Report on Pilot Feedback Survey on the Implementation of the UNESCO-IOC Tsunami Ready Recognition Programme in ICG/CARIBE-EWS

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Executive Summary

Tsunamis are no-notice, fast-onset ocean hazards that can cause catastrophic humanitarian, social, economic, and physical impacts. To mitigate these risks, the UNESCO-IOC Assembly approved the Tsunami Ready Recognition Programme in 2022 with guidelines and indicators to minimize the loss of life, livelihoods, and property to these hazards. This project aims to evaluate the implementation process and results of a pilot feedback survey on the effectiveness of the Tsunami Ready program in facilitating tsunami preparedness and response. With the feedback from its administration among ICG/CARIBE-EWS Tsunami Ready communities who have received their recognition or renewal since 2019, the project:

- Affirms the survey's effectiveness as a feedback mechanism.
- Reveals the Tsunami Ready program's strengths in public outreach, tsunami education, and risk assessment efforts.
- Identifies the program's gaps in communication, data accuracy and collection, and resource mobilization.
- Demonstrates that more concise instructions and question language are needed to yield comprehensive feedback from the survey.
- Recommends the establishment of a national Tsunami Ready contact.
- Confirms the need to implement the survey upon community recognition and develop an annual reporting mechanism on program indicators.

These findings are instrumental in ensuring the successful monitoring and improvement of the program's efficacy and progress among all ICGs, helping to inform future implementations of the survey and evaluations of the Tsunami Ready program. Ultimately, this project and the efforts that will follow it contribute to one of the two overarching goals of the UNESCO-IOC Ocean Decade Tsunami Programme: "Ensure 100 percent of communities at risk of tsunami are prepared for and resilient to tsunamis by 2030 through efforts like the UNESCO IOC Tsunami Ready Programme."

1 Introduction

In 2021, the UNESCO-IOC Assembly established the Ocean Decade Tsunami Programme (ODTP) in an effort to ensure 100 percent of communities at risk of tsunami across the four ICG regions (i.e., Pacific, Caribbean and Adjacent Regions, Indian Ocean, and North-eastern Atlantic the Mediterranean and connected seas) are prepared for and resilient to tsunamis by 2030 through efforts like the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP). The TRRP, after being piloted for over 11 years and starting in the Caribbean, was officially established in 2022. As a globally pursued initiative, UNESCO-IOC TRRP bolsters tsunami preparedness and response across coastal communities, encouraging communities to collectively act to build resilience under the denotation 'Tsunami Ready.' Such an endeavor is therefore crucial to achieving "A Safe Ocean" with its vision to advance the protection of life and livelihoods from ocean hazards, in line with the 2030 Agenda for Sustainable Development.

1.1 Conditions for Tsunami Ready Recognition Programme Implementation

Successful implementation of the Tsunami Ready Recognition Programme depends on a collaborative effort across national and local agencies, authorities, scientists, community leaders, and the public to mobilize resources in fulfillment of the 12 key indicators (*in the table below*).

	TSUNAMI READY INDICATORS
I	**ASSESSMENT (ASSESS)**
1	**ASSESS-1**. Tsunami hazard zones are mapped and designated.
2	**ASSESS-2**. The number of people at risk in the tsunami hazard zone is estimated.
3	**ASSESS-3**. Economic, infrastructural, political, and social resources are identified.
II	**PREPAREDNESS (PREP)**
4	**PREP-1**. Easily understood tsunami evacuation maps are approved.
5	**PREP-2**. Tsunami information including signage is publicly displayed.
6	**PREP-3**. Outreach and public awareness and education resources are available and distributed.
7	**PREP-4**. Outreach or educational activities are held at least three times a year.
8	**PREP-5**: A community tsunami exercise is conducted at least every two years.
III	**RESPONSE (RESP)**
9	**RESP-1**. A community tsunami emergency response plan is approved.
10	**RESP-2**. The capacity to manage emergency response operations during a tsunami is in place.
11	**RESP-3**. Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place.
12	**RESP-4**. Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place.

