination mechanism. He emphasized that this step remains pending and would be essential to move forward with TRRP implementation.

3. NEW INITIATIVES

3.1 Tsunami Ready for Critical Infrastructure

Ms Suci Dewi Anugrah introduced a new initiative under Working Group 3 (WG3) to develop Tsunami Ready Guidelines for Critical Infrastructure, recognizing the vulnerability of essential facilities such as airports, seaports, and power plants located in tsunami-prone coastal zones. These infrastructures are critical not only for daily operations but also for emergency response and recovery following disasters. However, they are not currently covered under the existing UNESCO-IOC Tsunami Ready Recognition Programme (TRRP), which focuses primarily on community-level preparedness.

Ms Anugrah explained that the proposed guidelines aim to adapt the existing 12 Tsunami Ready indicators to the operational realities of critical infrastructure. The goal is to ensure the safety of personnel and users, minimize cascading hazards, and accelerate post-disaster recovery and business continuity. She emphasized that infrastructure operators can also serve as advocates for tsunami preparedness within surrounding communities, thereby amplifying the impact of the programme.

Indonesia has already piloted this approach at several sites, including Yogyakarta International Airport, Ngurah Rai International Airport (Bali), and Benoa Port (Bali). These pilots involved the development of tsunami hazard maps tailored to infrastructure layouts, integration of tsunami warnings into Standard Operating Procedures (SOPs), installation of warning receiver systems, and the conduct of evacuation drills involving both staff and passengers. Ms Anugrah noted that these activities demonstrate the feasibility and value of extending Tsunami Ready principles to infrastructure settings.

The draft guidelines will include sections on hazard assessment, population exposure, resource inventory, evacuation planning, signage, training, and simulation protocols. WG3 intends to submit the draft for review and endorsement by the ICG/IOTWMS, with the goal of establishing a formal recognition pathway for critical infrastructure under the TRRP framework.

Mr Tariq Ibrahim asked whether nuclear power plants and similar facilities could be included under the definition of critical infrastructure. Ms Anugrah confirmed that power plants, including nuclear facilities, could be considered within the scope of the guidelines. Dr Ali Khoshkholgh added that perhaps all critical infrastructure could be defined as a community, given that the 12 indicators remain the same. Ms Anugrah agreed, noting that while the indicators are consistent, the way they are addressed differs. For example, evacuation maps for critical infrastructure must be more detailed, including designated evacuation areas and routes specific to the facility's layout and operations.

Action: *Share the draft Tsunami Ready for critical infrastructure guidelines with WG3 members and the ICG/IOTWMS Steering Group for consideration and comments. [Secretariat]*

Action: *Updated Tsunami Ready for critical infrastructure guidelines to be shared with the Task Team on Disaster Management and Preparedness (TT-DMP) for technical input and alignment with broader disaster risk reduction efforts. [Secretariat, IOTWMS Representatives of the TTDMP]*

3.2 Tsunami Ready Equivalency

Ms Anugrah also presented the concept of Tsunami Ready Equivalency, with valuable inputs provided by Ms Ashley Fromont of the ICG/PTWS. Tsunami Ready Equivalency is a strategic approach designed to broaden participation in the TRRP by recognizing national programmes that already meet or exceed the UNESCO-IOC indicators. This initiative acknowledges that some Member States have well-established

disaster preparedness systems that align closely with Tsunami Ready principles, even if they have not formally applied for recognition.

The equivalency model would allow countries to map their existing protocols and indicators against the 12 TRRP indicators, thereby demonstrating compliance without duplicating efforts. This approach is particularly relevant for countries such as Australia, which has robust emergency management systems, and Sri Lanka, which has maintained a National Advisory Committee on Tsunami since 2004 and has implemented extensive preparedness measures.

Ms Anugrah noted that equivalency would require the establishment of a national oversight mechanism—either a dedicated Tsunami Ready Board or an existing coordination body—to validate and report on alignment with TRRP standards. The goal of the equivalency initiative is to promote inclusivity and flexibility within the TRRP, enabling Member States to participate in a manner that respects their national contexts and capacities.

Dr Srinivasa Kumar Tummala asked whether a formal document outlining the equivalency guidelines had been prepared. Ms Anugrah confirmed that a draft document has been developed and is ready for review.

