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Commission

The Indian Ocean Tsunami Information Centre

RWG NWIO
30 May 2023

Ardito M. KODIJAT
Disaster Risk Reduction and Tsunami Information Unit
UNESCO Office Jakarta
Indian Ocean Tsunami Information Centre of IOC-UNSCO
a.kodijat@unesco.org

Engagements

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Indian Ocean Tsunami Information Centre

- UNESCO IOC Tsunami Unit
- ICG/IOTWMS Secretariat
- ICG/IOTWMS SG / WGs / TTs
- TOWS Task Team for Tsunami Disaster Management and Preparedness
- UNESCO IOC Tsunami Information Centers (CTIC, ITIC, NEAMTIC)
- 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
Bangladesh
Comoros
French Reunion
India
Indonesia
Iran
Kenya
Madagascar
Malaysia
Maldives
Mauritius
Mozambique
Myanmar
Oman
Pakistan
Seychelles
Singapore
South Arfica
Sri Lanka
Tanzania
Thailand
Timor Leste
United Arab Emirates
Yemen

3 Working with Tsunami Service Providers

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

IOWave

6 Support Indian Ocean Tsunami Wave Exercises (IOWave)

2009
2011
2014
2016
2018
2020

iowave.org

8 IORW (Webinars)
Indian Ocean Regional Workshop

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

4 IOCAP
Indian Ocean Capacity Building Training

Outreach

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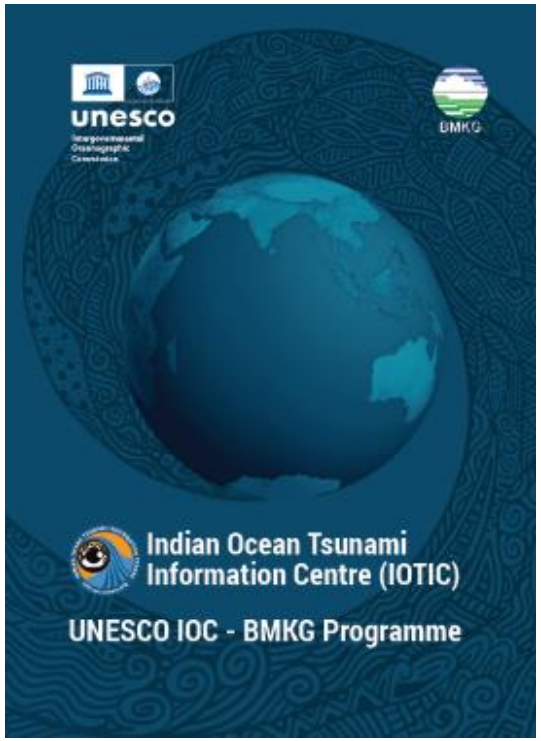

Tsunami Ready

9 Support Tsunami Ready Community

- 2 Communities in India Recognized
- 7 Communities in Indonesia Recognized

14 Tsunami Ready Animation Video

6 Online Lecture Series
2.172 Engaged
44 Countries

1 Tsunami Ready Boardgame

93 Youth Engaged
9 Countries
79 Videos
12 Winners

7 Past Tsunamis

Information preserved

- 1945 Makran Tsunami
- 1950 Ambon Tsunami
- Central Sulawesi Tsunamis (1938, 1968, and 2018)
- 1992 Flores Tsunami
- 1994 Banyuwangi Tsunami
- 1996 Biak Tsunami
- 2000 Banggai Tsunami

319 Eyewitness Stories Documented

IOTIC Term of Reference

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NEW TOR

Goal of IOTIC

The overall goal of IOTIC is to support the UNESCO-IOC ICG/IOTWMS 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.

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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 roviders (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 UNESC)-IOC ICG/IOTWMS Steering Group as required.

IOTIC Term of Reference

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NEW TOR

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 of the focal point under the guidance of the IOC-UNESCO ICG/IOTWMS, to guide, facilitate, support and coordinate the activities of the World Tsunami Awareness Day 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.