Figure 1. Tsunami Ready Recognition Programme Indicators.

Together, the 12 Tsunami Ready Recognition Programme Indicators facilitate the establishment of a consistent standard to assess and mitigate the risk, preparedness, and response to tsunamis. In obtaining feedback on the effectiveness and difficulty of implementing such a programme, it should be noted that a community's sustainment of the Tsunami Ready condition therefore hinges on its capacity building, public engagement, and funding capabilities— all key challenges to sustainable development.

1	**ASSESS-1**. Tsunami hazard zones are mapped and designated.

Inundation modeling and mapping efforts, supported by either local or external experts and resources, culminate in a tsunami inundation map depicting the tsunami hazard zone. Such maps are utilized as a basis for tsunami evacuation mapping and planning.

2	**ASSESS-2**. The number of people at risk in the tsunami hazard zone is estimated.

This assessment should estimate the number of people in the hazard zone, including local residents, vulnerable populations (persons with disabilities, elderly, young, etc.) and non-residents (workers and tourists). Such a population figure is necessary for guiding responses, planning evacuation shelters, and defining evacuation routes.

3	**ASSESS-3**. Economic, infrastructural, political, and social resources are identified.

Involves the collection of data that recognizes the available local resources in the community to reduce its tsunami risk, such as available local/national emergency budget, possible temporary shelters, social and volunteer organizations etc. Being aware of such resources can strengthen community resilience against tsunamis.

4	**PREP-1**. Easily understood tsunami evacuation maps are approved.

Community-led preparation of tsunami evacuation maps that incorporate local knowledge and depict tsunami evacuation routes and assembly areas. These maps are based on tsunami hazard zone mapping (*see: ASSESS-1*) and are in line with the community's Tsunami Response Plan.

5	**PREP-2**. Tsunami information including signage is publicly displayed.

Signage about tsunami risk information as well as public education on how to respond in the community in the event of a tsunami is observable. Such signage must inform both local population and visitors. This indicator can be achieved with tsunami danger area and/or hazard zone entering and leaving signs, evacuation routes signs, assembly/meeting area/points signs etc.

6	**PREP-3**. Outreach and public awareness and education resources are available and distributed.

Materials tailored to meet local information needs and location-specific tsunami threats are prepared and distributed using three or more wide-reaching diverse methods, such as brochures, local radio and television, websites/social media etc. These resources should provide tsunami evacuation maps, evacuation routes, safety tips, and information on how to respond to warnings to the public.

7	**PREP-4**. Outreach or educational activities are held at least three times a year.

Public outreach and educational activities informing residents (with an emphasis on those in the tsunami hazard zone) on tsunami hazards, evacuation routes, warning system information, safety, and response are held annually. Acceptable activities include multi-hazard events or presentations, booths at community events and fairs, community tsunami safety workshops etc.

8	**PREP-5**: A community tsunami exercise is conducted at least every two years.

A community exercise, either focusing solely on the tsunami hazard or is multi-hazard, is conducted in either a tabletop, functional, or full-scale manner. Such exercise should involve a communications test between the components of the tsunami warning system. During community tsunami exercises, gaps with regards to the local tsunami warning, preparedness, and response can be identified.

9	**RESP-1**. A community tsunami emergency response plan is approved.

Community has a tsunami response plan in place that addresses responding to a tsunami incident. To meet this requirement, plans should present a tsunami-hazard profile, describe community vulnerability, include evacuation plans, detail 24-hour tsunami warning procedures, list schools and critical infrastructure, and provide contact information for all jurisdictions agencies and response partners.

10	**RESP-2**. The capacity to manage emergency response operations during a tsunami is in place.

The community possesses the means to ensure that officials can carry out tsunami warning functions (public notifications) and response functions (evacuation) based on predetermined tsunami warning information procedures and tsunami emergency response operations during a tsunami incident. This guideline indicates a community's capacity to manage evacuations and respond to the consequences of a tsunami, emphasizing communication links, warning reception and dissemination capability, and operations.

