Tsunami Ready Tool for Assessing the Impact of UNESCO–IOC Tsunami Ready Recognition on Community Preparedness and Resilience

"A Survey-Based Study to Assess the Sustainability of Tsunami Preparedness in UNESCO–IOC Tsunami Ready Recognized Communities"

Pilot Study in 22 UNESCO-IOC TR Recognized Community

Perception of the Head of Village On the Impact of TR Recognition

IOTIC-BMKG Programme

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A. Background

Over the past few years, several coastal communities in India and Indonesia have received international recognition from the Intergovernmental Oceanographic Commission of UNESCO (UNESCO–IOC) as Tsunami Ready Communities. This acknowledgment signifies that these communities have achieved all 12 Tsunami Ready Indicators designed to enhance tsunami preparedness, reduce risk, and strengthen community resilience.

This recognition was made possible through close collaboration between local governments, community-based Disaster Risk Reduction (DRR) teams, and technical support from national institutions such as BMKG (the Meteorology, Climatology, and Geophysics Agency) in Indonesia and INCOIS (the Indian National Centre for Ocean Information Services) in India.

While the recognition itself is a significant milestone, it is equally important to understand the real-world impact of the Tsunami Ready Programme on communities. Has it increased awareness? Has it strengthened local preparedness? Are DRR teams and community members more confident and capable of responding to tsunami threats?

To answer these questions, IOTIC-BMKG conduct a structured survey involving Head of Village, Community DRR Teams, and community members in villages that were recognized. This survey aims to assess:

- How the recognition has influenced disaster preparedness activities
- Their current capacity after being recognized as a Tsunami Ready Community
- The gaps and challenges they have faced following recognition
- The overall sustainability of tsunami preparedness measures in these communities

This survey document the perspectives of village leaders, DRR committee members, and community members regarding the recognition.

The results of this survey will help identify what works, what needs improvement, and how to sustain long-term tsunami readiness. They will also support other communities both within the country and internationally by providing insights that encourage understanding, learning, and motivation to implement the UNESCO–IOC Tsunami Ready Programme. The findings will inform future technical support, training, and policy recommendations at regional, national, and local levels.

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This initiative reflects a shared commitment to empowering coastal communities and strengthening the UNESCO–IOC Tsunami Ready Programme to enhance preparedness and resilience against tsunami hazards.

This assessment tool was piloted in 22 villages in Indonesia that received UNESCO–IOC Tsunami Ready recognition two or more years ago. It is expected that this tool can also be piloted in India in 2026 or 2027 and shared with the other ICG regions for their consideration.

Note:

This assessment does not aim to claim the work and achievements of the community nor the efforts of the supporting stakeholders in implementing and building the community's capacity to meet the 12 UNESCO-IOC Tsunami Ready indicators. The implementation of Tsunami Ready in Indonesia was led by the Indonesian Agency for Meteorology, Climatology, and Geophysics (BMKG), in collaboration with various stakeholders at the national, local, and community levels. Rather, this assessment seeks to understand how the communities that received the recognition perceive the impact of the UNESCO-IOC Tsunami Ready Recognition Programme on their communities.

Expected Outcomes

This study will be an evidence-based approach to assess the mid-term impact of the UNESCO-IOC Tsunami Ready Recognition at the community level. Through structured survey instruments and analysis, the study will generate valuable insights into how recognition translates into lived preparedness, institutional change, and community resilience. The results will serve as a learning tool for strengthening tsunami readiness frameworks and scaling best practices across coastal regions. The expected outcomes will be:

- A comprehensive profile of the current tsunami preparedness and gaps in the Tsunami Ready-recognized village.
- Clear documentation of perceived and real changes attributable to the UNESCO-IOC recognition.
- Actionable recommendations for local governments, disaster management agencies, and UNESCO-IOC partners to enhance future tsunami readiness support and guidance.
- Evidence-based insights on whether Tsunami Ready Recognition has strengthened resilience.
- Identified gaps (e.g., lack of regular drills, insufficient awareness).
- Policy recommendations for UNESCO and local governments to enhance the program.
- A case study report that can inform replication and learning in other communities nationally and regionally.

B. Survey Implementation Methodology

The study uses structured survey questionnaires administered to three distinct target groups within the recognized communities:

- Village Leaders: To gather insights on how the recognition has influenced institutional arrangements, policy integration, budget allocation, and oversight.

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- DRR Committee Members: To gather insights on how the recognition has affected the sustainability and capacity of the 12 indicators, as well as technical capacity and confidence in performing DRR roles. The study involves the head/leader of the community DRR team and at least five members.
- General Villagers: To gather community perspectives on tsunami preparedness after receiving the recognition. The study involves 5–10 community members. A random sampling method is used to select the respondents, ensuring representation across gender, age groups, and persons with disabilities.

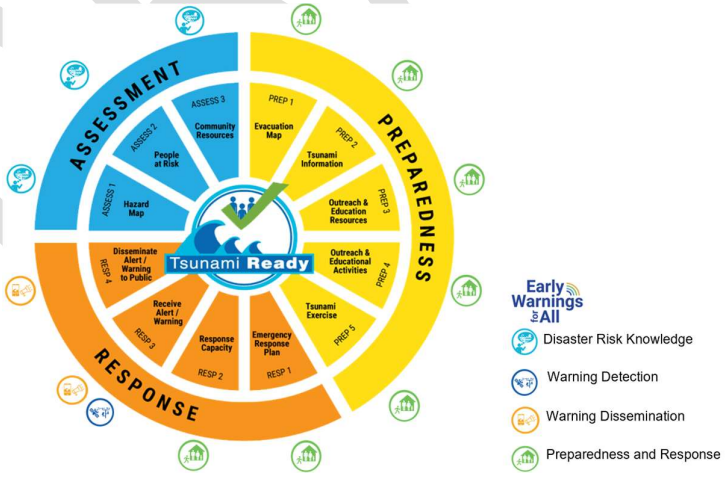
Each questionnaire consists of multiple-choice questions, allowing for standardized responses and quantitative analysis. Questionnaires are tailored to the roles and relevance of each target group.

Data Collection

The interviews and data collection were conducted in person, assisted by enumerators from the local staff of the BMKG Geophysics Station. The questionnaire was administered using a Google Form. All questions in the survey form were in Bahasa Indonesia.

During data collection, if a respondent was unable to use the Google Form, they were given a paper-based version of the form, or the enumerator read the questions aloud one by one while the respondent provided their answers, and the enumerator entered the responses into the Google Form. If the respondent was able to use the Google Form, the enumerator provided additional explanations when needed.

The data collection was also linked to the Early Warning for All (EW4All) pillars, particularly in questions related to the Tsunami Ready Indicators.



The three assessment indicators of Tsunami Ready were closely linked with Pillar 1 of EW4All. The five preparedness indicators and two response indicators were linked with Pillar 4 of EW4All, while the remaining two response indicators were linked with Pillar 3. Pillar 2 of EW4All corresponded to one of the response indicators.

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Survey for Head of Village and Village DRR Teams

- The Village Head was interviewed separately from the Village DRR Team to gather the individual perspective of the village leader. There were 16 questions related to the overall impact of the Tsunami Ready Recognition on the community. Survey form: **E.1. Questionnaires for Community Leader / Head of the Community**

- The Village DRR Team (both the head and members) were interviewed in the same session, but each member completed the form individually, with no discussion among members. For the Community DRR Team and its leader, there were 84 questions:
    - 13 general questions on Tsunami Ready
    - 13 assessment questions
    - 30 preparedness questions
    - 23 response questions

  In relation to EW4All:
    - 13 questions were linked to Pillar 1
    - 12 questions were linked to Pillar 3
    - 41 questions were linked to Pillar 4

  As the Community DRR Team does not have any role in tsunami detection, no questions were linked to Pillar 2. Survey form: **E.2. Questionnaires for Community DRR Team Leader and Members**

- Survey for the General Public

The public survey was conducted in person (face-to-face) by enumerators. The data collection process was adapted to local conditions and involved direct engagement with village residents. This methodology was designed to ensure active participation and meaningful understanding from the respondents, while also enhancing the quality and accuracy of the data collected. For community members, there were 56 questions:

- 6 general questions on Tsunami Ready
- 10 assessment questions
- 29 preparedness questions
- 11 response questions

In relation to EW4All:

- 10 questions were linked to Pillar 1
- 5 questions were linked to Pillar 3
- 35 questions were linked to Pillar 4

As community members do not have a role in tsunami detection, no questions were linked to Pillar 2. Survey form: **E.3. Questionnaires for Community Members**

Coordination Mechanism

The coordination mechanism was executed through the following stages:

Questionnaire Development: The project's initial phase involved a collaborative effort between the project team and the project leader to design and refine the survey questionnaires. The questionnaires were consulted to several experts for review, input, and improvement. This crucial step ensured that the questions were well-structured and aligned with the study's objectives. The finalized questionnaires were then converted into digital Google Forms to

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streamline the data collection process and make them easily accessible to a wide range of respondents.