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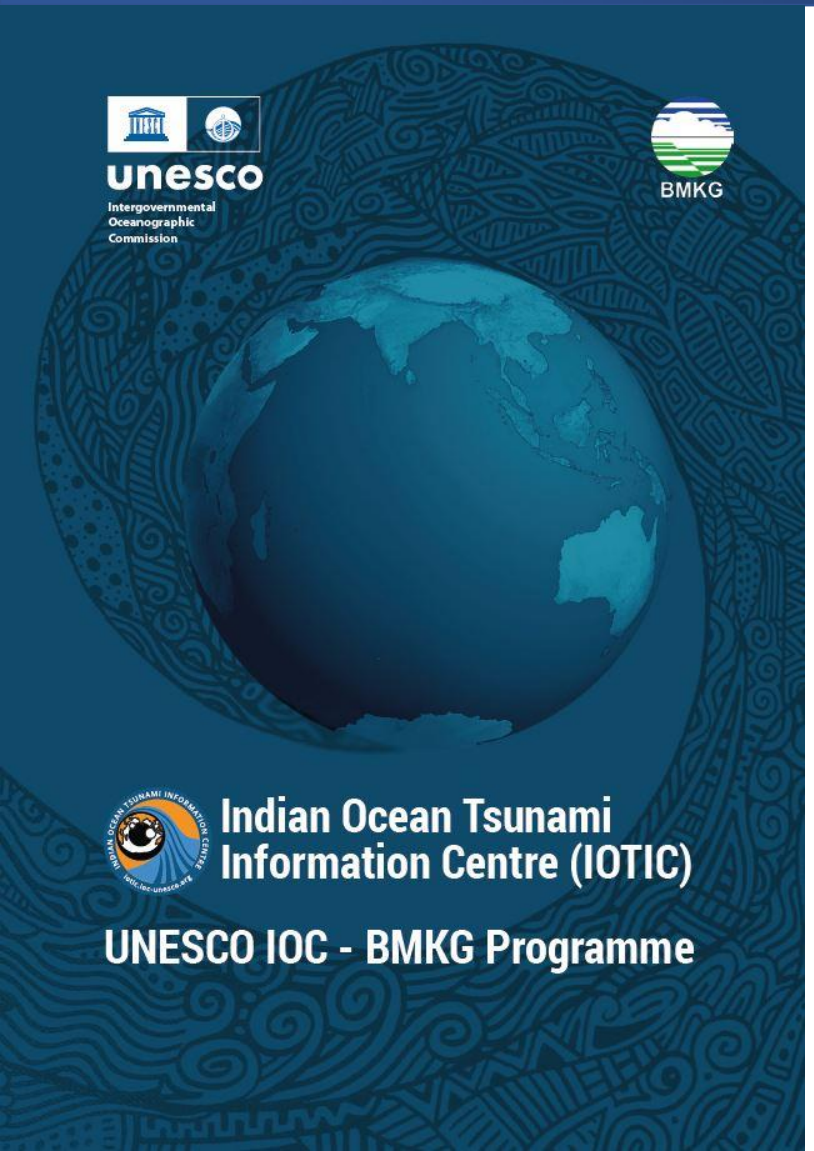
3. Coordinate activities and exchange materials, resources, and information with other Tsunami Information Centres (TICs) of the other ocean basins (Caribbean Tsunami Information Centre (CTIC), International Information Centre (ITIC), and North-East Atlantic and Mediterranean Seas Tsunami Information 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.

IOC-UNESCO and BMKG Partnership Agreement
"Support to IOTIC-BMKG Programme"



2023 - 2027

Objectives

- Ensure the sustainability and continuation of service of the Indian Ocean Tsunami Information Centre to the Indian Ocean Member States of the ICG/IOTWMS.
- Support IOTIC programmes and activities in coordination with IOC-UNESCO Tsunami Unit, the IOC-UNESCO ICG/IOTWMS Governance, and the IOC-UNESCO ICG/IOTMWS Secretariat.
- Enhance BMKG's role in the Indian Ocean Tsunami Warning and Mitigation System.
- Support capacity building of BMKG's staff assigned to IOTIC-BMKG in international cooperation.

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"Support to IOTIC-BMKG Programme"

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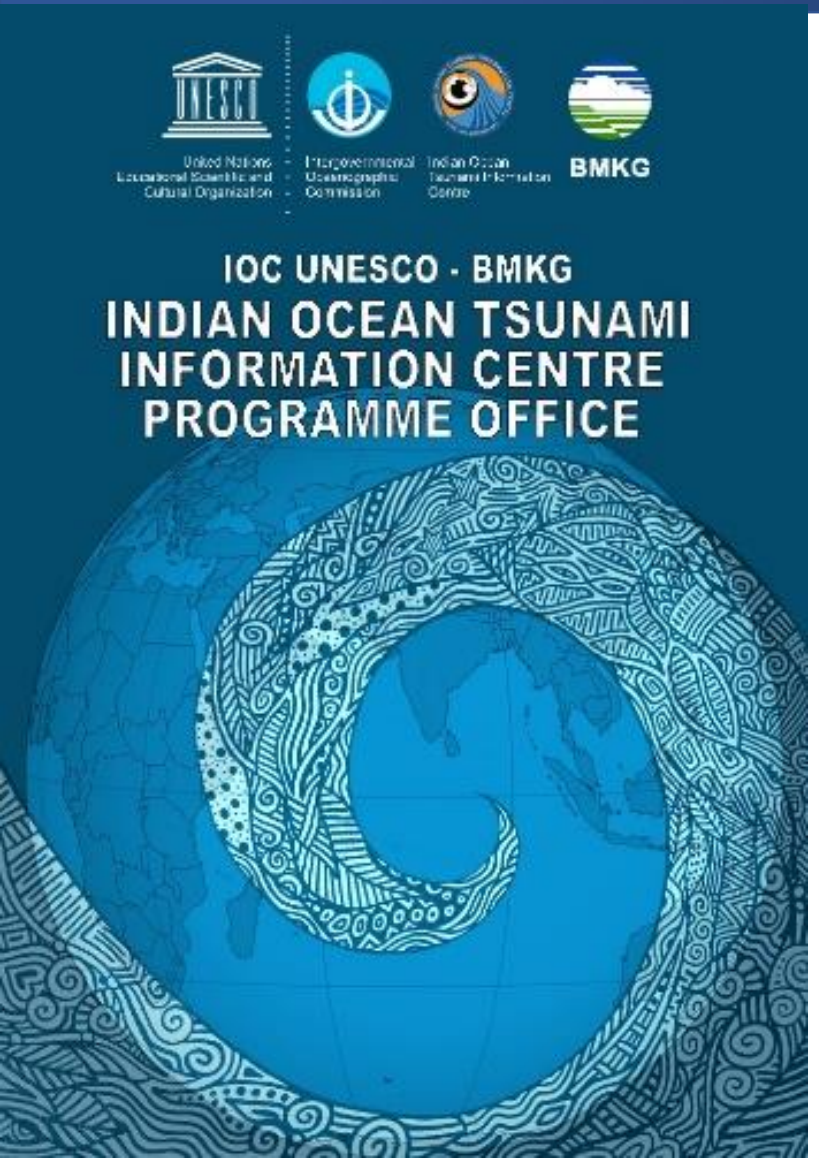

2023 - 2027

Programme and activities

- Indian Ocean Regional Workshops (IORW);
- Indian Ocean Capacity Building (IOCAP); and
- Indian Ocean Studies, Assessments, and Projects (IOSAP).
- Management of IOTIC website and social media at BMKG Server: for the IOTIC-BMKG programme and activities; Tsunami Education, Awareness and Preparedness resources; IOWave Tsunami Exercise; World Tsunami Awareness Day (WTAD); and other IOTIC activities and project results.