11	**RESP-3**. Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place.

The community can receive tsunami threat notifications at any time (24-hour) from the National Tsunami Warning Centers and/or the Emergency or Disaster Management Office, or other officially recognized alerting authorities such as local emergency management agencies. Notifications must be able to achieve the 24-hour receipt point by at least three methods, such as Public Alert Radio Systems, social media, National/Territorial warning call-out tree system, Coast Guard/maritime agency official broadcasts, etc.

12	**RESP-4**. Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place.

In addition to reception, the community can disseminate tsunami alerts, especially warnings to all of its members. Such alerts can be disseminated at any time of the day from the warning point (24-hour) and/or Emergency Operations Center through at least three methods, such as a country Emergency Alert System broadcast, public/private television and audio/video overrides, audible alerts, local pager/texting system, telephone mass notification system, etc.

1.2 Background on Pilot Survey

At its 16th Session, ICG/CARIBE-EWS requested the WG4 Subgroup on Tsunami Ready (later reestablished as a Task Team at its 17th Session) with the Caribbean Tsunami Information Center (CTIC) and the International Tsunami Information Center-Caribbean Office (ITIC-CAR) to administer a Tsunami Ready evaluation survey for communities recognized as Tsunami Ready since 2019. At its 17th Session in May 2024, the ICG/CARIBE-EWS accepted the kind offer of ITIC-CAR to provide an intern for a period of 10 weeks to support the implementation of said Tsunami Ready survey in the ICG/CARIBE-EWS. The UNESCO-IOC Working Group on Tsunamis and Other Hazards related to Sea-Level Warning and Mitigation Systems (TOWS-WG) further recommended the introduction of a Tsunami Ready Evaluation Form in the other ICGs. The ICG thus recommended the Steering Committee and the Secretariat to evaluate the implementation process in ICG/CARIBE-EWS and inform the ICG/CARIBE-EWS in the implementation of this effort in other ICGs in accordance with the TOWS-WG-XVII recommendation.

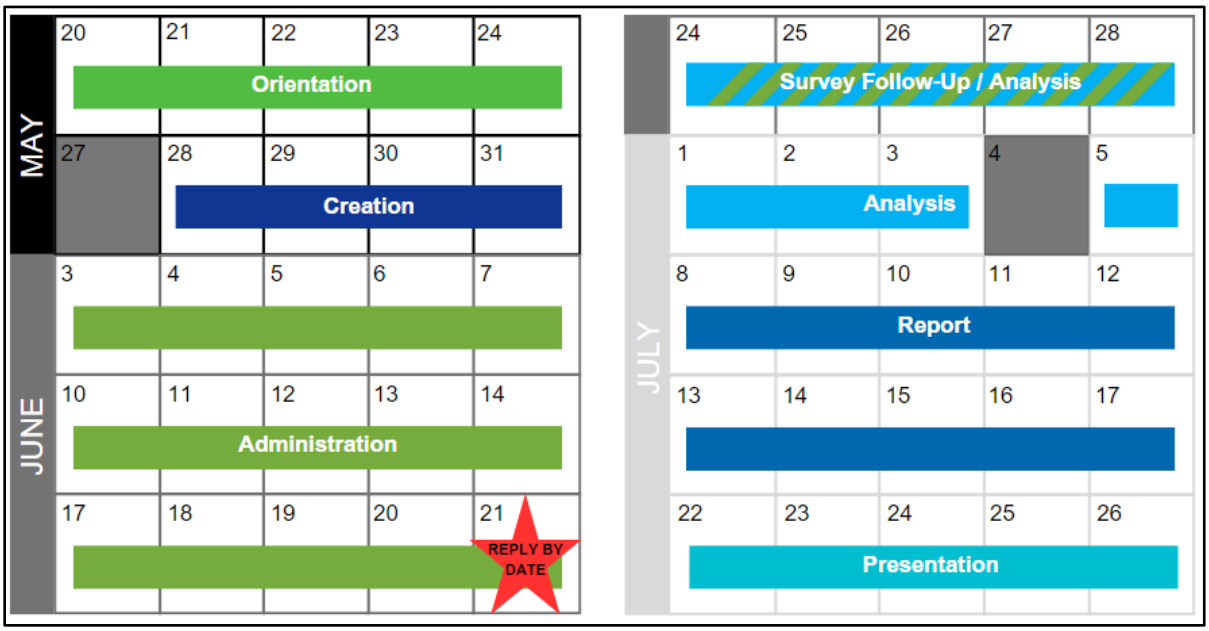

Figure 1. Project Timeline.