Enumerator Selection and Briefing: In preparation for field operations, a strategic selection process was implemented. The Head of each Geophysics Station appointed two dedicated enumerators per village to serve as on-site support. To ensure a standardized approach, the project leader conducted comprehensive briefings, providing the enumerators with a thorough understanding of the questionnaire content and the overall survey methodology.

Data Collection and Assistance: Enumerators played a central role in the data collection process, employing a flexible approach to accommodate different community needs. They either visited the villages to coordinate with local Disaster Risk Reduction (DRR) teams and officials and provided a Google Form link for direct completion by respondents, or they used printed versions of the questionnaires for respondents to fill out manually. The enumerators were then responsible for accurately transferring this physical data into the digital Google Form format.

Data Compilation and Monitoring: Upon completion of the data collection phase, the project team initiated a thorough data compilation process. All collected data was centralized and meticulously organized. As part of this final step, the team compiled a summary report detailing the number of respondents who had completed the questionnaires, serving as a key metric for monitoring survey progress and completion.

Survey Results.

The results are based on data collected from all 22 recognized villages across Indonesia, providing a comprehensive overview of the program's effectiveness on the ground.

The data collection successfully engaged a total of 449 respondents across three distinct groups, offering a rich and diverse set of perspectives. The survey was completed by 22 Head of Village, 148 members of the Village Disaster Risk Reduction (DRR) Teams, and 279 general community members. This broad respondent base ensures that the results reflect the views of institutional leaders, on-the-ground practitioners, and the wider community.

The following tables present a detailed breakdown of the survey results, categorized by key indicators and respondent groups.

Village	HoV	DRR	Com'ties	Total
Gampong Jawa	1	5	5	**11**
Deah Glumpang	1	6	5	**12**
Mon Ikeun	1	4	20	**25**
Lamkruet	1	4	8	**13**
Tapakih	1	7	20	**28**

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Purus	1	8	38	**47**
Lolong Belanti	1	19	14	**34**
Panggarangan	1	5	14	**20**
Pangandaran	1	5	19	**25**
Sidaurip	1	7	10	**18**
Kemadang	1	6	7	**14**
Glagah	1	7	9	**17**
Poncosari	1	6	9	**16**
Parangtritis	1	6	13	**20**
Tirtohargo	1	8	15	**24**
Gadingsari	1	6	7	**14**
Tambakrejo	1	5	9	**15**
Tanjung Benoa	1	10	11	**22**
Pengastulan	1	5	11	**17**
Kuta Mandalika	1	10	15	**26**
Galala	1	4	12	**17**
Hative Kecil	1	5	8	**14**
Total	22	148	279	**449**

Note:

Despite the trainings, supervision, and coordination efforts provided to the enumerators to ensure that the information collected was objective, represented reality, and reflected the respondents' views, the team acknowledges that some errors exist. For example, in questions requiring respondents to write their own answers, several identical responses were found, particularly among members of the village DRR Team and among community members. As this is a qualitative assessment, and considering that the cases of identical answers were limited, the data/information collected is still considered acceptable for analysis.

C. Data Analysis

- All survey data will analyse based on responses to the multiple-choice answers. Descriptive statistics will be used to analyse frequencies, percentages, and distributions for each question.
- Comparative analysis will be conducted to explore:

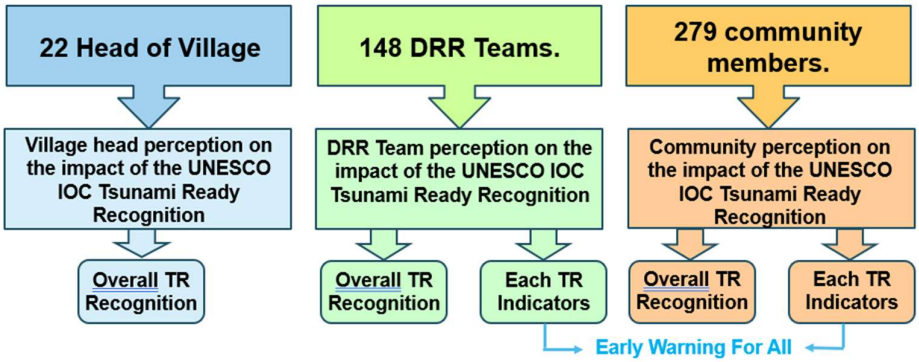
- Differences in perceptions between village leaders, DRR committee members, and villagers.
- Patterns in preparedness levels between households closer to the coast versus those inland.

- Cross-tabulation will identify relationships between awareness, participation in drills, and self-reported confidence levels.

Potential Data Analysis

Data analysis could be done in four tiers:

1. Perception of the impact of UNESCO-IOC Tsunami Ready Recognition based on Respondent:

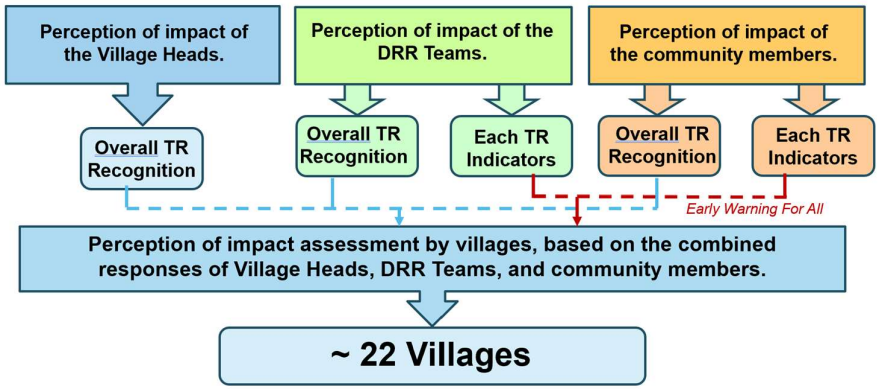


The analysis will be conducted collectively by respondent category: Head of Village, DRR Teams, and community members. This approach provides an overall picture of the perceptions within each category. The responses from the 22 Head of Village will be interpreted as the Village Heads' perception of the overall impact of the Tsunami Ready Recognition on the recognized communities. Similarly, for the DRR Teams and community members, the analysis will focus on two aspects:

- Their perception of the overall impact of the Tsunami Ready Recognition, and
- Their perception of the impact of each indicator, which can also be analysed in relation to the EW4All status.

The results of this analysis will provide a better understanding of the community's perception of the usefulness of the Tsunami Ready Recognition Programme, the improvements in their DRR and tsunami preparedness, and the challenges and gaps faced by Head of Village, DRR Teams, and community members in general.

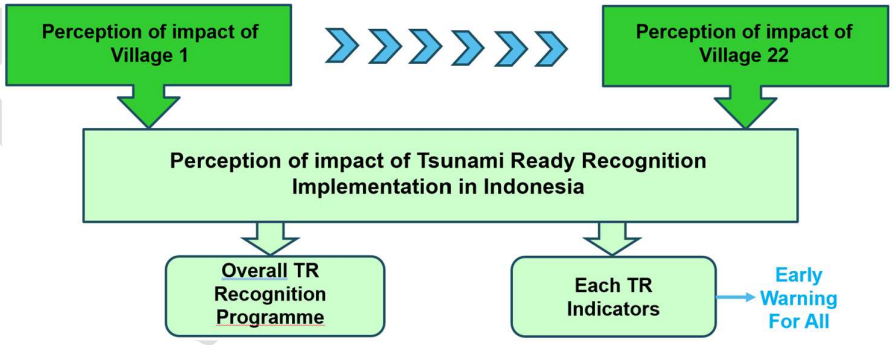
2. The impact of UNESCO-IOC Tsunami Ready Recognition to each of the village.



The analysis will be conducted to capture the perceptions of the impact in each village by examining the combined responses of Head of Village, DRR Teams, and community members. The perception of the overall impact of the Tsunami Ready Recognition on each community will be based on responses from all three respondent categories, while the perception of the impact of each indicator will be based on the responses from the DRR Teams and community members. This analysis will also include the context and information of the village, i.e number of population at risk, the characteristic of the community, activities that have been done after the recognition, etc.

The results will also offer a clearer picture of the status of the Tsunami Ready Recognition and its indicators in each village, the progress made in DRR and tsunami preparedness, and the specific challenges and gaps faced by the village, especially in maintaining and sustaining their level of preparedness.

3. Perception of impact of UNESCO-IOC Tsunami Ready Recognition based In Indonesia



The third potential analysis is to look at representation of the impact of UNESCO – IOC Tsunami ready within the context of Indonesia by looking at the overall Indonesian tsunami at risk community, including national programmes such as Destana, IDRIP Destana, Katana, etc.