WAY FORWARD (IOC-UNESCO IOTIC)

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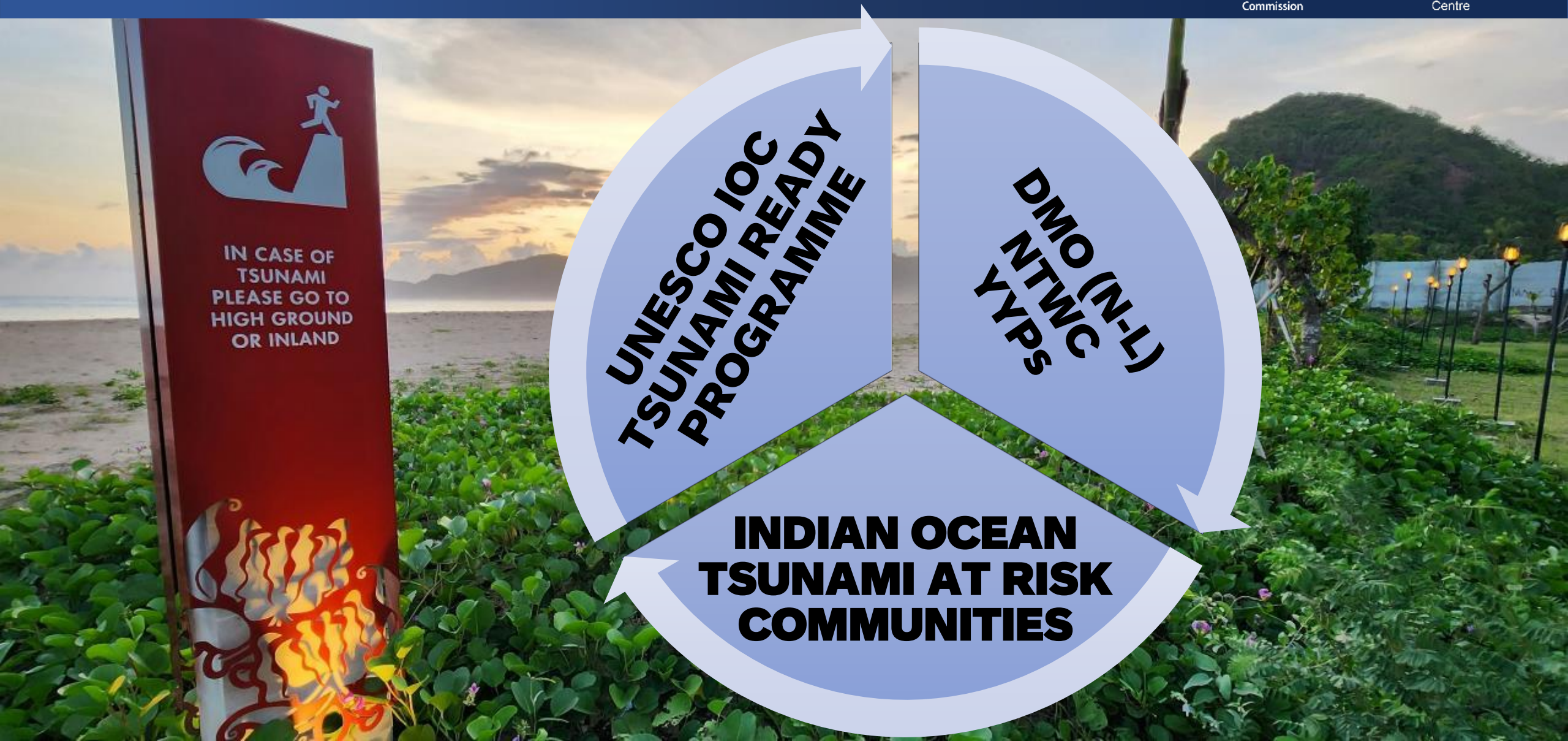

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UN Decade of Ocean Science 2021-2030

Tsunami Ready

UNESCO-IOC Tsunami Ready Recognition Program

A **community performance-based programme** that facilitates tsunami preparedness as an active collaboration of the public (community), community leaders, local and national emergency management agencies and national tsunami warning centre.

1.	The community have designated and mapped tsunami hazard zones.
2.	The community have information of the estimate number of people that live in the tsunami hazard zone.
3.	The community have a public display of tsunami information.
4.	The community have an inventory of available economic, infrastructural, political and social resources to reduce tsunami risk at the community level.
5.	The community have easily understood tsunami evacuation maps as determined to be appropriate by local authorities in collaboration with communities.
6.	Development and distribution of outreach and public education materials
7.	Hold at least three outreach or education activities annually
8.	Conduct a biennial tsunami community exercise.
9.	Have a tsunami emergency operations plan (EOP) for the community.
10.	Have the capacity to manage emergency response operations during a tsunami.
11.	Have redundant and reliable means to receive 24-hour official tsunami alerts
12.	Have redundant and reliable means to disseminate 24-hour official tsunami alerts to the public.