In this view, the feedback survey on the implementation of the UNESCO-IOC Tsunami Ready Recognition Programme in question was constructed as a pilot survey to be used within the ICG regions.

1.3 Scope

This report seeks to assess the survey as a tool for future evaluations of the Tsunami Ready Recognition Programme and benchmarking its implementation among the ICGs. With its feedback from the pilot sample, it will furthermore begin to offer insights into the successes and challenges faced by communities who have received or renewed Tsunami Ready recognition in the CARIBE-EWS region.

1.3.1 Regional Profile of ICG/CARIBE-EWS Tsunami Ready

Established in 2005, the ICG/CARIBE-EWS consists of 28 IOC Member States, 19 Overseas Territories, Commonwealths, and States, and 1 Observer Member States in the Caribbean and Adjacent Regions. The ICG/CARIBE-EWS began implementing Tsunami Ready as a pilot in 2011, from which point 31 communities have received their recognition as Tsunami Ready. As of June 2024, there are 19 communities within 15 of these states that have been recognized as Tsunami Ready since 2019:

1. St. John's, Antigua and Barbuda (AG)
2. Christ Church West, Barbados (BB)
3. Shermans, St. Lucy to Mullins, St. Peter, Barbados (BB)
4. Cahuita, Costa Rica (CR)
5. Portsmouth, Dominica (DM)
6. Deshaies, Guadeloupe, France (FR)
7. Carriacou & Petite Martinique, Grenada (GD)
8. Fort-Liberté, Haiti (HT)
9. Omoa, Honduras (HI)
10. Tornabé/Tela, Honduras (HI)
11. Old Harbour Bay, Jamaica (JM)
12. Bluefields, Nicaragua (NI)
13. Corn Island, Nicaragua (NI)
14. Laborie, Saint Lucia (LC)
15. Saint Kitts and Nevis (KN)
16. St. George Parish, Saint Vincent and the Grenadines (VC)
17. Union Island, Saint Vincent and the Grenadines (VC)
18. Carenage, Trinidad and Tobago (TT)
19. British Virgin Islands, United Kingdom (UK)

All of these communities maintain their Tsunami Ready recognition under the guidance of a Local Tsunami Ready Committee and National Tsunami Ready Board, with the exception of Saint Kitts and Nevis and the British Virgin Islands. These two

communities are recognized on the territorial level and as such operate with a National Tsunami Ready Committee and Regional Tsunami Ready Board.

