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Progress Report to 55th IOC Executive Council:

Intergovernmental Coordination Group Indian Ocean Tsunami Warning & Mitigation System (IOTWMS)

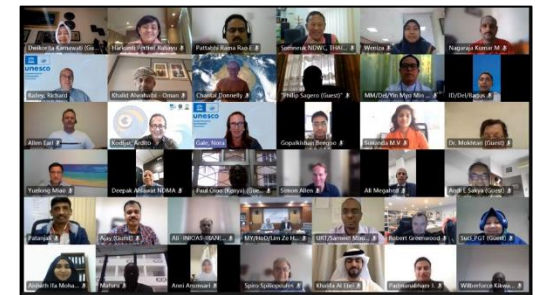


Prof Dwikorita Karnawati
Chair, ICG/IOTWMS

15 June 2022

ICG/IOTWMS

- 12th Session in Kish Island, Iran in March 2019
- Intersessional Online Meeting in November 2021
 - Very successful, with over 100 participants from 19/25 Member States, including for first time large number representatives from Disaster Management Organisations (DMOs)
- 13th Session planned for October 2022 in Bali, Indonesia
 - Face-to-face and online participation to help maintain increased MS participation shown in intersessional meeting
 - Preceded by workshop “Implementing Tsunami Ready in the Indian Ocean”



Leading contributions to UN Ocean Decade Tsunami Programme Science Team (Chair Dr Srinivas Kumar) and TOWS- Task Team Disaster Management & Planning (Chair Dr Harkunti Rahayu)



Support for 25 IOTWMS Member States

1. Support for further two years (2022-2023)(USD\$310K per year) from Government of Australia, through Australian Bureau of Meteorology, to support ICG/IOTWMS Secretariat

2. ICG/IOTWMS Secretariat has provided support for 17 meetings of ICG/IOTWMS & related activities in 2021/22, most in online or hybrid mode due to COVID

3. Support for further five years (2022-2027) (USD\$130K per year) from Government of Indonesia, through BMKG, to support Indian Ocean Tsunami Information Centre (IOTIC)



4. Phase 1 of UNESCAP Project “Strengthening tsunami warning in the North-West Indian Ocean through regional cooperation” successfully completed 30 October 2021

5. Phase 2 of UNESCAP Project funding USD\$280K secured began May 2022

6. IOTIC and IOC Secretariat supported several activities World Tsunami Awareness Day (WTAD) 2021



UNESCAP Project Outcomes “Strengthening tsunami warning in the North-West Indian Ocean through regional cooperation”



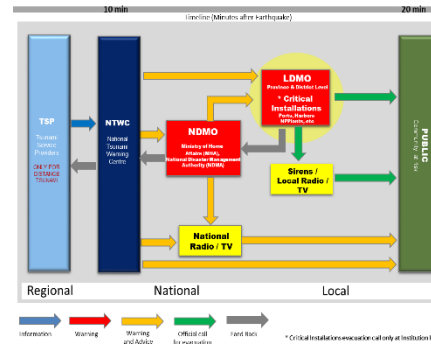
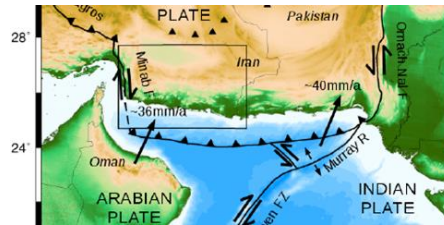
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Phase 1 (completed)

- Development of a unified Probabilistic Tsunami Hazard Assessment (PTHA)
- National tsunami warning chains developed
- Standard Operating Procedures (SOPs) in development for National Tsunami Warning Centres (NTWCs), Disaster Management Organisations (DMOs), and Broadcast Media
- Capacity empowerment through strengthening tsunami warning in selected Pilot communities

India, Iran, Pakistan
(Oman & UAE at own cost)



Phase 2 (commenced)

- Exchange of scientific knowledge
- Finalisation of national tsunami warning chains and SOPs
- Identify best practices and capacity in inundation and evacuation mapping:



Phase 3 (proposed)