Action: *Review the draft Pacific Tsunami Warning System (PTWS) equivalency document to assess its applicability and potential adoption by the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS). [WG-3 Chair / Vice Chair]*

Action: *The draft PTWS guidelines to be shared with the WG-3 Members for review and feedback, in the backdrop of their national tsunami preparedness programmes. [Secretariat, WG-3 Members]*

Action: *Aligning with the SG recommendation, review national tsunami preparedness programmes in India and Indonesia against the draft PTWS equivalency indicators to assess their applicability by the IOTWMS. [WG-3 representatives of India and Indonesia]*

4. PROJECT COLLABORATIONS

4.1 PCTWIN PROJECT INITIATIVES RELEVANT TO WG3

Ms Sunanda Manneela, Scientist at INCOIS India, presented an overview of the People-Centred Tsunami Early Warning for India (PCTWIN) project, a collaborative initiative funded by the UK Natural Environment Research Council (NERC) and the Indian Ministry of Earth Sciences (MoES). The project is led by Professor Fatemeh Jalayer of University College London and Dr T.M. Balakrishnan Nair of INCOIS, and involves a consortium of international partners including NGI, GFZ, ISR, the University of Edinburgh, the University of Málaga, IOC-UNESCO, IOTIC, and the Earth Observatory of Singapore.

Ms Manneela explained that the PCTWIN project is designed to enhance tsunami resilience along the Indian coastline by aligning with the four pillars of people-centred early warning systems. These pillars include improving disaster knowledge, enhancing detection, observation and forecasting of tsunamis, and promoting inclusive communication and preparedness. The project's vision is to develop a socially grounded understanding of tsunami risk drivers (both seismic and non-seismic) and to catalyse the next generation of early warning systems.

To achieve its objectives, PCTWIN is structured into three main work packages:

- WP1: Knowledge Hub, led by NGI, focuses on understanding the physical processes of earthquake and landslide-generated tsunamis. This includes tasks such as seismic and landslide source modelling, probabilistic hazard analysis, and exposure mapping of coastal populations and infrastructure.
- WP2: Early Warning, led by INCOIS, aims to strengthen operational capabilities at both the national and regional levels. Key activities include rapid source characterization using GNSS, tsunami inundation modelling using machine learning, probabilistic tsunami forecasting, impact forecasting, and communication of uncertainties in warnings.

- WP3: Resilience Hub, led by UCL, emphasizes participatory approaches to increase public awareness and preparedness. This work package includes assessments of risk perception and behavioural readiness in communities, development of inclusivity indicators, engagement with the private sector on business continuity planning, and the co-development of a Tsunami Ready Toolkit.

The Tsunami Ready Toolkit is a key deliverable of WP3 and is designed to provide simple, user-friendly tools that support the implementation of Tsunami Ready procedures. These tools include simplified hazard and risk maps, inundation contours, communication guidelines, and inclusive tsunami response planning materials. The toolkit is intended to facilitate uptake by local communities and is inspired by previous initiatives such as the GITEWS Tsunami Kit.

Ms Manneela emphasized that PCTWIN embraces inclusive, local, and participatory methods, and is closely aligned with UNESCO-IOC initiatives in the Indian Ocean region, particularly the Tsunami Ready Recognition Programme. The project also aims to contribute to long-term impact through three strategic pathways: reducing casualties (Pathway A: Save Lives), advancing scientific knowledge (Pathway B: Share Knowledge), and enhancing community resilience (Pathway C: Enhance Resilience).

The Working Group welcomed the presentation and acknowledged the relevance of PCTWIN to WG3's objectives. Members expressed interest in the Tsunami Ready Toolkit and its potential to support community-level implementation and capacity building across the Indian Ocean region.

Recommendation: *Explore integration of the PCTWIN Tsunami Ready Toolkit into WG3 training and outreach activities. [WG-3 Chair / Vice Chair, PCTWIN]*

4.2 UNESCAP & FUST

Mr Ardito M Kodijat, Head of the Indian Ocean Tsunami Information Centre (IOTIC), presented an overview of two major regional initiatives supporting tsunami preparedness and the implementation of the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP): the UNESCAP Phase 3 Project and the Flanders UNESCO Science Trust Fund (FUST) Project.