- Bringing the **ownership of preparedness to the community**
- Ensures **structural and systematic approach** in building community preparedness supported **by Science and Knowledge**
- A **collaborative effort** to meet a level of tsunami preparedness through the achievement of fulfilling a set of established best practice guidelines and indicators

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2 Communities in India Recognized
9 Communities in Indonesia Recognized

IOC-UNESCO and BMKG Partnership Agreement Program and Activity 2023

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- **Indian Ocean Regional Workshops (IORW);**
  - World Tsunami Awareness Day ➔ November 2023
- **Indian Ocean Capacity Building (IOCAP);**
  - Online Training for Tsunami Ready Facilitator in Indonesia ➔ 10 January – 23 February 2023
  - Tsunami Ready National Workshop In Timor-Leste ➔ Dili, 20-21 July 2023
  - Tsunami Ready National Workshop in Seychelles ➔ Mahe, November 2023
  - Online Regional Training Tsunami Ready for Tsunami Ready Focal Point ➔ TBD (WG-3)
- **Indian Ocean Studies, Assessments, and Projects (IOSAP);**
  - Preserving Past Tsunami Information for Future Preparedness ➔ 1995 Tsunami in Dili, Timor-Leste 17 – 19 July 2023
  - Development of community education materials on the natural warnings signs for tsunamis generated by non-seismic and complex sources (WG-3)

IOC-UNESCO and BMKG Partnership Agreement Program and Activity 2023

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- **Finalization of the Tsunami Ready Ocean Teacher Global Academy Training Material ➔ Hawaii 12-16 June 2023**
- **Jointly w' ICG/IOTWMS secretariat to Implement UNESCAP Project Phase 2c ➔ July 2022 – June 2023**
- **Preparation of Program, Proposal, and Activities for 20th Commemoration of the 2004 Indian Ocean Tsunami ➔ May 2022 – November 2023**
  - Culture based Tsunami Awareness and Preparedness
  - Tsunami Survivors and Eyewitness Stories and Exhibition
- **Support ICG/IOTWMS Secretariat**
  - Western Indian Ocean Meeting Tsunami Warning & Preparedness Workshop
  - SOP Training Workshop for Western Indian Ocean NTWC/DMO/Media
  - SOP Training Workshop for Eastern Indian Ocean NTWC/DMO/Media
- **Advise, Guide, Facilitate, Support Member States in the Application Process for the Tsunami Ready Recognition**

Thank you

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Ardito M. KODIJAT
a.kodijat@unesco.org

IOC-UNESCO Indian Ocean Tsunami Information Centre
IOTIC-BMKG Programme Office

Disaster Risk Reduction and Tsunami Information Unit
UNESCO Jakarta Office

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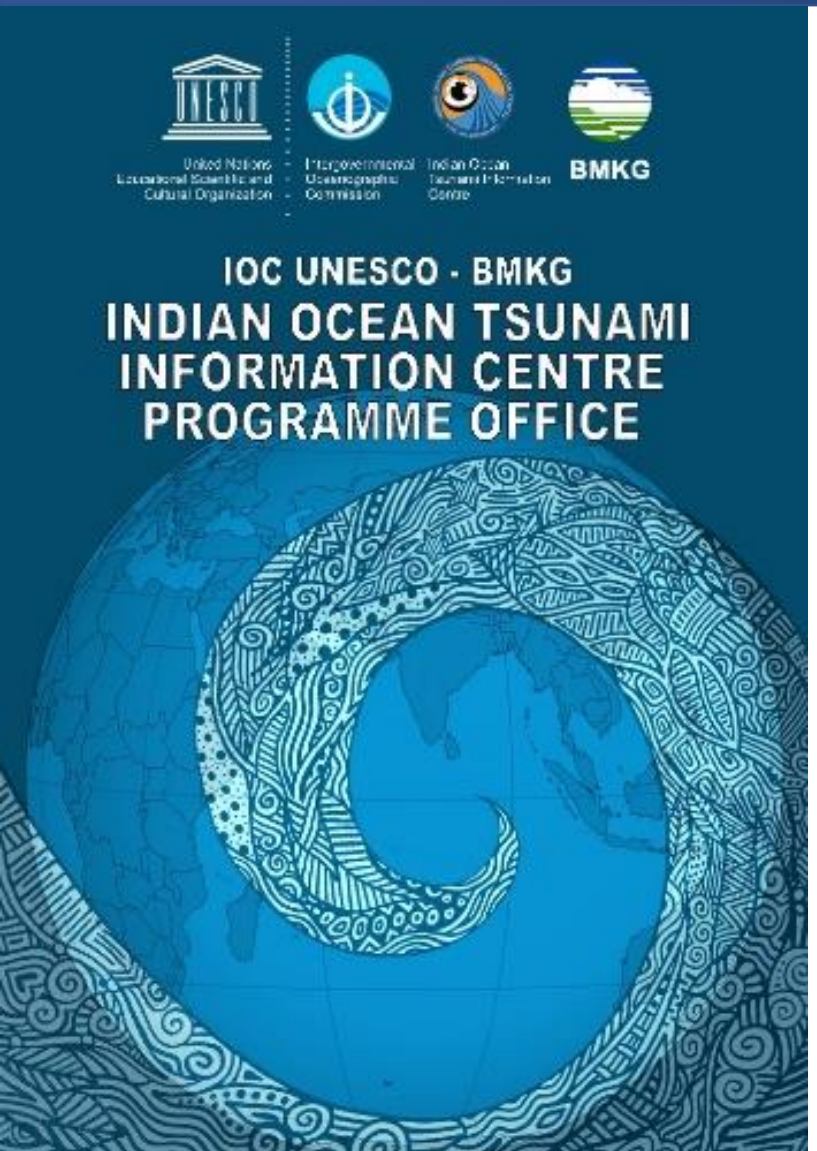