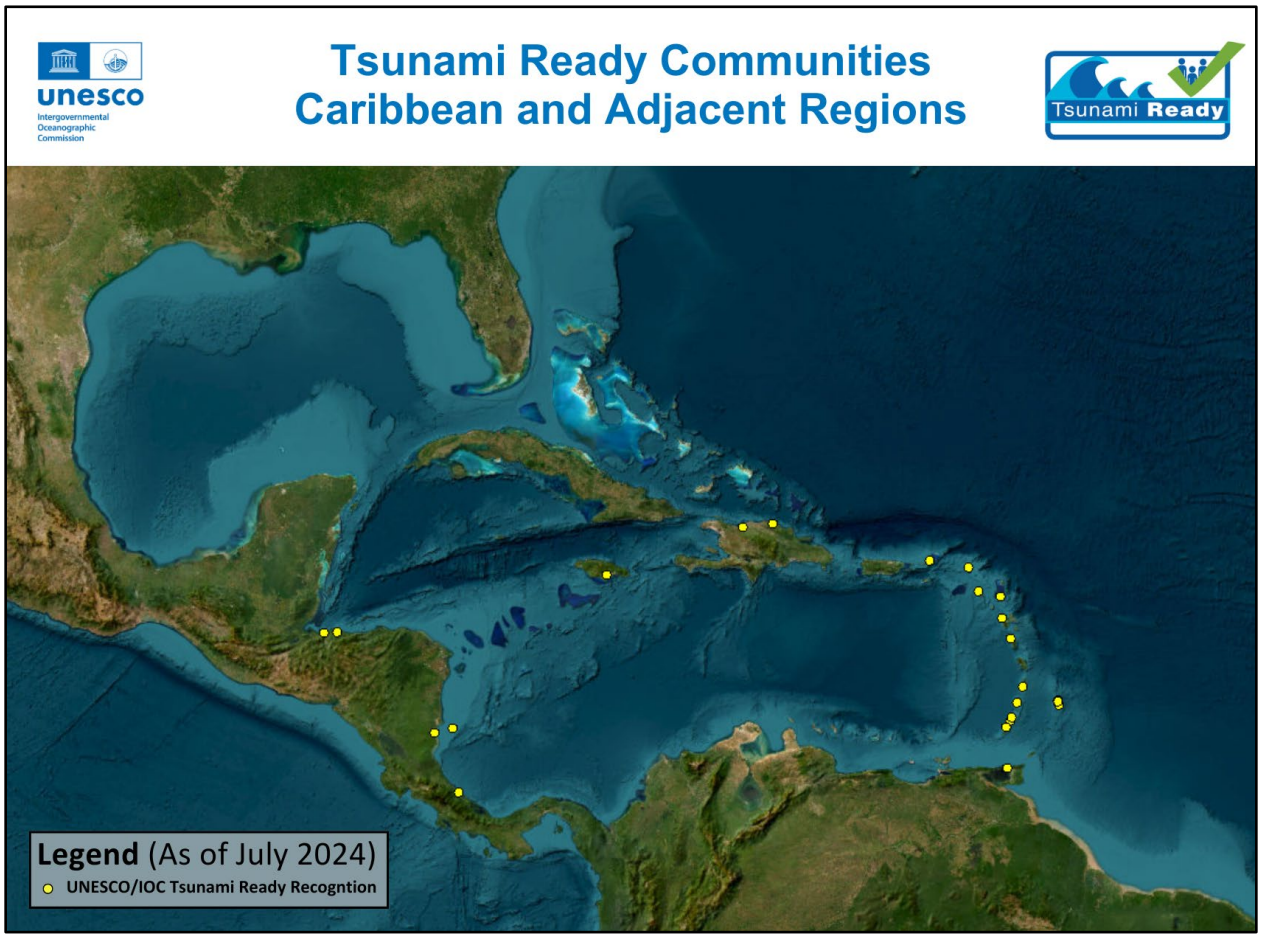

Figure 2. Tsunami Ready Communities in the ICG/CARIBE-EWS Region.

These communities are situated in seismically active zones, with those in the Caribbean facing elevated tsunami risk due to deep ocean trenches, plate boundaries, fault lines, and underwater volcanoes. Given its extensive history of tsunami experiences and harboring of all known tsunami sources, establishing preparedness and resilience through TRRP remains an urgent priority for coastal communities in the Caribbean and Adjacent Regions.

Of the 15 UNESCO-IOC ICG/CARIBE-EWS Member States with Tsunami Ready communities, 10 identify as Small Island Developing States (SIDS), one of which additionally identifies as a Least Developed Country (LDC).

2 Methodology

2.1 Survey Design

Adapted from a questionnaire previously approved by the Tsunami Ready Task Team of ICG/CARIBE-EWS, the pilot survey was developed for administration among communities who have received or renewed their Tsunami Ready recognition since 2019. These questions were curated to elicit feedback on the TRRP indicators, implementation, and process, enticing respondents to consider effectiveness and difficulties as experienced by their communities. With its collected responses, the survey aimed to:

1. assist in benchmarking the current effectiveness of the recognition program.
2. provide insight into the program's strengths and deficiencies.
3. promote and improve the program collectively and, through the program, the readiness of communities to respond to tsunami events.