The UNESCAP Phase 3 Project builds on the achievements of earlier phases and aims to strengthen tsunami preparedness in vulnerable communities across the North-West Indian Ocean (NWIO) region. The project is designed to improve community capacities in five key areas aligned with the TRRP indicators: disaster risk knowledge, preparedness and response, warning detection, warning dissemination, and emergency response planning. Phase 3 is proposed for a 24-month implementation period and will focus on supporting pilot communities in India, Iran, Pakistan, Maldives, Sri Lanka, Oman, and the United Arab Emirates.

Mr Kodijat highlighted several key achievements from previous phases, including the development of scientifically robust tsunami inundation maps and draft evacuation plans for pilot communities in India, Pakistan, Iran, Oman, and UAE. Capacity building in tsunami inundation modelling has been successfully delivered in five countries, and national facilitators have been trained to support TRRP implementation at the community level. The project has also facilitated strategic discussions on resource allocation and the establishment of National Tsunami Ready Boards (NTRBs) or equivalent mechanisms.

Phase 3 will continue this work by supporting the planning and implementation of TRRP indicators in selected pilot communities. Tentative pilot sites include Purakkad and Alappad in Kerala, Okha and Pingleshwar in Gujarat, Chabahar and Jask in Iran, Gwadar and Karachi in Pakistan, Diffushi and Fuvahmulah in Maldives, Ambalangoda in Sri Lanka, Alhail North in Oman, and Fujairah in the UAE. Activities will include on-the-job training for experts, national training workshops, community capacity building, and the submission and review of TRRP applications.

In parallel, Mr Kodijat introduced the FUST Project, which focuses on implementing the Tsunami Ready Recognition Programme in selected pilot communities within Madagascar and Seychelles. The project has a duration of 18 months and is designed to build capacity in tsunami inundation modelling and mapping,

support the establishment of NTRBs, and facilitate national training and community-level implementation of the 12 TRRP indicators.

Key activities under the FUST Project include on-the-job training at INCOIS for two experts each from Madagascar and Seychelles, national Tsunami Ready training workshops, and support for community capacity building. The project also aims to align its activities with the UNESCAP initiative to ensure consistency and leverage shared resources, such as the Tsunami Ready Facilitator training in Bali.

Mr Kodijat emphasized that both projects are fully aligned with the IOTWMS Medium-Term Strategy and the four pillars of the UNESCAP Trust Fund. They represent a coordinated effort to strengthen tsunami early warning systems and community resilience through regional collaboration, technical capacity building, and inclusive implementation of the TRRP.

The Working Group welcomed the presentation and acknowledged the strategic importance of both projects in advancing Tsunami Ready implementation across the Indian Ocean region. Members expressed appreciation for the inclusion of new countries and communities, particularly in Africa and Small Island Developing States (SIDS), and noted the value of aligning training and capacity building efforts across initiatives.

Action: *Support TRRP implementation under the UNESCAP and FUST projects, including pilot site coordination and NTRB establishment. [WG-3 Chair / Vice Chair, Secretariat, IOTIC]*

4.3 SURVEY-BASED STUDY: ASSESSING THE IMPACT OF UNESCO-IOC TSUNAMI READY RECOGNITION ON COMMUNITY PREPAREDNESS AND RESILIENCE

Mr Ardito M Kodijat, Head of the Indian Ocean Tsunami Information Centre (IOTIC), presented a new initiative to assess the impact of the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) at the community level. The initiative involves the development and piloting of a structured survey tool designed to evaluate how recognition has influenced disaster preparedness, institutional arrangements, and community resilience in villages that have been formally recognized as Tsunami Ready.

The assessment tool was piloted in Indonesia and is intended to provide an evidence-based understanding of the real-world effects of TRRP implementation. The survey methodology involves administering tailored questionnaires to three distinct respondent groups within each recognized community: village leaders, disaster risk reduction (DRR) committee members, and general community members. Each group provides insights into different aspects of tsunami preparedness, including policy integration, technical capacity, public awareness, and sustainability of preparedness measures.

Mr Kodijat explained that the survey results can be analyzed in multiple ways. One approach is to examine the overall perception of impact based on respondent category, which helps to build a comprehensive picture of how TRRP is experienced across different stakeholder groups. Another approach is to conduct village-level analysis, comparing responses across communities to identify patterns, strengths, and areas for improvement. A third method involves aggregating data by country to assess national-level trends and inform regional strategies.