4. Impact of Each Indicators to Tsunami Preparedness and EW4All in Indonesia

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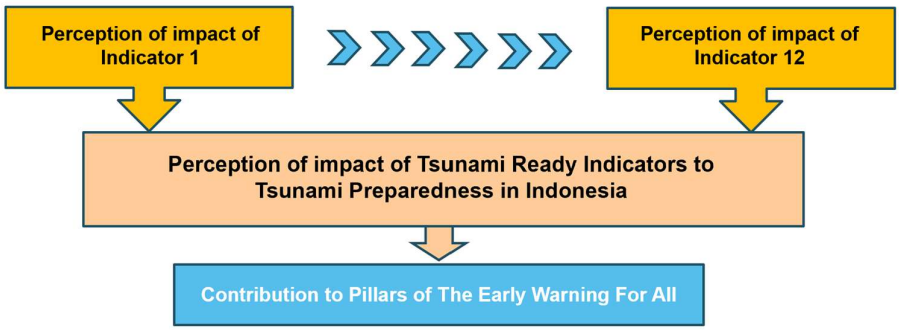
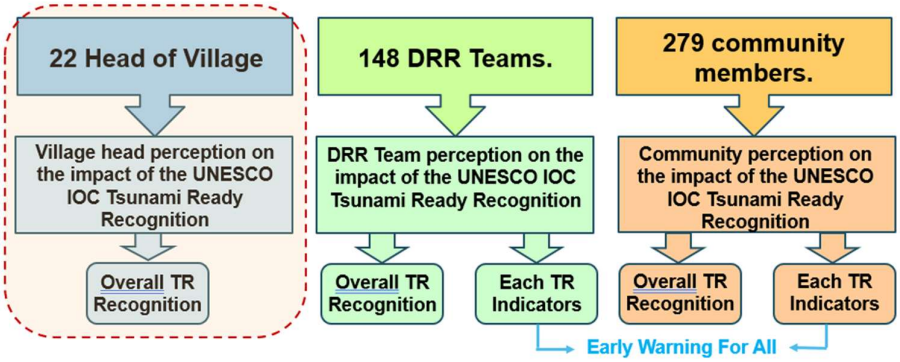


Another potential analysis is to look at the contribution of the UNESCO-IOC Tsunami Ready Recognition Programme to the achievement of the global framework on Early Warning for All (EW4All), through the implementation of all the tsunami ready indicators.

D. Preliminary Analysis

These are the preliminary analysis is based on the respond of the Head of Villages.



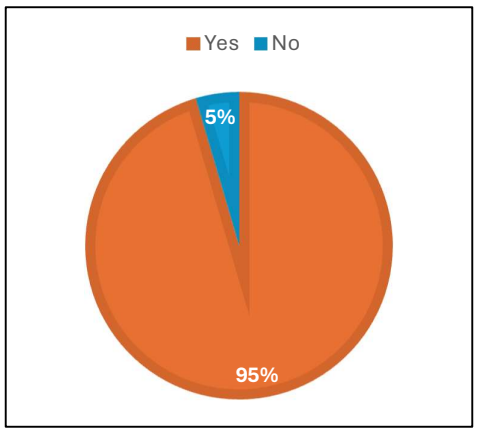
Note:

This preliminary perception analysis reflects only the perspectives of the village heads and may not fully represent the actual situation in the villages. A more comprehensive perception analysis will be possible once the results are combined with the perspectives of the DRR Teams and the community members.

The analysis was conducted based on survey results collected in Bahasa Indonesia, and the initial analysis was also carried out in Bahasa Indonesia. After this first analysis was translated into English, the next step involved re-analysing the data and drafting the preliminary report in English. This report will be translated back into Bahasa Indonesia as needed.

The perceptions of the village heads regarding the impact of the UNESCO-IOC Tsunami Ready Recognition on their communities are as follows:

D.1. Head of Village involvement in the implementation and submission of application for UNESCO-IOC Tsunami Ready Recognition.



Of the 22 villages that have been recognized as Tsunami Ready Communities, 21 current Village Heads were involved in the preparation and submission of the application for recognition from UNESCO-IOC.

The fact that 95% of Village Heads reported being involved in the preparation and submission of the UNESCO-IOC Tsunami Ready recognition application indicates a very high level of leadership engagement from the community. This leadership presence is critical, as Village Heads often serve as key decision-makers and coordinators of village-level initiatives. Their participation also implies a sense of ownership over the program. When Village Heads are engaged in the foundational stages, such as compiling required information, coordinating with stakeholders, and validating the community's preparedness measures, the program is more likely to be integrated into the village's long-term planning and governance structures. This helps ensure that the Tsunami Ready framework is not seen as an external requirement but as part of the village's own commitment to strengthening disaster preparedness.

Moreover, the Village Heads' direct involvement likely contributed to smoother coordination across community groups, such as the DRR Teams, local institutions, and residents, thereby improving the quality and completeness of the application. It also reinforces accountability, as leaders who are involved early tend to follow through with implementation, monitoring, and sustainability efforts after recognition is achieved.

The Village Head of Tapakis was not involved in the UNESCO-IOC Tsunami Ready application process because there had been a change in leadership. However, he is aware that his village has been recognized as a Tsunami Ready Community and acknowledges that this recognition has helped motivate the community to improve their tsunami awareness.
In summary, the involvement of Village Heads demonstrates strong leadership ownership, enhances program credibility at the community level, and provides a solid institutional foundation for sustaining tsunami preparedness initiatives beyond the recognition process.

D.2. Impact or progress in Disaster Risk Reduction (DRR) efforts in the community After receiving the recognition

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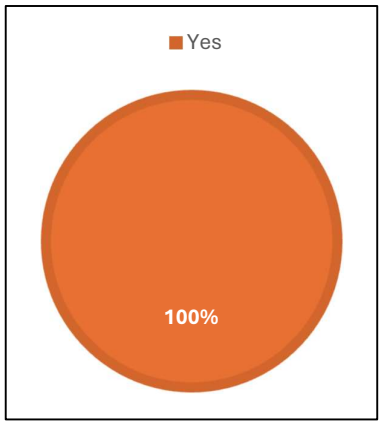


The unanimous agreement among Village Heads confirming that they observed impacts or progress in Disaster Risk Reduction (DRR) efforts following the UNESCO-IOC Tsunami Ready recognition. This indicates that the program has been both meaningful and transformative at the community level. Village Heads appear to perceive the program as accelerating momentum around preparedness, encouraging communities to prioritize tsunami readiness, maintain early warning systems, enhance evacuation procedures, and improve coordination across local institutions.

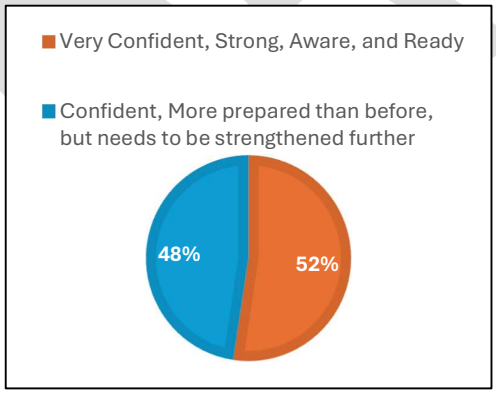
Furthermore, this underscores the credibility of the Tsunami Ready framework. When all local leaders agree on its benefits, it shows that the program resonates with community needs and aligns with local priorities. It also implies that the changes brought about by the program are visible, meaningful, and sustained, not temporary or superficial.

In summary, the consensus among Village Heads highlights the significant, positive, and widely recognized impact of the UNESCO-IOC Tsunami Ready program on disaster preparedness.

D.3. Confidence of Head of Village toward disaster risk reduction (DRR) efforts in the village after receiving the recognition

The responses reveal the level of confidence among Village Heads regarding the state of Disaster Risk Reduction (DRR) efforts in their communities following the receipt of the UNESCO-IOC Tsunami Ready recognition is high.

Out of 21 respondents, the findings indicate that the recognition has increased local leaders' trust in their preparedness systems.



The 11 Village Heads who reported being "Very Confident" reflect communities where DRR structures and processes are perceived to be functioning. They are very confident they have a strong system, high community awareness, and are very well prepared. This level of confidence suggests not only that the program's requirements were met but that these villages have the community's ability to respond to potential tsunami threats.

Meanwhile, 10 Village Heads indicated "Confident" also display a positive outlook but with a pragmatic understanding that DRR is an ongoing effort. Their responses reflect confidence in the systems already in place, while acknowledging that some components may still require strengthening. This realistic perspective suggests a mature and proactive approach to DRR, recognizing that continuous improvement is necessary to maintain readiness.