To best achieve these objectives, the survey was further designed with the intent to obtain two responses for each Tsunami Ready community. Respondents were prompted to submit one response that reflected the opinion of the National Tsunami Ready Board (NTRB) and another of the corresponding Local Tsunami Ready Committees (LTRC). To gather these consolidated viewpoints, the corresponding bodies were allowed to request stakeholders to complete the form individually and use it as a basis for their consolidated response.

2.1.1 Question Structure

The approved questions were formatted into a SurveyMonkey questionnaire form for contacts to fill out (*see Appendix 1*). In an effort to ensure ease of access and efficiency, the survey featured 14 questions with a variety of builds, each carefully selected according to the level of consideration required by the respondent:

- *Single Textbox*: Allows respondents to respond with a short text or numerical answer. Chosen for open-ended questions from which the response was unable to be predicted, such as Name, Phone Number, and Email Address.

- *Dropdown Lists*: Provides a dropdown list of answer choices of which the respondent must choose one. Chosen for questions regarding community location.

- *Multiple Choice*: Chosen for questions with two answer choices, such as respondent affiliation and community recognition/renewal status.

- *Likert Rating Scales (with Comment Boxes)*: Formatted as a single-row rating scale that assigns weights to each answer choice. Chosen for all questions seeking answers on effectiveness, scaled from *1- Very Ineffective* to *5- Very Effective*. Included a comment box for respondents who selected ineffective to elaborate on areas that should be addressed.

- *Matrix (with Comment Boxes)*: Enabled respondents to evaluate multiple row items using the same rating scale, requiring a single answer per row. Chosen for rating implementation difficulty. Included a comment box for respondents to provide additional perspective and context for their answers.

The matrix question (Question 13) sought to gather insights into the perceived level of difficulty in implementing the program by prompting respondents to rate each indicator *(see Section 1.1)* from *1-Very Easy* to *5-Very Difficult*, with the additional option of *N/A* to encompass all such cases in which the respondent was not capable of making a judgment. These ratings, therefore, inherently embody a subjective nature due to their contextual variability. As such, the survey aimed to capture a nuanced understanding of these complexities with the inclusion of comment boxes, acknowledging the relative nature of implementation challenges within diverse community settings.

Thirteen of the 14 questions were required, meaning that respondents could not submit the survey until they selected an answer for these questions. The remaining question (Question 14) served as an optional space for respondents to leave any general comments about the Tsunami Ready Recognition Program.

2.2 Survey Administration

The survey was created citing an initial deadline of Friday, June 21, 2024, later extended to Friday, June 28, 2024. To ensure adequate time for information collection and response submissions, administration took place over a three-and-a-half week timeline spanning from Tuesday, June 4, 2024 to Friday, June 28, 2024.

Once the survey was made live in SurveyMonkey, a collector hyperlink was created for distribution among eligible respondents. The determined method of administration was email correspondence, the messages of which contained said hyperlink as well as a PDF version of the survey as an alternative. Further accompanying the survey was a copy of each community's Tsunami Ready Recognition Programme Application, which were collected from the UNESCO-IOC Tsunami Ready Recognition Programme Repository. As such, every correspondence with the community contacts included a customized message, hyperlink, and PDF attachments of the survey and TRRP application forms.

Furthermore, read receipts were implemented with every communication. Though it is limited in its return capacity, read receipts are designed to indicate which email recipients received and opened messages. It is an imperfect tool, given that the sender must manually request a read receipt for every email sent, and then the recipient must return the request by sending back a receipt to indicate that the message has been received— they do not send automatically when the recipient opens the email. In this context, they served as a measure to track engagement with the survey once administered.