2023 - 2027

Budget

- Annual BMKG budget of approximately of USD 80.000
- Annual IOC-UNESCO budget of approximately of USD 20.000 to support additional international participants

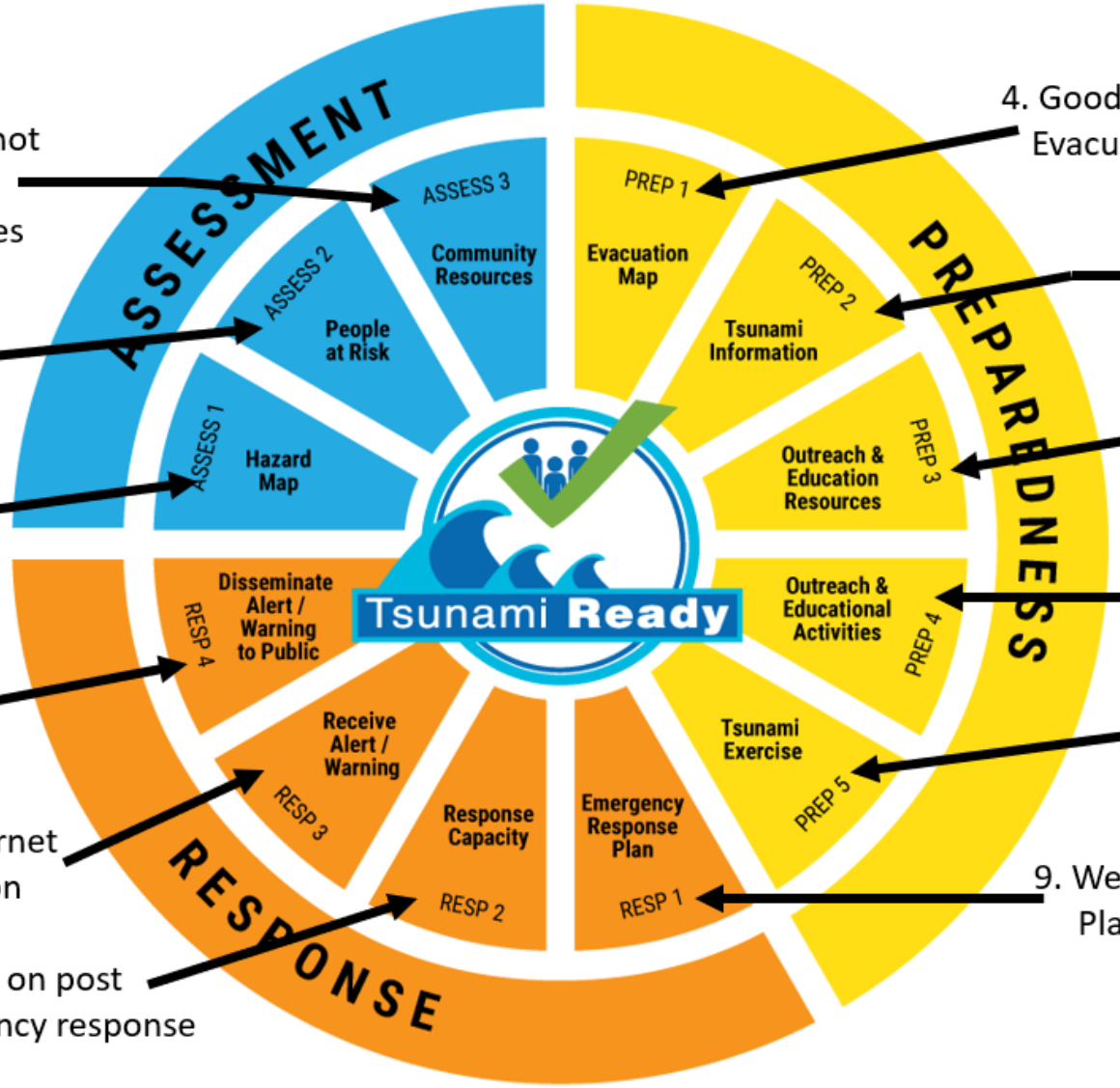
Office Logistics

- Office space and equipment and Office Supplies (paper, toner, etc.) and Utilities (electricity, water, local and international communication, internet).

Staffing

- BMKG assigned 3 staffs to support the administrative, coordination and organization of activities under BMKG Budget.

Summary of the TR Indicators in 9 Communities



3. Available Resources were not fully identified and utilized, especially external resources

2. The information of people at risk were not fully complete / comprehensive

1. Good Hazard Map, but limited understanding of the Map

12. Rely on traditional means and technology based

11. Receiving modes rely on Internet and electronic communication

10. Capacity is more on post disaster emergency response

4. Good Evacuation Map

5. Limited or lack of Tsunami sign and Information Board

6. Limited outreach education resources

7. Limited outreach Activities

8. Mostly have conducted Tsunami Exercise

9. Weak Tsunami Response Plan workflow and SOP

Coast with Tsunami Risk in Indonesia ➔ Near Field Tsunamis

There 5744 villages are prone to tsunami (1013 villages in high risk, and 4731 villages are moderate)