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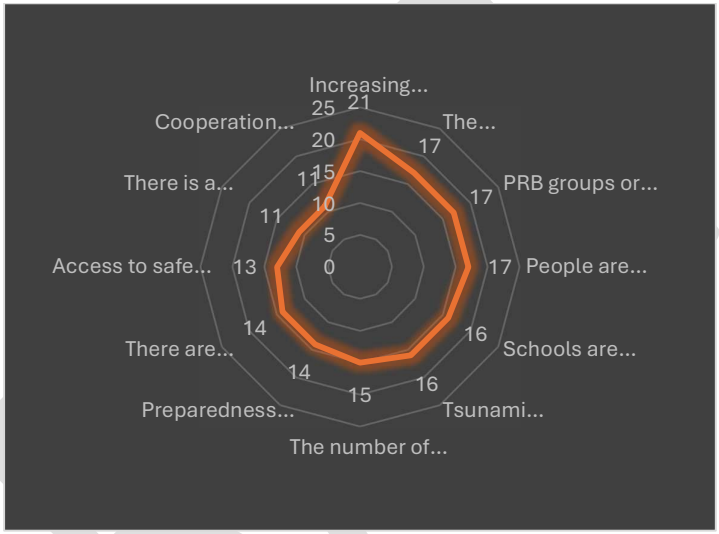
Taken together, the distribution of responses demonstrates that the Tsunami Ready recognition has not only validated existing preparedness capacities but has also enhanced local leaders' trust and motivation to maintain and advance the systems established. The fact that no Village Head expressed doubt or low confidence further indicates that the program has successfully instilled a sense of assurance, institutional stability, and forward-looking commitment to disaster risk reduction at the village level.

In conclusion, among Village Heads highlights both the perceived effectiveness of the Tsunami Ready initiative and the strong leadership engagement that supports sustained and long-term resilience within these communities.

D.4. Improvement in DRR after receiving tsunami ready recognition



The responses from Village Heads reveal a clear pattern of where the Tsunami Ready initiative has generated progress and where gaps remain. The distribution of answers highlights that while the program has been successful in elevating disaster awareness and strengthening community preparedness, there are still issues lack behind.

The improvement reported unanimously by all 21 Village Heads, is the significant increase in public awareness and understanding of tsunami risks and preparedness measures. This suggests that the Tsunami Ready program has been highly effective in its core objective: ensuring that communities know what to do before, during, and after a tsunami.

The recognition process typically requires multiple community touchpoints, such as awareness sessions, signage installation, evacuation mapping, and drills. The unanimous acknowledgement reflects that these interventions have successfully reached a broad segment of the population and are widely remembered and valued.

Alongside awareness, 17 Village Heads (81%) highlighted strengthened community institutions and increased public participation in preparedness activities, such as more frequent involvement in drills and simulations, active

and more accessible DRR teams, and greater familiarity with evacuation routes, information boards, and maps

These patterns indicate that the program has helped embed DRR mechanisms within the community. Active DRR groups and drills suggest that preparedness has become a community-driven activity, not just a requirement for recognition. This level of institutionalization is crucial for long-term resilience and ensures continuity.

However, the data also show that progress is uneven across several important dimensions. Slow Progress in cultural and behavioural change, only 11 Village Heads (52%) noticed a shift in community mindset or daily behaviour related to disaster preparedness. This might indicates that while knowledge has increased, internalization of preparedness as a lifestyle habit remains limited in nearly half of the villages. The score suggests that educational efforts may not yet have translated into long-term behavioural transformation, pointing to the need for continued engagement, regular simulations, and culturally tailored communication strategies.

Uneven External Cooperation and Partnerships, only 11 Village Heads (52%) observed improvements in collaboration with government agencies, NGOs, or other external stakeholders. Almost half of the villages did not perceive any strengthening in partnerships, highlighting a potential vulnerability in sustaining the Tsunami Ready status. Partnerships are essential for long-term sustainability and continuity. The lack of consistent external engagement may place some communities at risk of stagnation once the recognition phase ends.

Limited Progress in Accessibility and Safe-zone Infrastructure, 13 Village Heads (62%) reported improvements in access to safe zones, including inclusivity considerations for people with disabilities. This marks a weaker performance compared to the high scores in awareness (81%). It suggests that physical and infrastructural investments have not kept pace with social and institutional improvements. Ensuring accessibility to evacuation routes and safe zones is a core requirement for equitable disaster preparedness. The relatively low confidence in this area calls for more systematic assessments of infrastructure gaps, collaboration with public works departments, and targeted investment to improve inclusivity.

The collective findings show that the Tsunami Ready recognition has been successful in strengthening awareness and activating community-level institutions two foundational components of effective preparedness. However, the weaker areas indicate that knowledge is spreading faster than behavioural change, community mobilization is stronger than inter-institutional cooperation, and institutional readiness is advancing faster than infrastructural inclusivity. These patterns suggest that while the Tsunami Ready program has set a strong foundation, its long-term impact will depend on sustained community engagement, continued capacity-building, stronger partnerships, and investment in accessible infrastructure.
In summary, the program is functioning as a catalyst for awareness and institutional strengthening, but further effort is needed to transform this momentum into deeper cultural shifts, equitable access, and resilient partnerships.

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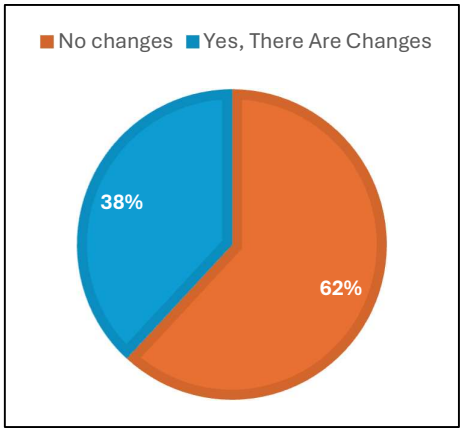
D.5. Structural or organizational changes of the DRR Team that occurred after being recognized as a Tsunami Preparedness community by UNESCO-IOC



This analysis based on two questions, on indicating if there are changes or not and second to describe the structural or organizational changes that took place. No change in the structure or organization of their DRR units might be indicating sustainability and stability. While structural stability is a good indicator, it may also indicate missed opportunities for institutional strengthening or formalization of roles and responsibilities after the recognition.

Out of 21 Village Heads, the majority of respondents 13 out of 21 Village Heads (62%) reported no change in the structure or organization of their DRR units following UNESCO–IOC recognition. This suggests that many villages already had functional and adequate organizational arrangements in place prior to recognition, or that the recognition itself did not trigger a formal restructuring process.

Eight Village Heads reported making changes to the structure or organization of their Disaster Risk Reduction (DRR) units after receiving Tsunami Ready recognition. Among those who made changes, the most common adjustment involved renewing team membership and leadership positions. This shows that structural adjustments were largely aimed at refreshing and strengthening human resources rather than creating entirely new units. The focus was on ensuring that operational teams have newer, more active, and more motivated members.

Only a small subset of the 8 who initiated changes implemented more substantial modifications, such as strengthening existing institutional mandates or integrating DRR functions with other local governance structures. These more significant reforms indicate a deeper effort to institutionalize disaster risk management responsibilities rather than simply adjusting personnel.

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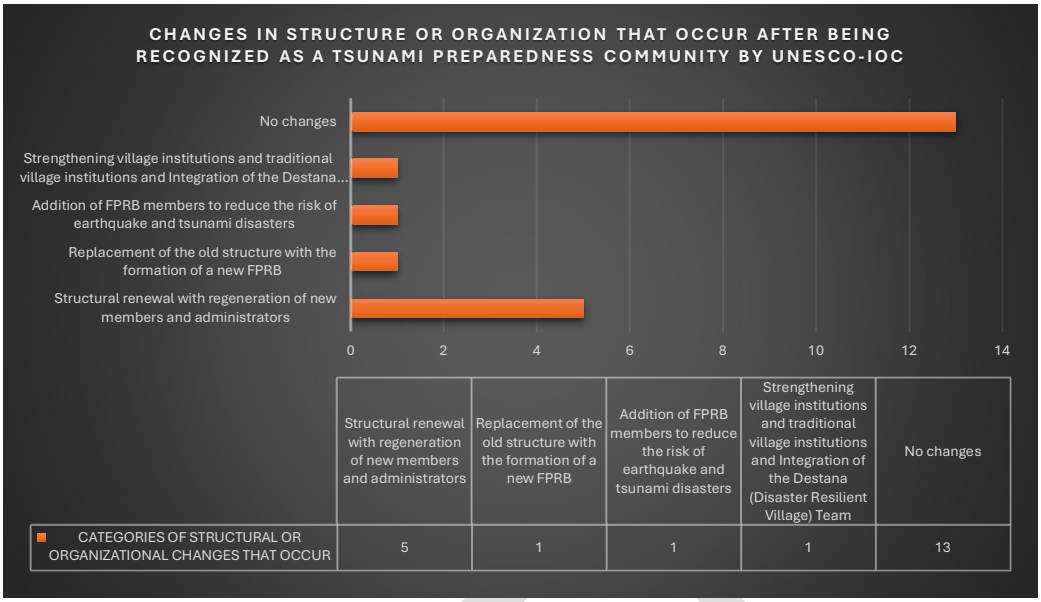
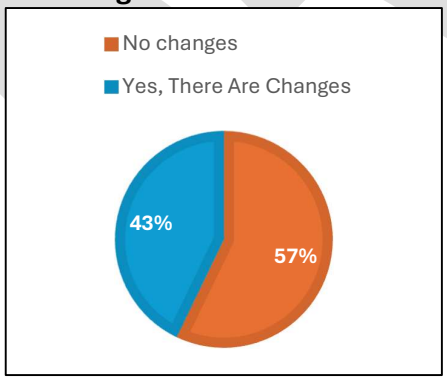