2.2.1 Record of Email Correspondence

Seeking responses from the National Tsunami Ready Boards and Local Committees, the survey was administered to 71 individuals across 18 communities[1] in the ICG/CARIBE-EWS region on Tuesday, June 4, 2024. This initial pool of 71 recipients consisted of the NTRB Chairs, Primary Community Contacts, and Secondary Community Contacts of each community, as designated in each community's Tsunami Ready Recognition Programme application. It further included the Tsunami National Contacts (TNC)[2] overseeing these communities, whose information was collected from an official ICG/CARIBE-EWS TNC/TWFP/NTWC database. Of the initial pool of survey recipients, 54 were qualified to submit a response, based on the available knowledge of their identified status as a community contact.

[1] The community of Omoa, Honduras was excluded from the survey administration process because there already existed a consolidated response from its contacts, completed at the time of its recognition in 2019.

[2] A Tsunami National Contact or TNC is the person designated by an ICG Member State government to represent his/her country in the coordination of international tsunami warning and mitigation activities, such as Tsunami Ready. The person is part of the main stakeholders of the national tsunami warning and mitigation system programme.

To further encourage participation and engagement with the survey, several strategies were utilized. Following the introductory email (*see Appendix 3*), reminder messages were distributed at the one-week (June 11) and two-week (June 18) mark. The length of both reminder emails were condensed and included a new line emphasizing the sender's availability to meet to fill out the survey as well as the sender's Whatsapp contact information to offer an alternate correspondence method. All subsequent communications with Bluefields, Corn Island, and Tornabé/Tela were conducted in Spanish to overcome any possible language barriers. An extended deadline of Friday, June 28, 2024 was further specified for recipients of the final reminder email.

In addition, the ICG/CARIBE-EWS stakeholders overseeing this process reached out to their contacts in each community to reaffirm the importance of their participation. Christ Church West, Shermans/St. Lucy to Mullins/St. Peter, Cahuita, and British Virgin Islands were removed from the reminder email lists for this reason.

As such, contacts were removed from the email list if they (1) completed the survey, (2) initiated contact with a stakeholder or (3) were unable to be reached because their address couldn't be found or was unable to receive mail. Figure 3 depicts changes in the record of email addresses, recipients, and eligible respondents involved in each email correspondence. According to recipient preference, the final reminder was also adapted and transmitted over Whatsapp to 5 eligible respondents across 3 communities.