INDONESIAN VILLAGES PRONE TO TSUNAMI

No	Provinsi	Kerawanan Tinggi	Kerawanan Sedang
1	Aceh	70	445
2	Sumatera Utara	28	169
3	Sumatera Barat	51	77
4	Bengkulu	53	90
5	Lampung	6	95
6	Banten	22	77
7	DKI Jakarta		2
8	Jawa Barat	40	42
9	Jawa Tengah		64
10	DI Yogyakarta	3	25
11	Jawa Timur	12	130
12	Bali	44	109
13	NTB	70	146

No	Provinsi	Kerawanan Tinggi	Kerawanan Sedang
14	NTT	68	524
15	Maluku	98	392
16	Maluku Utara	62	467
17	Kalimantan Timur		7
18	Kalimantan Utara		9
19	Sulawesi Utara	95	376
20	Gorontalo	2	58
21	Sulawesi Tenggara	1	197
22	Sulawesi Tengah	80	467
23	Sulawesi Selatan	117	168
24	Sulawesi Barat	31	91
25	Papua	39	358
26	Papua Barat	21	146

Badan Meteorologi Klimatologi dan Geofisika

Indonesian Recognized Tsunami Ready Communities

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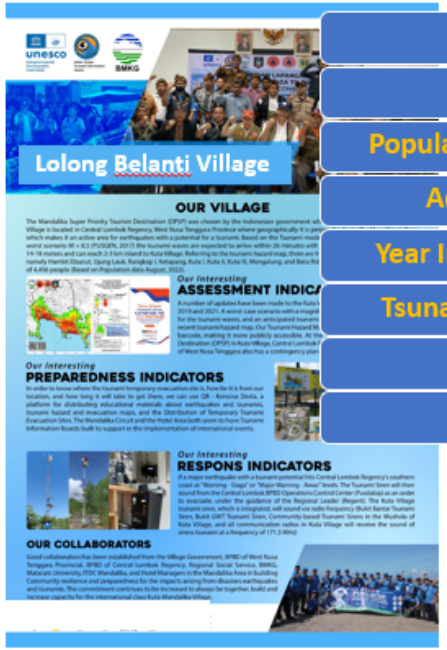
Field Verification of a Tsunami Ready Community

Lolong Belanti Village



Location	Padang, West Sumatera - Indonesia
Population	6.515 (daytime ± 2.000)
Population in Inundated Area	6.515 (daytime ± 2.000)
Administrative Level	Village (Kelurahan)
Year Implement 12 Indicator	2022
Tsunami Ready Recognition	2022
Characteristics	Urban
Village DRR	KSB Langit

Tsunami Preparedness Background

- Local NGO, KOGAMI, who has been working on Community Tsunami Preparedness since 2006.
- Experience devastating earthquake in 2009.
- GIZ, UNESCO, DESTANA, and Sekolah Lapang Gempa activities in Padang

Best Practices Interesting Development

- Door to door outreach activity for awareness and preparedness.
- Local awareness, preparedness, and education material.
- School preparedness programme.

Key Success Factors

- Strong leadership (government, NGO, and Community member).
- Strong vertical support from the local government (Pemda, BPBD).
- Strong local NGO (KOGAMI) engagements.
- Strong support from BMKG (Jakarta and Station Office).
- Strong cultural (Matriarchy) influence in the community. Women participation.

Challenges

- The entire village is under inundated area.
- Need to rely on Vertical Evacuation
- Limited Tsunami Evacuation Shelter.
- Education facilities with students from outside of the village

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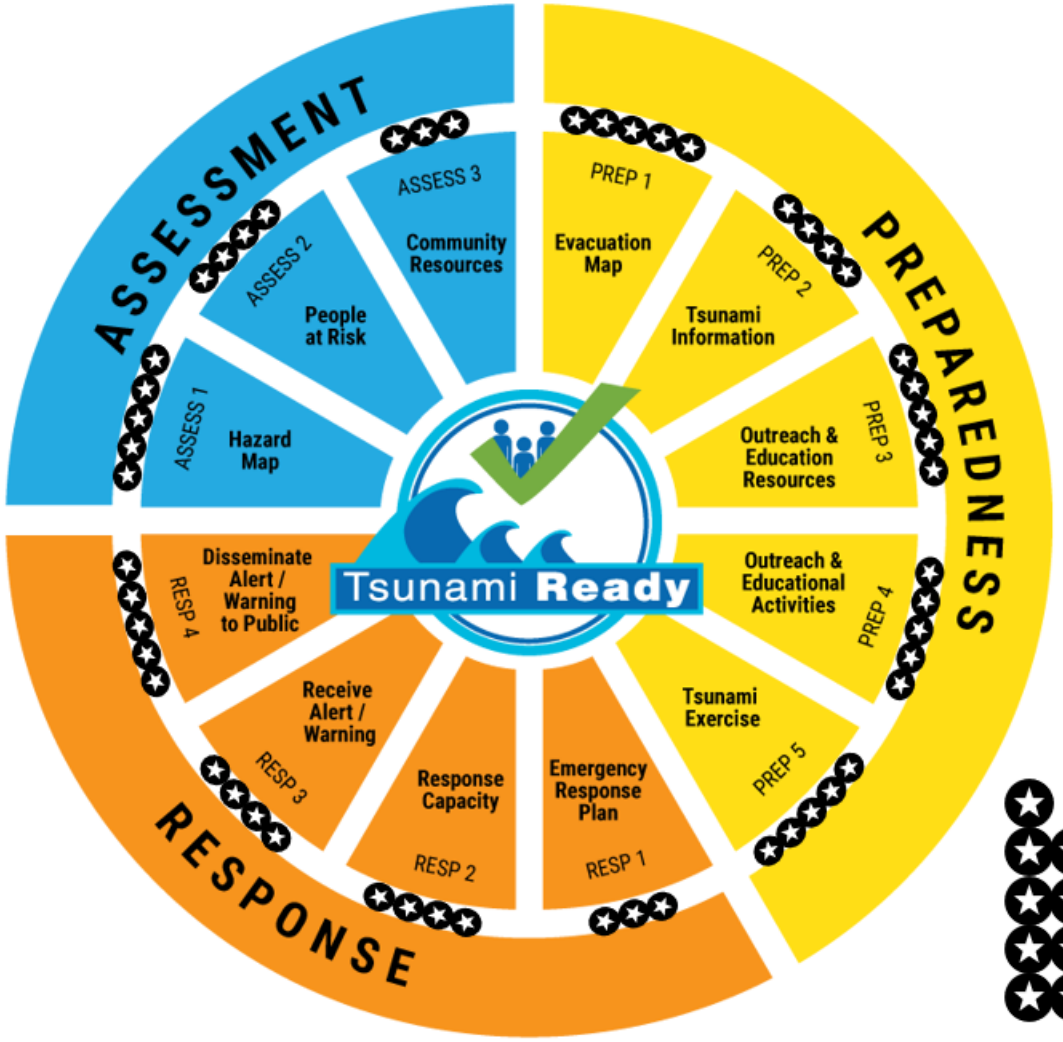
Field Verification of a Tsunami Ready Community