Initial findings from the pilot in Indonesia indicate that recognition has led to increased public awareness, improved evacuation infrastructure, and stronger institutional coordination in many communities. However, the survey also revealed challenges in maintaining the 12 TRRP indicators post-recognition, such as sustaining regular drills, updating hazard maps, and securing dedicated budgets for DRR activities. The study highlights both the benefits and limitations of the current recognition framework and provides actionable recommendations for enhancing its effectiveness.

During the discussion, Dr Srinivasa Kumar Tummala asked whether there were plans to develop the survey tool into a standardized instrument that could be used by Tsunami Ready communities in other ocean basins. Mr Kodijat confirmed that this was the intention and noted that he had already discussed the concept with colleagues in the Caribbean and Pacific regions. While there was interest, concerns were raised about the

length of the questionnaire and the methodology for obtaining responses. As such, the tool remains in the early stages of development and is currently being refined based on feedback from the Indonesian pilot.

Recommendation: *Expand the survey-based impact assessment tool to India and consider replication in other ocean basins. [IOTIC, WG-3 representative from India]*

5. WORKPLAN, ACTIONS, RECOMMENDATIONS, AND CLOSING

The final session of the Working Group 3 (WG3) meeting focused outlining the workplan for the intersessional period (2025-2026). The session was facilitated by the Chair, Ms Suci Dewi Anugrah with support. WG3 reaffirmed its commitment to supporting Member States in implementing the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP), with a particular focus on expanding recognition beyond India and Indonesia and encouraging participation from Small Island Developing States (SIDS), Least Developed Countries (LDCs), and African coastal nations. These initiatives align with the group's Terms of Reference and contribute to the broader goals of the IOTWMS Medium-Term Strategy.

Ms Anugrah highlighted the WG3 actions arising during the fourteenth session of the ICG/IOTWMS held in Banten, Indonesia during 17-19 November 2024:

- ***ICG-XIV/WG3(i)*** *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.*
- ***ICG-XIV/WG3(ii)*** *Review the guidance on Tsunami Ready Equivalency of ICG/PTWS.*
- ***ICG-XIV/WG3(iii)*** *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 Programme.*
- ***ICG-XIV/WG3(iv)*** *Encourage members to identify potential communities for implementing the Tsunami Ready Recognition Programme.*
- ***ICG-XIV/WG3(v)*** *Continue the capacity development on Tsunami Ready for the Member States and national Tsunami Ready facilitators.*
- ***ICG-XIV/WG3(vi)*** *Encourage the Member States to explore possibilities for implementation of Tsunami Ready for critical infrastructure.*

Following this, Ms Anugrah presented a workplan to address these during the intersessional period including activities and outcomes. Dr Yuelong Miao suggested that some outcomes presented should be revised to align with the work of the Working Group itself, rather than that of its Member States. This recommendation was acknowledged and will be considered in future reporting and documentation.

Dr Srinivasa Kumar Tummala emphasized the importance of providing clear guidance to Member States, particularly regarding procedural aspects such as the formal notification to UNESCO-IOC of the establishment of a National Tsunami Ready Board. He suggested that WG3 develop and share a template letter to support this process.

Action: *Develop and share a template letter for Member States to notify UNESCO-IOC of National Tsunami Ready Board establishment. [IOTIC, Secretariat]*

Action: *Share the template letter with all Member States, including Sri Lanka and Iran (on priority) to enable formal notification of their NTRB establishment to the IOC. [Secretariat]*

To address Member State needs and facilitate continued progress, the Working Group agreed to organize a future workshop. This workshop will provide an opportunity for Member States to report back on pilot communities, share lessons learned, and receive technical support for advancing Tsunami Ready

implementation. It will also serve as a platform for reviewing tools and resources, such as the survey-based assessment instrument and the Tsunami Ready Toolkit.