The changes appear fragmented and limited in scope moving toward establishing stronger, more formalized institutional mandates, such as strengthening emergency response teams or formally enhancing DRR unit functions. The finding shows that while most villages maintained their existing DRR organizational structures after being recognized as a Tsunami Ready Community, a significant minority introduced meaningful changes. These proactive adjustments indicate a positive institutional response to recognition and highlight opportunities for capacity strengthening. To build consistent DRR team across all villages, there could be facilitation of sharing of learning session among villages would be beneficial.

D.6. Policy changes or additions related to Disaster Risk Reduction after receiving the UNESCO-IOC Recognition



This analysis based on two questions, on indicating if there are changes or not on policy related to DRR and second is for the respondent to explain what are the changes. A balanced landscape that while some villages are advancing through policy adjustments, others are choosing to focus on maintaining consistent operations, both of which are valid pathways toward sustaining community-level preparedness and resilience.

Out of 21 Village Heads, 12 Village Heads (57%) reported no policy changes. This might indicate that existing policies are considered functional and adequate for current preparedness needs. Their focus might be on strengthening practice and implementation rather than altering policies, an approach that can still support continuity and stability in DRR operations in the village.

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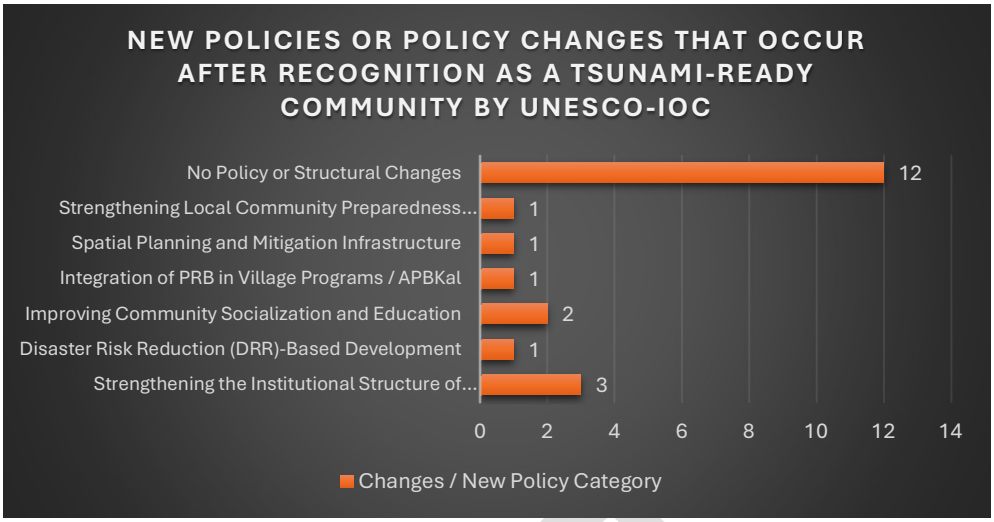

Nine Village Heads reported that their villages have introduced new or revised DRR-related policies following UNESCO–IOC recognition. The finding showed that the policy changes are more toward institutional strengthening. This demonstrates a positive institutional impact, where recognition has strengthened the legitimacy of DRR efforts and encouraged the integration of preparedness measures into local governance frameworks. Such policy adjustments reflect a strengthened commitment to sustaining the Tsunami Ready program beyond its initial implementation phase.

Among the villages that initiated changes, more than half focused on refreshing personnel and updating team membership, rather than creating new institutions. This reflects a practical and adaptive strategy centered on strengthening human resources, improving capacity, and enhancing community outreach. Such personnel-focused changes highlight a commitment to maintaining active, responsive, and motivated disaster preparedness teams.

Overall, the pattern of changes across villages, ranging from personnel renewal to institutional strengthening, illustrates diverse approaches to improving tsunami preparedness. Even for villages that did not enact policy changes, their choice to maintain existing structures can reflect a belief in the stability, relevance, and effectiveness of their current DRR arrangements. Continued encouragement and support can help these villages gradually formalize improvements when they see the timing or capacity as appropriate.

D.7. Changes in the Disaster Risk Reduction budget in your village after being recognized as a Tsunami Preparedness Community by UNESCO-IOC

This analysis based on two questions, on indicating if there are any change in the Disaster Risk Reduction (DRR) budget and second is for the respondent to explain the reasons for the increase or decrease in the DRR budget. The results reveal mixed trends, with nearly half of the villages increasing their DRR budget while the remainder maintained existing allocations due to fiscal constraints. There are no respond indicating there is a decrease in the DRR budget in the village.

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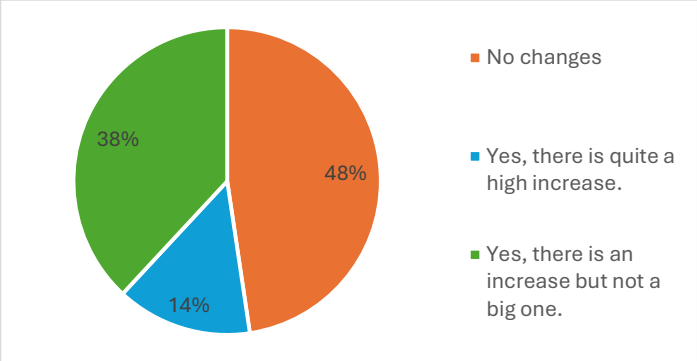
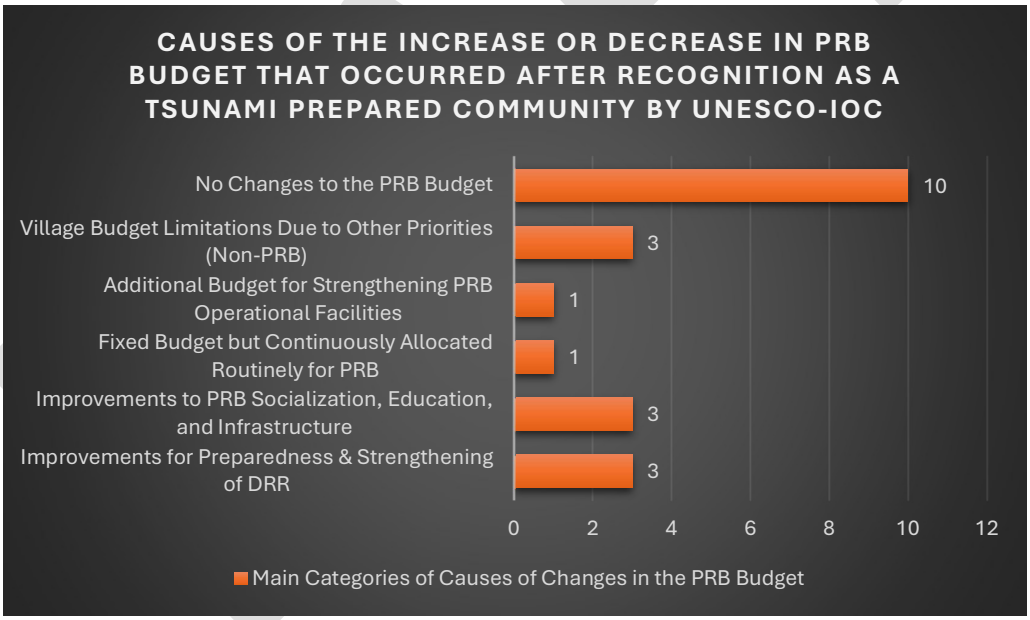


Out of 21 Village Heads, 11 (52%) reported an increase or adjustment in the Disaster Risk Reduction (DRR) budget following Tsunami Ready recognition, while 10 (48%) reported no change. This shows that although some villages have started to strengthen financial support for DRR programs, nearly half remain static, indicating that DRR has not yet become a top priority in village budget planning.