Lolong Belanti Village



Main Recommendation

- To improve the Emergency Response Plan document to include the workflow and SOP for community self-evacuation protocol.
- To improve the response capacity especially in evacuation procedure and management.
- To identify the number of students of the educational facilities in the village.
- To increase the number and renew the tsunami route signs and tsunami information boards
- To include the agree - designated Tsunami Evacuation Shelter that is located outside the village in the tsunami evacuation plan.
- To continue outreach and education activities especially for students from outside the village studying in the schools / university located in the village

- Not available
- Major Improvement
- Improvement in 1 year
- Small Improvement
- To Be Maintained

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THANK YOU

Ardito M. KODIJAT
a.kodijat@unesco.org

IOC/UNESCO Indian Ocean Tsunami Information Centre
IOTIC-BMKG Programme Office

r Risk Reduction and Tsunami Information Unit
UNESCO Jakarta Office

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IOC Secretariat: Nora Gale
Ardito Kodijat
Harkunti P. Rahayu
Rick Bailey
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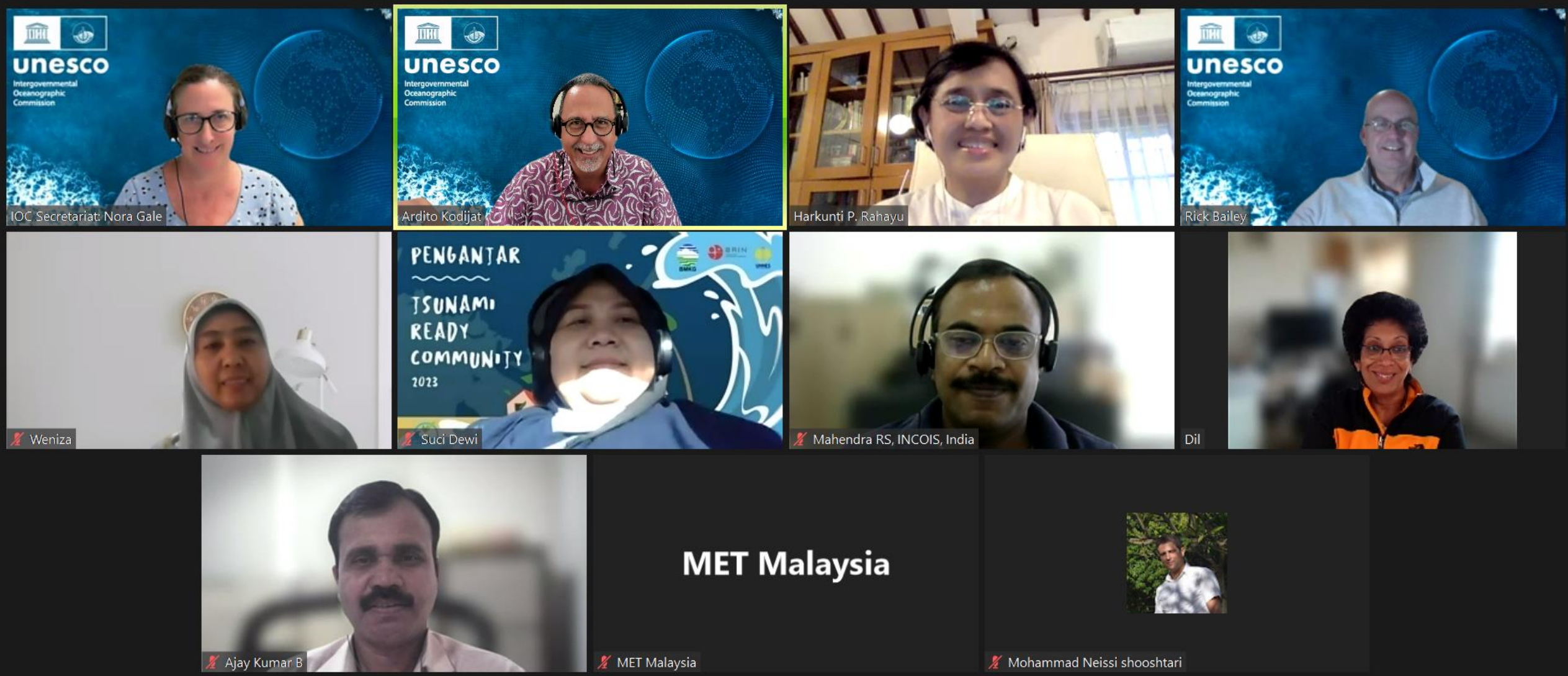
2023
Weniza
Suci Dewi
Mahendra RS, INCOIS, India
Dil
Ajay Kumar B
MET Malaysia
MET Malaysia
Mohammad Neissi shooshtari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Ajay Kumar B
MET Malaysia
MET Malaysia
Mohammad Neissi shooshtari