Action: *Organize a future workshop to address Member State requests and facilitate reporting on pilot communities. [Secretariat, IOTIC, WG-3 Chair / Vice Chair]*

The Actions and Recommendation of this meeting include:

1. *Share information with South Africa on the TEMPP training held in Hyderabad (April 2025), where South Africa was involved in tsunami evacuation mapping and planning. [Secretariat]*
2. *Share the draft Tsunami Ready for critical infrastructure guidelines with WG3 members and the ICG/IOTWMS Steering Group for consideration and comments. [Secretariat]*
3. *Updated Tsunami Ready for critical infrastructure guidelines to be shared with the Task Team on Disaster Management and Preparedness (TT-DMP) for technical input and alignment with broader disaster risk reduction efforts. [Secretariat, IOTWMS Representatives of the TTDMP]*
4. *Review the draft Pacific Tsunami Warning System (PTWS) equivalency document to assess its applicability and potential adoption by the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS). [WG-3 Chair / Vice Chair]*
5. *The draft PTWS guidelines to be shared with the WG-3 Members for review and feedback, in the backdrop of their national tsunami preparedness programmes. [Secretariat, WG-3 Members]*
6. *Aligning with the SG recommendation, review national tsunami preparedness programmes in India and Indonesia against the draft PTWS equivalency indicators to assess their applicability by the IOTWMS. [WG-3 representatives of India and Indonesia]*
7. *Explore integration of the PCTWIN Tsunami Ready Toolkit into WG3 training and outreach activities. [WG-3 Chair / Vice Chair, PCTWIN]*
8. *Support TRRP implementation under the UNESCAP and FUST projects, including pilot site coordination and NTRB establishment. [WG-3 Chair / Vice Chair, Secretariat, IOTIC]*
9. *Expand the survey-based impact assessment tool to India and consider replication in other ocean basins. [IOTIC, WG-3 representative from India]*
10. *Develop and share a template letter for Member States to notify UNESCO-IOC of National Tsunami Ready Board establishment. [IOTIC, Secretariat]*
11. *Share the template letter with all Member States, including Sri Lanka and Iran (on priority) to enable formal notification of their NTRB establishment to the IOC. [Secretariat]*
12. *Organize a future workshop to address Member State requests and facilitate reporting on pilot communities. [Secretariat, IOTIC, WG-3 Chair / Vice Chair]*

To conclude the meeting, Dr Ali Khoshkholgh, Vice Chair of WG3, thanked all participants for their contributions and engagement. He expressed hope that the future will bring continued progress and new achievements in tsunami preparedness across the Indian Ocean region. The meeting was officially closed at 11:40 UTC.

Annex 1 – Final Agenda

Meeting of ICG/IOTWMS Working Group 3 - Tsunami Ready Implementation on 14th October 2025 (online)

#	UTC Time	Agenda Item	Lead / Speakers
1	**05:00 – 05:20**	**Opening**	
1.1	05:00 - 05:15	Introductions, Welcome and Opening Remarks	Secretariat / WG3 Chair
1.2	05:15 – 05:20	Agenda Adoption, Meeting Logistics, Group Photo	SDA / NG / AMK
2	**05:20 – 07:00**	**Activity Updates**	
2.1	05:20 - 05:40	Chair Report (Terms of Reference, Membership, Activities, TOWS-WG/TT-TWO/IOC Meeting Updates, etc)	SDA / AKH
2.2	05:40 - 05:50	Secretariat Report	SK / NG
2.3	05:50 – 06:00	IOTIC Report (Supporting Tsunami Ready)	AMK
2.4	06:00 – 06:45	Tsunami Ready Implementation Plans by IOTWMS Member States (3 Mins each)	Tsunami Ready Focal Points
3	**06:45 - 07:15**	**New Initiatives**	
3.1	06:45 – 07:00	Tsunami Ready Guideline for Critical Infrastructure	SDA
3.2	07:00 – 07:15	Tsunami Ready Equivalency	SDA
4	**07:15 – 07:45**	**Project Collaborations**	
4.1	07:15 – 07:25	PCTWIN Project Initiatives relevant to WG3	MVS / FJ
4.2	07:25 – 07:35	UNESCAP & FUST	AMK
4.3	07:35 - 07:55	Survey-Based Study: Assessing the Impact of UNESCO-IOC Tsunami Ready Recognition on Community Preparedness and Resilience	AMK
5	**08:00 – 08:15**	**Workplan, Actions and Recommendations, Closing**	WG-3 Chair / Secretariat

SDA – Suci Dewi Anugrah; AKH – Ali Khoshkholgh; NG – Nora Gale; SK – Srinivasa Kumar; MVS – Sunanda Manneela; FJ – Fatemeh Jalayer; AMK – Ardito Kodijat