This increase or adjustment in the budget might indicates that the recognition has acted as a catalyst for strengthening internal financial commitment and prioritizing preparedness at the village level. The increase in funds suggests a growing acknowledgment of the importance of maintaining and improving readiness in areas such as training, equipment, community outreach, and response mechanisms.



Among the villages that increased their budgets, some focused on community preparedness and mitigation infrastructure, such as evacuation routes, educational systems, and disaster information boards. This indicates that recognition encourages budgeting not only for emergency response but also for preventive and preparedness measures, highlighting an understanding of the importance of real resources for sustainable readiness.

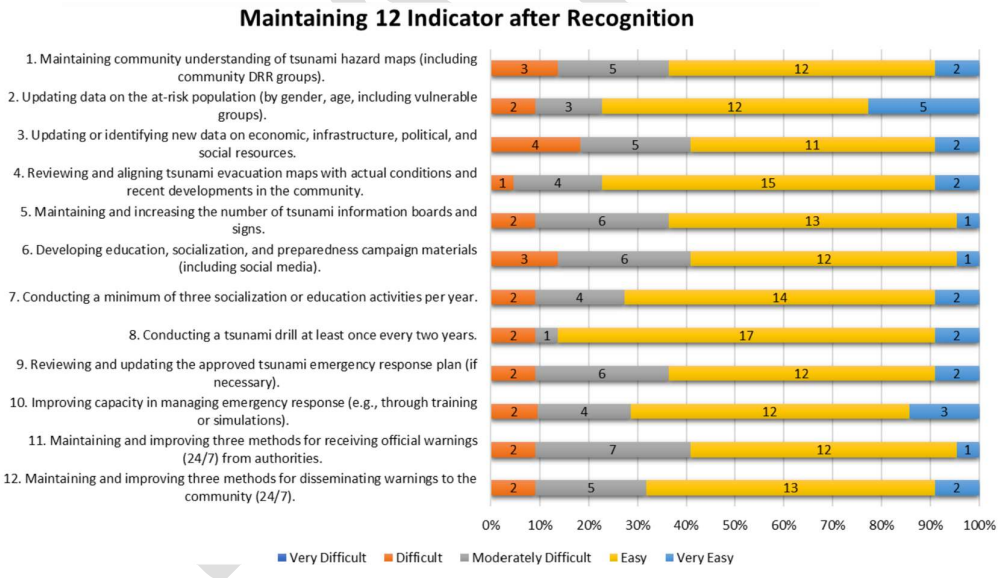
A few villages maintain a consistent, routine budget for DRR activities each year without significant spikes. This approach emphasizes long-term sustainability, focusing on operational needs, internal training, and capacity-building rather than short-term increases, serving as a model for stable DRR program management.

Conversely, some villages reported challenges in increasing the DRR budget due to competing priorities, such as food security, public health, and infrastructure development. Limited fiscal capacity and dependency on central programs make it difficult for DRR to secure a more strategic position in overall village planning.

Overall, the allocation of DRR budgets is still fragmented and uneven: Some focus on infrastructure and evacuation facilities while others prioritize human resource capacity and operational tools. This lack of an integrated approach indicates the absence of technical guidance to ensure that DRR budgets are used effectively and produce measurable improvements in preparedness under the tsunami ready framework.

D.8. Level of difficulty in maintaining and/or improving the Tsunami Ready indicators within the community after receiving the UNESCO-IOC Recognition

The responses of the Village Heads reveal mixed but insightful patterns regarding how easy or difficult it is to maintain and/or improve the Tsunami Ready indicators within the community after receiving the UNESCO-IOC Recognition. While most leaders feel confident in sustaining and improving the indicators, a meaningful minority signals ongoing challenges that could affect long-term preparedness.



1. **Maintaining community understanding of tsunami hazard maps.** Most Village Leaders find it easy to maintain the tsunami hazard knowledge, 2 rating Very Easy, 12 rating Easy, and 5 rating Moderately Easy indicate that reinforcing public understanding of tsunami hazard maps is relatively manageable. This suggests several underlying dynamics:
    - Tsunami hazard did not change often; the knowledge stayed within many communities during the recognition process. However, this does not reflect continuity to newer community members.

- The existence of hazard maps is likely visible, accessible, and regularly referenced, making it easier for community members to retain essential information.
- The regular activity might help sustain awareness without requiring intensive efforts.
- In some villages, the tsunami hazard context may be well-known due to past events or high exposure, making reminders feel intuitive rather than burdensome.

The strong pattern indicates that the Tsunami Ready program has successfully established a baseline understanding of tsunami hazard that can be maintained with routine communication and ongoing visibility.

However, 3 Village Heads rating the task as difficult that may stem from several village-level realities:

- Maintaining public understanding of hazard maps is not straightforward.
- Villages with significant migration, seasonal workers, or tourism may struggle to keep newcomers informed, especially if hazard maps are not consistently introduced.
- Maps require spatial understanding, and in some contexts, residents may need repeated explanations to fully grasp risk zones, evacuation paths, and safe areas.
- For some communities, economic pressures take priority, making disaster preparedness a secondary concern except during awareness campaigns.
- Hazard maps that are faded, unclear, or not displayed in strategic locations can lead to declining public understanding over time.

These difficulties underline the reality that maintaining hazard-map knowledge is not a one-time effort but requires continuous engagement and community-friendly communication methods.

This finding reinforces the need for continuous socialization, periodic refreshers, and improved visibility of hazard information. While the UNESCO-IOC Tsunami Ready program has successfully laid a foundation of hazard-map understanding in most communities, the challenges is to monitor closely, as hazard-map literacy is a core component of effective tsunami preparedness.

2. **Maintain and update information on people at risk, including information segregated by gender, age, and vulnerable populations**
The responses from Village Heads regarding the maintenance and updating of data on people at risk, including information segregated by gender, age, and vulnerable populations show a clear pattern of strengths as well as areas needing targeted attention.

   The overall pattern is most villages are capable of effectively maintaining and updating risk population data. A minority of villages face capacity or systemic challenges, which could impact the effectiveness of the tsunami ready. The difficulties might be both the logistical and technical aspects of maintaining up-to-date information.

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A majority of 17 out of 22 Village Heads rated this task as Easy (15) or Very Easy (2), indicating that most villages have established processes and systems for tracking vulnerable populations and maintaining up-to-date records. These villages demonstrate strong administrative capacity and systematic approaches to data collection. They are likely using structured registries, regular community surveys, or active coordination with other section within the village administration. Their confidence suggests that vulnerable populations are being accurately identified.

Five Head of Village reported moderately difficult and difficult. These villages may face obstacles in consistently updating demographic information. This difficult level indicates that although some progress is being made, gaps may exist such as in accuracy, frequency of updates, or coverage of vulnerable groups. Potential causes can be due to lack of standardized data collection processes, inadequate coordination with other social service section of the village, or limited technical knowledge in disaggregating data by gender, age, or vulnerability. The lack of update of a tsunami risk population could compromise the ability to identify at-risk populations for effective evacuation planning, resource allocation, support during disasters or emergency interventions particularly for vulnerable populations.

This highlights the need for ongoing monitoring and peer-learning opportunities. Villages that are performing well could serve as models, sharing best practices and practical strategies with those facing difficulties.

3. **Update or identify new data on economic, infrastructure, political, and social resources.**
   The analysis indicates that 13 out of 22 Village Heads rated the process of updating and identifying new information as Easy (11) or Very Easy (2), reflecting an encouraging trend. These villages might possess good administrative and effective coordination mechanisms and reliable resource capacity to manage data updates related to economic, infrastructure, political, and social resources. This positive pattern suggests that more than half of the surveyed villages might have a level of administrative essential for ensuring accurate information flows and data management.

   Despite these strengths, the data also points to persistent challenges in 9 villages having varying degrees of difficulty in maintaining updated information. Five Villages reported the process as Quite Difficult. This indicates having obstacles that maybe caused by limited staff capacity, irregular data reporting from community units, lack of data collection tools, or inconsistent coordination among administrative departments. While these challenges do not represent critical issues, it suggests the need for sustained monitoring and support to ensure these villages can reach the standards as tsunami ready community.

   A more critical level of concern emerges from the four villages that are likely face significant structural or operational constraints in maintaining updated information. Such constraints may hinder the accuracy and timeliness of data updates and could negatively impact local planning and

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responsiveness to emergency situation. The ongoing difficulties could contribute to weaken the reliability of the level of tsunami ready.

This finding highlight both encouraging progress and notable challenges in village-level data management. While the majority of Village Heads report ease in updating key information, the identified weak points underline the need for support and assistance. Strengthening the capabilities of the villages experiencing difficulties will to ensure these villages can maintain the standards as tsunami ready community.