ICG/IOTWMS Tsunami Ready Focal Point (TRFP) Criteria

Definition: Person who responsible and organizes the Tsunami Ready or similar program in their country

Significant experience or expertise in one or more of the following criteria:

1. Developing community preparedness against natural hazards, preferably the tsunami hazard.
2. Understanding of evacuation planning and procedures implementation.
3. Understanding of the requirements, protocols, and Standard Operating Procedures (SOP) for national tsunami warning chains.
4. Training of at-risk communities in responding to natural hazards, including the planning and implementation of community exercises.
5. Strong leadership and/or advocacy for helping make at-risk communities prepared and resilient to natural hazards, preferably the tsunami hazard.
6. Member of National Tsunami Ready Board (NTRB) or similar national body responsible for coordinating the implementation of the UNESCO-IOC Tsunami Ready Implementation Programme (TRRP) if already exist, or a similar initiative

IOC-UNESCO and BMKG Partnership Agreement
ICG IOTWMS Tasked IOTIC

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Requests IOTIC in consultation with the ICG/IOTWMS Secretariat to create a capacity development work plan for the intersessional period, where appropriate utilising the International Training Centre for Operational Oceanography (ITCOocean) operated by INCOIS in India and the BMKG Training Center in Indonesia that serves as an OTGA Specialized Training Center (STC Indonesia), and STC ITIC in Hawaii;

Requests IOTIC and Working Group 1 develop community education materials on the natural warnings signs for tsunamis generated by non-seismic and complex sources;

Requests IOC-UNESCO IOTIC, IOC-UNESCO ICG/IOTWMS Secretariat, [and the new Working Group 3] to continue to organize regional workshops such as this as platform of sharing experience and lessons on the implementation of IOC-UNESCO Tsunami Ready in Indian Ocean.

Requests the Secretariat, IOTIC, WG1 and WG3 Members to develop urgently an online webinar for Tsunami Ready Focal Points on tools and strategies for implementing TR, supporting by a one-page brochure

IOC-UNESCO and BMKG Partnership Agreement
ICG IOTWMS Tasked IOTIC

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IOTIC and Task Team IOWAVE23

Requests Task Team IOWAVE23 in collaboration with IOTIC to:

1. Conduct Indian Ocean Wave Exercise (IOWave23) in 2023 noting suggestions from the post-IOWave20 lessons learnt workshop, including an increased focus on participation of Local Disaster Management Offices (LDMO) down to community level and exercising communities recognised or planning to be recognised under the TRRP or similar initiatives;
2. Explore mechanisms where resources available for participation of international observers with expertise in tsunami warning in countries conducting community evacuations and implementing TRRP and similar initiatives during future IOWave exercises;
3. Conduct IOWAVE23 in Sept/Oct 2023, with three scenarios run one week apart and not on consecutive days, at least one scenario with major impact
4. Support pre- and post-IOWAVE workshops to facilitate planning, conduct, and review of Exercise. Include near-field tsunami scenarios, including scenarios for tsunami generated by non-seismic and complex sources;
5. Develop technical guide/manual for exercises in pandemic situation**.**
6. Encourage Member States to test/verify the UNESCO-IOC Tsunami Ready Indicators during the Exercise.
7. Develop guidelines and manual for conducting virtual table-top exercises.

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ICG IOTWMS Tasked IOTIC

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IOTIC under WG-1 TOR

- Work closely with Working Group 3 “Tsunami Ready Implementation” and IOTIC to help develop the capacity of Member States across the Indian Ocean to implement the IOC-UNESCO Tsunami Ready Recognition Programme (TRRP) or similar initiatives.

IOTIC under WG-2 TOR

- Work closely with Working Group 3 “Tsunami Ready Implementation” and IOTIC to help develop the capacity of Member States across the Indian Ocean to implement the IOC-UNESCO Tsunami Ready Recognition Programme (TRRP) or similar initiatives.
- Work closely with Working Group 1 "Tsunami Risk, Community Awareness and Preparedness", Working Group 3 “Tsunami Ready Implementation” and IOTIC to develop effective national tsunami warning chains, warning products, services, Standing Operating Procedures and warning chains.

IOC-UNESCO and BMKG Partnership Agreement
ICG IOTWMS Tasked IOTIC

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IOTIC under WG-3 TOR

- Assist with training programmes of Member States implemented by IOC-UNESCO IOTIC and coordinated by IOC-UNESCO ICG/IOTWMS Secretariat to facilitate enhanced national tsunami warning chains and at-risk communities becoming resilient and prepared for tsunamis
- In collaboration with IOC-UNESCO IOTIC and IOC-UNESCO Secretariat for ICG/IOTWMS, identify Capacity Development and resource needs of Member States to implement TRRP, national Tsunami Warning Chains, and related Activity