- Training to implement Tsunami Ready Programme



INDIAN OCEAN INFORMATION CENTRE 2017-22



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- UNESCO IOC Tsunami Unit
- UNESCO-IOC ICG/IOTWMS Secretariat
- UNESCO-IOC ICG/IOTWMS SG / WGs / TTs
- UNESCO-IOC TOWS Task Team for Tsunami Disaster Management and Preparedness
- UNESCO IOC Tsunami Information Centers (CTIC, ITIC, NEAMTIC)
- UNESCO-IOC Ocean Teacher Global Academy Secretariat



BMKG

- BMKG Geophysics
- BMKG InaTEWS
- BMKG Training Centre (STC OTGA)

25

Working with Indian Ocean Member States
(active National Tsunami Warning Centres)

- | | | | | | |
|----------------|-----------|------------|------------|--------------|----------------------|
| Australia | India | Madagascar | Mozambique | Seychelles | Tanzania |
| Bangladesh | Indonesia | Malaysia | Myanmar | Singapore | Thailand |
| Comoros | Iran | Maldives | Oman | South Arfica | Timor Leste |
| French Reunion | Kenya | Mauritius | Pakistan | Sri Lanka | United Arab Emirates |
| | | | | | Yemen |



3 Working with Tsunami Service Providers

- Bureau of Meteorology (BOM) and Geoscience Australia (GA), Australia
- Indian National Centre for Ocean Information Services (INCOIS), India
- Agency for Meteorology, Climatology, and Geophysics (BMKG), Indonesia

6 Projects
(2012-2022)

IFIT (1); MFIT (1); UNESCAP (3); Charles Englehart Foundation (1)



IOWave

6

Support Indian Ocean Tsunami Wave Exercises (IOWave) 2009, 2011, 2014, 2016, 2018, 2020



iowave.org

1 IOYVC

Indian Ocean Youth Video Competition (2021)

187

Past Tsunamis Eyewitness Stories

8 IORW
(Webinars)

(2017-2021) Indian Ocean Regional Workshops

4 IOCAP

(2017-2021) Indian Ocean Capacity Building Training

1 IOLS

(2020) Indian Ocean Lecture Series during COVID-19

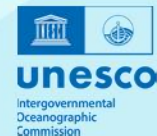
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Pilot and support Tsunami Ready communities

(2017-2022) India implement the Indian Tsunami Ready Programme. 2 communities in Odisha State India (Noliasahi and Venkatraipur) received Tsunami Ready Community Recognition in 2020, and 1 community in Indonesia (Tanjung Benoa), received Tsunami Ready Community Recognition in 2022

1 Tsunami Ready Boardgame (2022)

14 Tsunami Ready Animation Video (2022)



Contribution to Indian Ocean Capacity Development through Training Courses



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OTGA@ OceanTeacher Global Academy Training Course

BMKG

Course information
Duration: 12 days (45 learning hours)
Venue: Online. Supported by STC Indonesia

Trainers
• Dr. Daryono
• Mr. Admiral Musa Julius
• Mr. Muhammad Harvan
• Ms. Suci Dewi Anugrah
• Ms. Gloria BR Simangunsong

Period for Applications
1-25 October 2021

To apply
Please fill the online application form: <https://bit.ly/reg-OTGA>

More information
<https://www.oceanexpert.net/event/3292>

No tuition fee applies.

Contact
Further information contact the OTGA Training Coordinator: loc.training@unesco.org
Ms. Madona; madona@bmgk.go.id

Useful sites:
• www.oceanteacher.org
• www.oceanexpert.net
• www.loc-cd.org
• www.iode.org

Tsunami Ready Training Course
12 – 30 November 2021

This is an introductory-level training course providing the basic understanding of performance-based community readiness concept toward tsunami hazard based on 12 tsunami preparedness indicators.

The objective of this training course is to build the capacity of participants to enable them to provide assistance on building a tsunami ready community.

Learning Outcomes
After the course participants are expected to have knowledge, skills and experience to be able to:

- explain 12 indicators needed to establish the tsunami ready community.
- explain the overview of the tsunami ready development in Indonesia to be implemented in each country.
- advocate community to complete the 12 indicators.
- advocate school preparedness.
- advocate a certain community to fulfill the requirements for proposing tsunami ready recognition.