4. **Review and match tsunami evacuation maps with actual conditions and recent developments in the community.**
   The data reveals a majority of ease, with 17 out of 22 Village Heads describing the process of reviewing and validating evacuation maps as Easy (15) or Very Easy (2). This strong pattern suggests that most villages have their monitoring and updating development information and aligning with the evacuation maps. This response might also demonstrate adequate awareness of local risks, familiarity with evacuation routes, and capacity to identify changes such as new buildings, infrastructure, or population shifts.

   Despite the dominant positive respond, 5 villages highlight meaningful challenges. This indicates that while these villages may possess some awareness of local conditions, they face obstacles that hinder effective map validation. Possible challenges may include rapid changes in land use or new construction that outpace map updates, limited technical capacity or personnel, and/or weak coordination among relevant agencies link with community development.

   The findings highlight a generally good capacity to validate evacuation routes and adjust maps in response to local changes. However, the presence of villages experiencing moderate to significant difficulty underscores the need for technical assistance and regular supervision and follow-up to support the coordination between village authorities and village disaster management team.

   Addressing the gaps in reviewing and validating tsunami evacuation maps against real on-the-ground conditions and new developments is essential to ensure consistent disaster readiness and to avoid disparities in community safety should a tsunami event occur.

5. **Maintaining and increasing the number of tsunami information boards and signage.**
   The results indicate 14 out of 21 Village Heads reporting that maintaining and increasing tsunami information boards is either Easy (13) or Very Easy (1). This may suggest that more than half of the surveyed villages performed well in maintaining this tsunami ready requirement and have sufficient understanding of the importance of tsunami information boards,

   Despite the strong majority expressing ease, 8 reported varying levels of difficulty. This highlights a meaningful portion of villages that face constraints requiring sustained attention. 6 Villages Reporting moderate Difficult and two villages identified the task as Difficult. This might suggest the presence of operational or resource-related challenges that hinder

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consistent maintenance and expansion of tsunami signage, such as limited budget for replacing damaged or outdated boards, of even to install new ones, lack of technical capacity to produce or maintain signage, or even limited awareness or community engagement regarding signage importance

The ability to maintain clear, visible, and functional tsunami information boards is a cornerstone of effective community preparedness. The findings suggest that while many villages are on track, the challenges faced by a substantial minority cannot be overlooked. Gaps in signage maintenance may compromise the clarity of evacuation instructions, slow community response times, and reduce overall safety during emergencies. Ensuring that all villages can maintain and expand tsunami signage is essential for strengthening community preparedness and safeguarding vulnerable populations in tsunami-prone areas.

6. **Producing public outreach, awareness, and education materials (both existing and new), including via social media.**
The findings show a majority pattern of ease, with 13 out of 22 Village Heads reporting that producing educational and outreach materials is Easy (12) or Very Easy (1). This suggests that many villages are increasingly familiar with communication tools, content development, and methods for disseminating information to their communities.

   This positive trend suggests that a considerable number of villages have public outreach activities into their disaster preparedness efforts. Reason for this might due to a well-established partnership with external agencies that support content development and/or utilize social media platforms for community awareness.

   Despite the overall encouraging pattern, 9 out reported varying degrees of difficulty, highlighting a significant capacity gap in communication and educational material development. Six villages reported the task as Moderately Difficult and 3 villages reported that producing outreach and education materials is Difficult. These challenges may be associated with limited human resources capable of content development, limited experience in crafting clear, engaging public messaging and campaign, restricted access to technology (computers, printers, internet), budget constraints for producing printed materials.

   Effective public outreach and education are essential components of disaster risk reduction, ensuring that communities receive timely and understandable information. The capacity gaps identified in nearly half of the villages could limit the effectiveness of preparedness campaigns, potentially reduce community awareness and weaken local disaster resilience.

7. **Conducting at least three outreach or educational activities per year.**
The data reveals a majority of ease, with 16 out of 22 Village Heads reporting that conducting three or more annual outreach or educational activities is Easy (14) or Very Easy (2). This indicates that a substantial proportion of villages are already actively engaged in community outreach and have sufficient organizational structures to sustain regular

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educational programming. This might suggest the village has established routines for public awareness and education, has experience delivering community meetings, workshops, or awareness campaigns, and an understanding of the importance of regular education efforts, particularly related to tsunami risk reduction.

Despite the strong overall trend, responses from 6 Village Heads highlight areas where additional support are necessary. Four villages rated the task as moderately Difficult and 2 as difficult. These villages might be experiencing budgetary constraints affecting event preparation or logistics, lower community participation levels, requiring additional mobilization efforts, or competing priorities or administrative burdens that reduce the capacity to organize regular outreach.

These villages require support and technical assistance to ensure they can meet outreach expectations and strengthen community preparedness as part of the Tsunami Ready Community. Without regular outreach, these communities may have lower awareness levels, reduced preparedness, and limited understanding of risk-reduction practices.

8. **Conducting a tsunami exercise at least once every two years.**
   The findings indicate a majority of ease, with 19 out of 22 Village Heads reporting that conducting a tsunami exercise is either Easy (17) or Very Easy (2). This overwhelmingly positive response suggests that tsunami simulation activities have become well-integrated into village-level disaster management routines. Two villages classified the activity as Very Easy, and 17 villages rated the task as Easy. This might indicate that they have good community awareness and participation, good coordination with emergency services and disaster agencies, experience organizing community mobilization efforts, and established logistical arrangements and experience in conducting drills.

   Despite the strong overall trend, 3 villages face challenges that hinder their ability to conduct regular tsunami exercises. While the number is small, these carries the necessary to continue monitor to ensure drills can be carried out effectively and consistently. Failing to do exercise might lead to less prepared and slower to respond effectively during a tsunami emergency. Their challenges might be among others: logistical constraints, limited staff availability or technical knowledge in exercise planning, low community participation or awareness, lack of resources (funding), and/or insufficient support from district-level disaster agencies.

9. **Maintaining, reviewing, and/or updating the approved tsunami emergency response plan (if necessary).**
   The findings show a majority pattern of ease, with 14 out of 22 Village Heads reporting that maintaining, reviewing, or updating the approved tsunami emergency response plan is Easy (12) or Very Easy (2). This suggests that more than half of the villages have administrative capacity and understanding of the plan's purpose and content. This might indicate that there are familiarity with the emergency response plan, routine practice of updating or reviewing the plan in line with changing local conditions, and awareness of when updates are required due to infrastructure, demographic, or environmental changes.

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These results demonstrate meaningful progress in ensuring that emergency response plans remain living documents rather than static forms.

Despite the majority's positive perception, 8 out of 22 Village Heads reported varying degrees of difficulty (six moderately difficult and 2 as difficult). These findings highlight capacity gaps that could undermine effective tsunami emergency response. These difficulties might reflect the challenges such as: limited technical understanding of the plan's, minimal technical capacity or trained personnel, resource constraints for conducting internal assessments or consultations, and/or rapid development or community changes that overwhelm the ability to keep plans updated. These villages might require technical assistance, step-by-step facilitation for reviewing and updating their plans, and capacity-building interventions to ensure long-term sustainability.

While the majority of villages show encouraging capacity and confidence in maintaining the plan, the challenges faced by the villages must not be overlooked. A well-maintained and regularly reviewed and updated (if necessary) tsunami emergency response plan is essential the village tsunami ready. It ensures clear roles, responsibilities, allows for the integration of new infrastructure, population changes, and evacuation procedures.

10. **Continuously improving the capacity to manage emergency response operations (e.g., through training or exercises).**
The results show a positive trend, with a majority 15 out of 21 Village Heads indicating that efforts to improve emergency response capacity are Easy (12) or Very Easy (3). This demonstrates a widespread confidence in the ability to strengthen and maintain essential emergency readiness systems. This might suggest that these villages possess: active partnerships with the local disaster management agencies, sufficient or well-maintained response equipment and infrastructure, training programs or routine drills that build staff readiness, and/or reasonable access to resources.

    This pattern of ease indicates that many villages already have established foundations for disaster preparedness and are capable of improving their capabilities.

    Despite the overall positive perception, 6 out of 21 villages expressed difficulty in strengthening their emergency response capacity (moderately difficult 4 and difficult 2). These challenges highlight important gaps in preparedness that need attention. The difficulties might due to these challenges: limited human resources or lack of personnel with specialized training, restricted resources in sustaining regular training or drills as well as to purchase or upgrade necessary equipment, and/or limited access to external support programs.

    The ability to continuously improve capacity in emergency response operations is central to building resilience, particularly in tsunami-prone areas. Villages that can strengthen their human resources, update equipment, and maintain response infrastructure (i.e. tsunami evacuation

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place, sign, etc) are far better positioned to respond effectively during emergencies.

While the majority of villages demonstrate confidence and capability in this area, the challenges faced by the remaining villages highlight important vulnerabilities. Without intervention, these gaps could delay emergency response, reduce coordination effectiveness, and increase community risk during disaster events.