Target Audience
The target audience includes, but is not limited to the following:

- Disaster management officer (national and local)
- Government agencies and non-government organizations (NGOs) working on disaster management field
- Researchers of tsunami science background

Note: UNESCO is committed to promote equal access principles. Applications from minority or underrepresented groups are strongly encouraged.

Course Pre-requisites
Applicants are expected to:

- have knowledge and experience in disaster risk management will be an advantage
- have a good working knowledge in English

A Certificate of Participation will be issued to all participants who finish all mandatory task's completion.

With the support of the Government of Flanders, Belgium

Flanders State of the Art

The UNESCO/IOC Project Office for IODE is certified as a Learning Services Provider

ISO 29990

STC Indonesia Tsunami Ready OTGA Training Course in 2021

OTGA@ Ocean Teacher Global Academy Training Course

BMKG

Course information
Duration: 10 days (68 learning hours)
Venue: Blended. Supported by STC Indonesia

Trainers
• Dr. Nelly Florida Riama
• Dr. Daryono
• Mr. Admiral Musa Julius
• Mr. Muhammad Harvan
• Ms. Suci Dewi Anugrah
• Ms. Gloria BR Simangunsong

Period for Applications
June 2022

To apply
Please fill the online application form: <https://bit.ly/reg-OTGA>

More information
<https://www.oceanexpert.net/event/3292>

No tuition fee applies.

Contact
Further information contact the OTGA Training Coordinator: loc.training@unesco.org
Ms. Madona; madona@bmgk.go.id

Useful sites:
• www.oceanteacher.org
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• www.loc-cd.org
• www.iode.org

Advance Tsunami Ready Training Course
27 September – 3 October 2022

The Advance Tsunami Ready Training Course will be conducted on Semester II, 2022. It is a continuation of the previous training (online- Basic Tsunami Ready Training Course). This training course provides the knowledge and skill to test the community's response capability. The course design will be like a Training of Trainers (ToT).

Course contents will cover presentation, discussion, sharing experiences on a case study of tsunami ready and practical sessions including a site visit to a tsunami ready community in Indonesia.

Learning Outcomes
After the course participants are expected to have knowledge, skills and experience to be able to:

- Implement 12 indicators needed to establish the tsunami ready community in their country;
- encourage the community to develop tsunami community by assessing the 12 indicators;
- advocate community to complete the 12 indicators; and
- advocate school preparedness.

Target Audience
The target audience is 30 people from participants of the previous training course (Tsunami Ready Training Course) who had obtained the certificate.

Note: UNESCO is committed to promote equal access principles. Applications from minority or underrepresented groups are strongly encouraged.

Course Pre-requisites
Applicants are expected to:

- have successfully finished the Tsunami Ready Training Course and obtained the certificate

A Certificate of Participation will be issued to all participants who finish all mandatory task's completion.

With the support of the Government of Flanders, Belgium

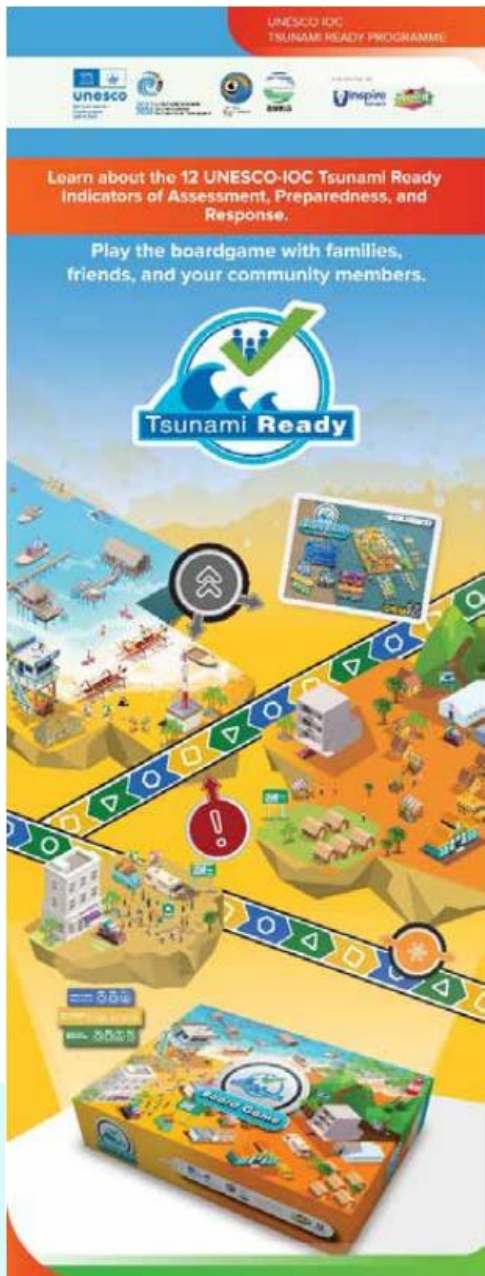
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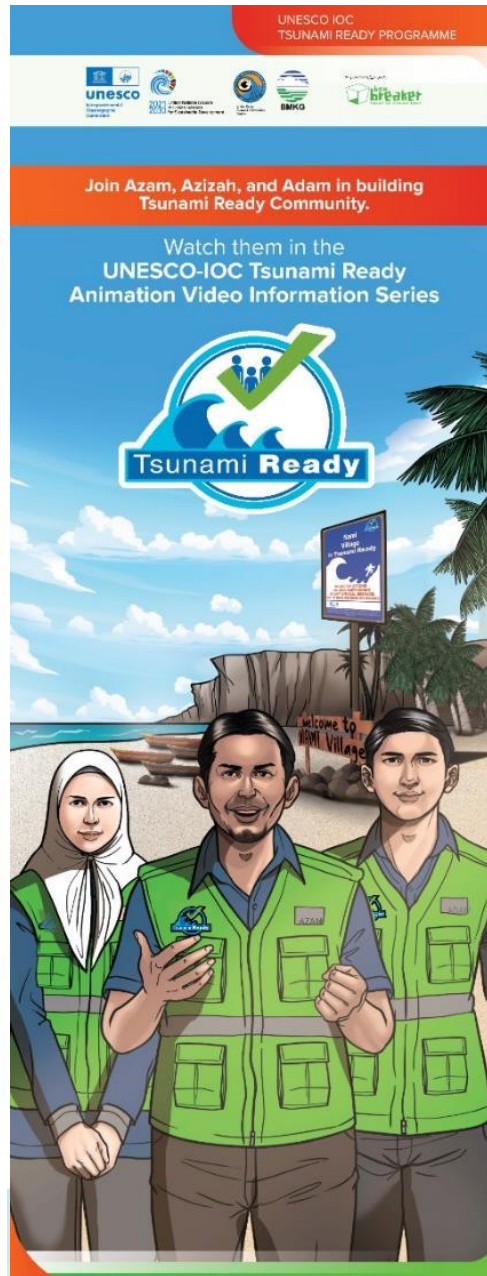
ISO 29990

STC Indonesia Advance Tsunami Ready OTGA Training Course in 2022

- **INCOIS in India** has been operating the International Training Centre for Operational Oceanography (ITCOcean) since 2013, providing several courses in support of Tsunami Programme in 2021/22
- **BMKG Training Center in Indonesia** now also serves as an OTGA Specialized Training Center (STC Indonesia)



Tsunami Ready Game Board



Tsunami Ready Animation Video Series

Development of Tsunami Ready Board Game and Short Animation Videos in 2021:

Video 1: Tsunami Ready (an introduction): <https://youtu.be/W4Zc5CIRYtGVideo>

Video 2: Tsunami Hazard for Tsunami Ready Community:

<https://youtu.be/hI3IHS544ZAVideo>

Video 3: Knowing people at risk of tsunami:

<https://www.youtube.com/watch?v=Wox4cSS8th0Video>

Video 4: Resource and capacity for Tsunami Ready Community:

<https://youtu.be/DOqdlZqr98sVideo>

Video 5: Public Tsunami Information in Community: <https://youtu.be/Od-o-G7IBb0Video>

Video 6: Tsunami Evacuation Map for the

community: <https://youtu.be/wECsv3XgJ3kVideo>

Video 7: Public Awareness and Education Resources: [https://youtu.be/GKid6-](https://youtu.be/GKid6-RHmSsVideo)

[RHmSsVideo](https://youtu.be/GKid6-RHmSsVideo)

Video 8: Outreach Activities in Tsunami Ready

Community: <https://youtu.be/Y8NoQXHCEX0Video>

Video 9: Community Tsunami Exercise: <https://youtu.be/bANfS7TdVPoVideo>

Video 10: Community Tsunami Emergency Operation Plan: [https://youtu.be/Or-](https://youtu.be/Or-lvI8HzPQVideo)

[lvI8HzPQVideo](https://youtu.be/Or-lvI8HzPQVideo)

Video 11: Building Capacity in community for Emergency Response:

<https://youtu.be/JZ0-h3H7EC0Video>

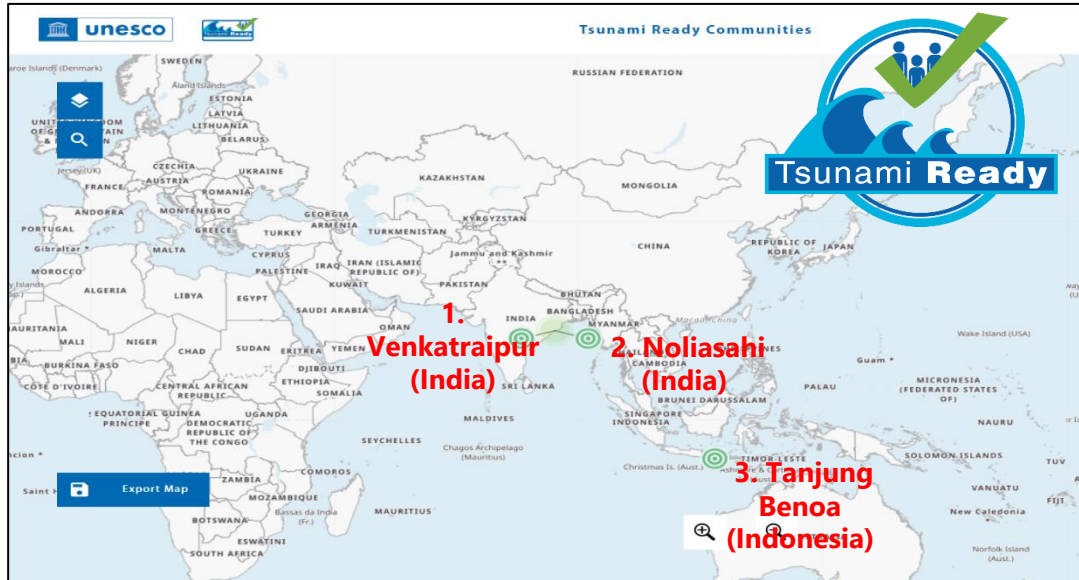
Video 12: Linking the Community to the Tsunami Warning Chain:

<https://youtu.be/04iGaCXulioVideo>

Video 13: Providing warning to the community: <https://youtu.be/wf8unCF1gz4Video>

Video 14: Getting Tsunami Ready Recognition: https://youtu.be/myAt1_Udsio

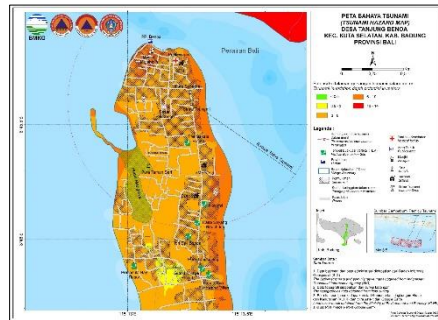
TSUNAMI READY RECOGNITION IN THE INDIAN OCEAN