11. **Maintaining and/or improving three redundant and reliable methods to receive official warnings (24/7) from the authorities.**
Reliable and redundant channels for receiving official tsunami warnings are foundational to effective community preparedness. If village authorities cannot ensure 24/7 reception of alerts, evacuation decisions may be delayed, reducing the safety of residents in vulnerable coastal areas.

The findings indicate a majority trend of ease, with 13 out of 22 Village Heads reporting that maintaining or improving these warning reception methods is Easy (12) or Very Easy (1). This demonstrates that more than half of the surveyed villages feel confident in their current communication reliability and redundancy. This perception might indicate that: there is existance of organizational structure in the village for receiving warning information or functional network of village DRR officials who monitor warning messages, having effective internet and telecommunications connectivity, well-established use of multiple channels such as SMS and WhatsApp groups, and familiarity among DRR village staff with NTWC (BMKG) warning communication and product.

This positive majority demonstrates that a significant number of villages have established or strengthened the systems needed to ensure reliable, 24/7 access to tsunami warning information.

Despite the encouraging overall trend, 9 out of 22 villages reported challenges that may compromise their ability to reliably receive official tsunami warnings through multiple redundant channels. 7 village indicate moderately difficult and 2 as difficult. Their difficulties reflect the challenges such as: poor, limited, or unreliable access to internet or mobile networks, difficulties in maintaining multiple active communication channels simultaneously, lack of trained personnel to manage or monitor warning channels 24/7, and/or lack of familiarity with NTWC (BMKG) warning communication and product.

These villages require monitoring and support, particularly in strengthening and improving local capacity of village DRR staff to manage multiple platforms reliably. Without such support, these villages are at higher risk of missing time-critical notifications during emergencies.

The strong capacity demonstrated by many villages is encouraging, but the challenges faced by nearly half of the respondents highlight the need for continuous support. Addressing these gaps is critical to ensure all communities, regardless of geographic, technological, or resource limitations, can receive timely and accurate warnings.

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12. **Maintaining and/or improving three redundant and reliable methods to disseminate warnings (24/7) to the community.**
Redundant and reliable village-level dissemination of tsunami warnings is a critical component of effective early warning systems. Even if warnings are received promptly from the authorities, delays in communicating the message to the public can significantly reduce evacuation time and compromise safety.

The findings show a majority pattern of ease, with 15 out of 22 Village Heads reporting that maintaining or improving multiple community warning dissemination methods is Easy (13) or Very Easy (2). This indicates that most villages have established or strengthened their internal communication systems and are confident in their ability to quickly circulate official tsunami warnings once received. This easiness might be duet to having clear internal protocols for distributing warning messages, reliable access to tools such as village loudspeakers, traditional communication tools, and community networks (WhatsApp or SMS groups involving key community representatives), DRR staff who are experienced and familiarity with rapid communication procedures,

This strong majority suggests that warning dissemination mechanisms are well-integrated into village preparedness systems.

Despite the encouraging overall trend, 7 out of 22 Village Heads reported challenges that could impede timely and effective warning dissemination. Five Village Heads rated the task as moderately Difficult and 2 as difficult. This might indicate the challenge such as: limited coverage or reliability of mobile networks, affecting SMS and WhatsApp dissemination, limited DRR staff to manage 24/7 dissemination responsibilities, challenges reaching residents in remote or dispersed settlements

These villages require monitoring and support, such as capacity-building for DRR staff, improving and strengthening warning distribution means to community networks at the neighbourhood level.

While many villages show readiness and confident capacity, the challenges reported by several villages highlight potential vulnerabilities. Gaps in communication could slow response times, particularly during nighttime or when key staff are unavailable.

D.9. The benefits (or disadvantages) of the UNESCO-IOC Tsunami Ready recognition to the Community.
This part was a open ended question where Village Heads were ask to give their views on the benefits (or disadvantages) of the UNESCO-IOC Tsunami Ready recognition to the Community. All 21 Village Heads acknowledged both the direct and indirect benefits of being recognized as a Tsunami Ready Community by UNESCO-IOC. None of the respondents stated that the program was without value, reflecting a unanimous perception of its positive impact. There were variety of answers, such as:

- Through the Tsunami Ready, the village now has a clearer understanding of what actions to take, enhancing the safety of residents to a greater extent.

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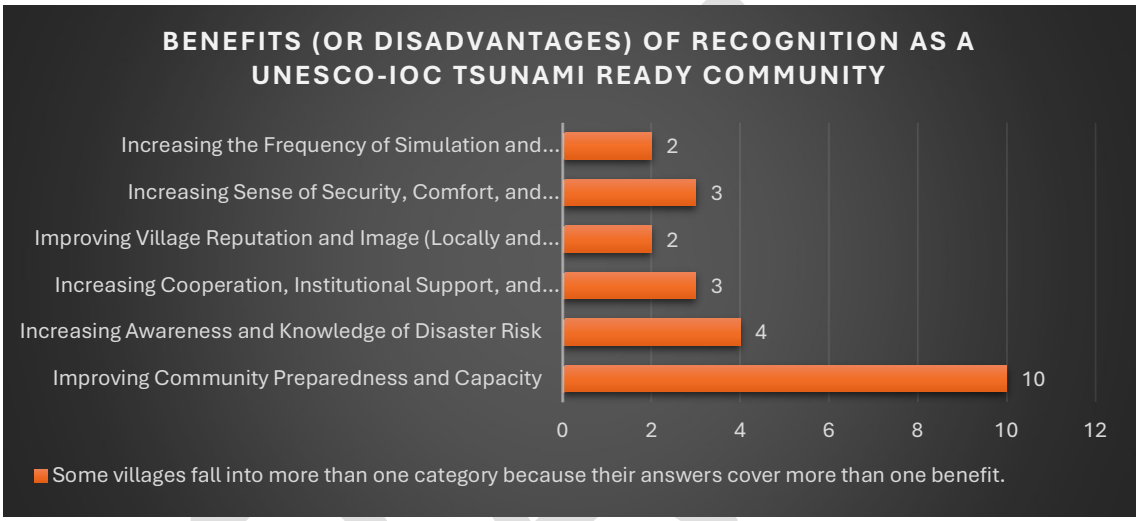
- The village has become more well-known as a prepared community.
- People have become more aware of tsunamis; whenever a strong earthquake occurs, regardless of its magnitude, people immediately carry out self-evacuation as the result of awareness-raising activities conducted through village programs.
- Regular tsunami drills in communities and schools have increased.
- Residents can understand steps to take and the location of the TES (Temporary Tsunami Shelter), TEA (Final Tsunami Evacuation Areas), and the implementation of earthquake and tsunami drills and awareness campaigns from an early stage.
- More institutions have come to collaborate with the village.



For the purpose of analysis, the answers are categorized as follows:

- Increased Public Awareness and Knowledge: Significant benefit reported was the rise in public awareness and understanding of disaster risks. Residents have become more informed about tsunami hazards, mitigation measures, and in some cases, began taking self-evacuation measures without waiting for official instructions. This internalization of preparedness reflects a key success indicator of the program, showing that communities are adopting disaster readiness as part of daily life.

- Enhanced Inter-Agency Collaboration: Some respondents highlighted improvements in cooperation between governmental and non-governmental agencies. The recognition has fostered joint participation in training, outreach, and local preparedness programs. This collaborative environment strengthens the community as a learning hub for disaster mitigation and promotes active involvement in preparedness activities.

- Village Reputation and Resource Access: Recognition also provides reputational benefits, enhancing visibility at national and international levels. This increased attention can lead to greater access to external resources, including infrastructure support and development assistance, demonstrating that preparedness efforts can also strengthen a community's broader profile and opportunities.

- Social Responsibility and Sense of Security: The program has reinforced social cohesion by fostering a sense of collective responsibility and security. Both residents and visitors experience greater confidence in the community's ability to respond to disasters. Preparedness is increasingly becoming part of the community's identity and culture, highlighting the social dimension of disaster mitigation.
- Sustained Disaster Education and Exercises: Finally, recognition encourages more frequent disaster simulations and educational activities in schools and community settings. This ensures the continuity of learning and preparedness, forming a critical foundation for maintaining an emergency response culture in coastal communities.

E. Next Steps and Follow up

Following the analysis of the survey responses from the Village Heads, the next step will be to analyse the responses from the Community DRR Heads and team members, representing the perspective of community members. Given the volume of information collected, this analysis will require additional time. Once all responses have been thoroughly examined, a more comprehensive understanding of community perceptions regarding the impact of the UNESCO-IOC Tsunami Ready Recognition can be developed.

F. The Survey Questionnaires

The survey questionnaires use to gather information from the Head of Villages are in Annex 1.

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