- **3 communities have been recognized as UNESCO-IOC Tsunami Ready, Noliasahi and Venkatraipur (India), and Tanjung Benoa (Indonesia).**
- **6 more communities in Indonesia are interested in implementing Tsunami Ready and have been proposed to UNESCO-IOC. Other countries in the process or indicating interest to implement include Oman, Sri Lanka, Tanzania, Kenya, Maldives, Timor Leste, Myanmar, Mauritius, Singapore, Iran, Pakistan, Madagascar, Comoros, and Australia.**
- **Non-seismic generated tsunami** should be considered in the 12 indicators for Tsunami Ready
- Need also consider **Tsunami Ready Implementation for critical infrastructure**

COLLABORATION EFFORT and PARTICIPATORY APPROACH on DEVELOPING TANJUNG BENOA COMMUNITY TSUNAMI READY

The Tanjung Benoa community has actively participated in collaboration with several institutions such as the Badan Nasional Penanggulangan Bencana – BNPB (Indonesian National Disaster Management Agency), Regional Disaster Management Agency (BPBD), UNDP, and Red Cross Indonesia



Developing a Tsunami Hazard Map by BMKG



BMKG, BNPB, BPBD and UNDP Providing the Evacuation Sign



Vertical Evacuation Provided by hotels



Tsunami Drill at School



Mangrove Planting by Community



Tsunami Ready School



Promoting TSUNAMI READY at the 7th Meeting GLOBAL PLATFORM for DISASTER RISK REDUCTION (GPDRR 2022) in Bali, Indonesia



The inauguration of Tsunami Ready Recognition of Tanjung Benoa community



Launching the Tsunami Ready board game and video series



Playing Tsunami Ready board game



Innovation Platform Booth: Recognizing Tsunami Ready Community



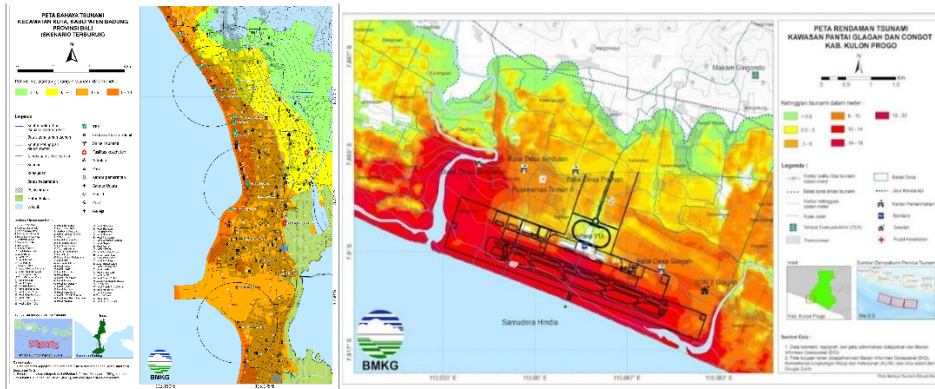
Mr Mohamed Djelid, Director of UNESCO Office Jakarta, handed the Tsunami Ready Board Game to Ms. Amina J. Mohammed, UN Deputy Secretary-General and Ms. Mami Mizutori, Special Representative of the Secretary-General for DRR and Head of UN Office for Disaster Risk Reduction (UNDRR) at the GPDRR.

- To promote the Tsunami Ready Programme, UNESCO-IOTIC and BMKG provided an exhibition at the Innovation Platform and launched the Tsunami Ready Communication Tools on the Ignite Stage of Rumah Resiliensi.
- In addition, the Tanjung Benoa community Tsunami Ready recognition was conducted as a part of promoting Tsunami Ready in the 7th GPDRR meeting in Bali

BEST PRACTICES of IMPLEMENTING TSUNAMI READY for CRITICAL INFRASTRUCTURE

BMKG has advocated **Kulonprogo International Airport (Yogyakarta)** and **Ngurah Rai Airport (Bali)** implement **Tsunami Ready**:

1. Developing tsunami hazard map for airport area
2. Evaluating tsunami evacuation facilities
3. Improving Airport Emergency Plan (including tsunami warning SOP)
4. Conducting earthquake and tsunami community education
5. Conducting tsunami drills
6. Providing/ensuring accessible earthquake information and tsunami warnings



Airport Tsunami Hazard Map



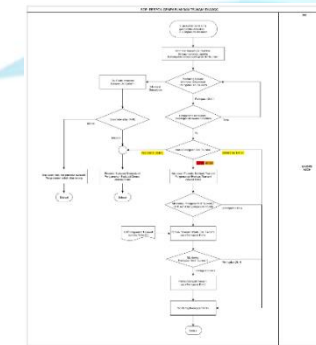
Evaluating Tsunami Evacuation Facilities



Earthquake and Tsunami Education for Airport Attendants



Airport Tsunami Drill



Including Tsunami Warning SOP in the Airport Emergency Plan



Providing Accessible earthquake information and tsunami warning



EARLY WARNING, EARLY ACTION: BRINGING the IDEA from GPDRR 2022 into ACTION

Cooperation and involvement of the Pentahelix (The government, private sector, media sector, academia, community) to accelerate the development of the End-to-end Early Warning System



Hotel Roof Top for
Vertical Evacuation



Room for Evacuation



Evacuation Simulation



The Vertical Evacuation
Shelter at the YIA



Evacuation Simulation to
Shelter Evacuation

- The hotel investment on the DRR had been a **good promotion on ensuring the safety and security of guests**
- 7 hotels in Tanjung Benoa had committed to provide the vertical evacuation shelter:
 1. Peninsula Bay Resort
 2. Hotel Benoa Sea Suites Villas
 3. Grand Mirage Resort
 4. Hotel Ion Bali Benoa
 5. Hotel Rasa Sayang
 6. Hotel Novotel
 7. The Sakala Resort

The Yogyakarta International Airport evacuation shelter for airport officers and surrounding communities.

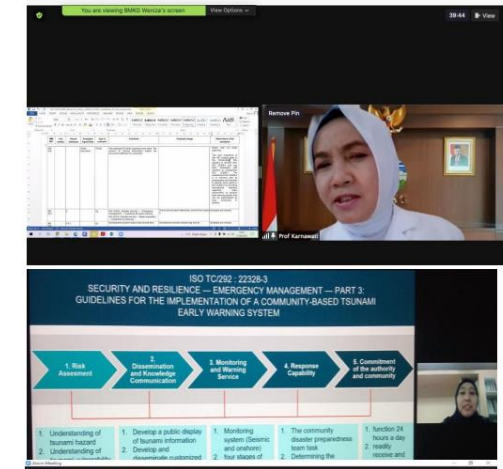
ISO Tsunami Early Warning Guidelines (ISO 22328-3)



- Complementary to Tsunami Ready Indicators
- Practical instrument used by Private Sector as well the City prone to tsunami to develop the Tsunami Early Warning System (TWS) as part of a Tsunami Ready Community program
- Guidelines for:
 - 1) Risk assessment;
 - 2) Dissemination & communication of knowledge;
 - 3) Monitoring and warning services;
 - 4) Improving response capability
 - 5) Commitment of authorities & community at risk for sustainability of the TWS.
- Integrated within business process of private sectors to ensure Business Continuity
- Help ensure professional performance with respect to safety management system of respective cities prone to tsunami



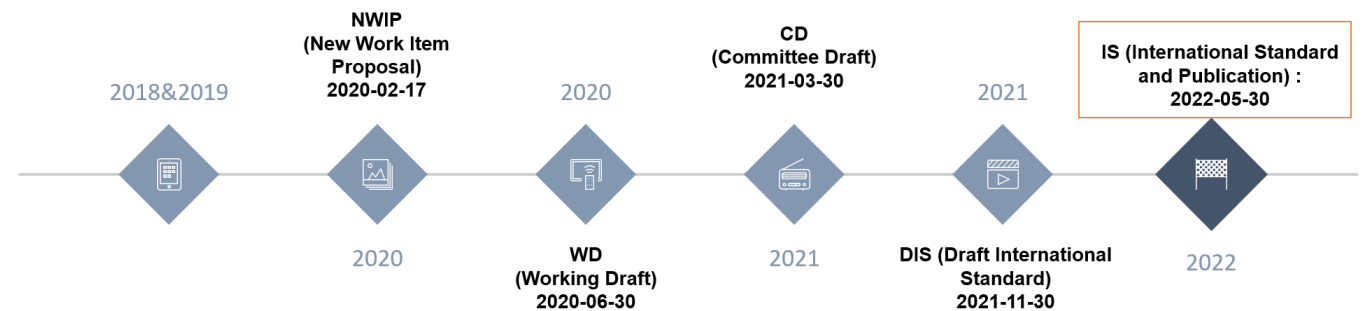
The 6th Plenary Meeting of ISO/TC 292, Sidney, 11-16 March 2018



The 10th Plenary Meeting of ISO/TC 292, Virtual, 14 - 23 June 2021



PROJECT PLAN



Commemoration of World Tsunami Awareness Day 2021



78 Attendees

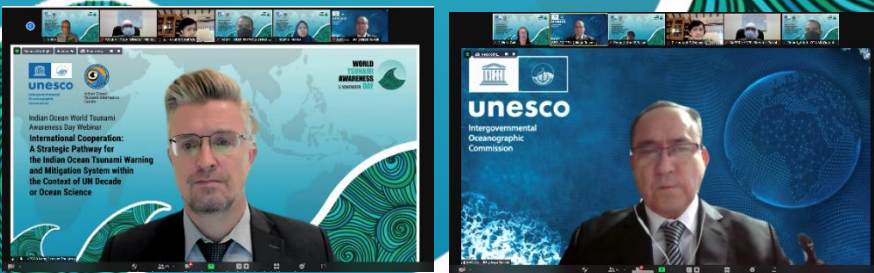


Indian Ocean World Tsunami Awareness Day Webinar

International Cooperation: 2021-2030



A Strategic Pathway for the Indian Ocean Tsunami Warning and Mitigation System within the Context of UN Decade or Ocean Science



Indian Ocean World Tsunami Awareness Day Webinar

INDIAN OCEAN YOUTH SHORT VIDEO COMPETITION ON TSUNAMI AWARENESS



10 November 2021



for more information: bit.ly/XXXXXXX

A total of 79 videos were successfully submitted by participants from 9 countries:

- Bangladesh 3,
- India 5,
- Indonesia 24,
- Kenya 4
- Malaysia 12,
- Maldives 2,
- Pakistan 25,
- Seychelles 3, and
- Tanzania 2.

Five (5) independent judges evaluated the videos based on 6 assessment: criteria theme/topic, information, originality, impact, concept, creativity.

Three winners for each of the four IO regions



ICG/IOTWMS Plans 2022/23



1. **Next ICG/IOTWMS meeting face-to-face Oct22 in Indonesia, including symposium on implementing Tsunami Ready in the Indian Ocean** facilitated by Member States nominating **National Tsunami Ready Focal Points**
2. **Implement Science & Implementation Plans** to be developed by UN Ocean Decade Tsunami Programme Science Committee
3. **Implement outcomes from Multi-Hazard Early Warning Conference (MHEWC) in Indonesia, May22 and translate Words-into-Action in support of UN Sec General call for all communities to have access to early warning systems by 2027.**
4. **Expand number of Tsunami Ready (TR) communities**
5. **Utilise lessons learnt from UNESCAP project** to benefit rest of Indian Ocean
6. **WGs to develop work plans to address issues identified in 2018 IOTWMS Capacity Assessment**
7. **Improve access to real-time data**
8. **Next IOWAVE Exercise to be held in Sep/Oct 2023**
9. **SOP training workshops:** western Indian Ocean (many SIDS and LDCs)(2022) and eastern Indian Ocean (2023)
10. **Focus on helping NTWCs develop SOPs for warning of non-seismic and complex source tsunamis**
11. **Proposal ICG-XIII establish new Working Group & Task Teams**
 - a. **Tsunami Ready WG and Task Team on Critical Infrastructure** to support Tsunami Ready implementation across the IOTWMS
 - b. **Task Team on SOPs for non-seismic and complex source tsunamis**



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THANK YOU

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