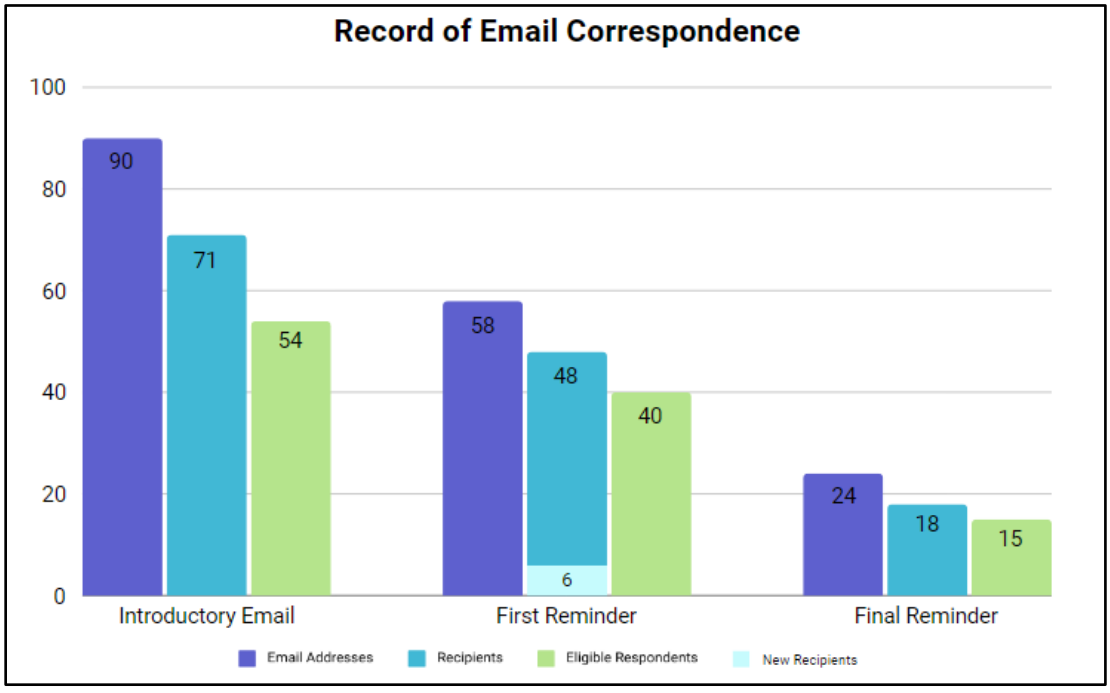

Figure 3. Column chart visualizing email recipients across the survey administration period.

Responses were automatically collected in SurveyMonkey if the respondents utilized the collector hyperlink to the survey. There were four cases in which responses were submitted via PDF form, all of which were subsequently entered into SurveyMonkey to integrate such feedback into the sample.

3 Results

The results presented offer insights into the two paradigms under evaluation in this report: TRRP implementation in the ICG/CARIBE-EWS region and usage of the survey itself. The former thus focuses on the feedback provided by the survey participants, while the latter considers metrics such as email engagement trends and the identities of respondents.

3.1 Survey Administration Statistics

Table 1. Summary of Eligible Respondent Engagement with Introductory Email

Email Addresses of Eligible Respondents Sent the Introductory Email	67
Email Addresses that Received Introductory Email	57
Number of Read Receipts Returned from Eligible Respondents	5
Introductory Email Read Receipt Return Rate	8.77%
Overall Deliverability Rate	85.07%
Total Recipients	71
Total Eligible Respondents	54
Number of Recipients Unable to be Contacted	9
Number of Eligible Respondents Unable to be Contacted	6

Table 2. Summary of Eligible Respondent Engagement with Reminder Emails

Number of New Recipients*	6

Email Addresses of Eligible Respondents Sent the First Reminder Email	50
Number of Read Receipts Returned from Eligible Respondents	3
First Reminder Read Receipt Return Rate	6.00%
Email Addresses of Eligible Respondents Sent the Final Reminder Email	22
Number of Read Receipts Returned from Eligible Respondents	5
Final Reminder Read Receipt Return Rate	22.73%

**New recipients refer to individuals who were not on the introductory email list. All of these recipients were eligible respondents.*

As illustrated in Table 3 below, 6 of 11 respondents who submitted answers on behalf of a National Tsunami Ready Board were neither a TNC nor contact listed on the community's Tsunami Ready Recognition application. Similarly, 7 of 11 LTRC respondents were not listed as a Primary or Secondary Community Contact on the community's application.

Table 3. Respondent Affiliation by Community

Tsunami Ready Community	NTRB Response?	Was the NTRB response from someone listed on application?	LTRC Response?	Was the LTRC response from the Primary or Secondary Community Contact listed on application?
St. John's, AG	YES	YES	NO	N/A
Shermans etc., BB	YES	YES	YES	NO
Christ Church West, BB	YES	YES	NO	N/A
Cahuita, CR	NO	N/A	YES	NO
Portsmouth, DM	NO	N/A	YES	NO
Deshaies, FR	NO	N/A	YES	NO
Carriacou and Petite Martinique, GD	YES	NO	YES	YES
Fort-Liberté, HT	NO	N/A	YES	NO
Tornabé/Tela, HN	NO	N/A	NO	N/A
Omoa, HN	YES	YES	NO	N/A
Old Harbour Bay, JM	YES	NO	YES	YES
Bluefields, NI	YES	NO	NO	N/A
Corn Island, NI	YES	NO	YES	YES
Saint Kitts and Nevis *NTRB refers to Regional	YES	YES	YES	YES
Laborie, LC	YES	YES	YES	NO
St. George, VC	NO	N/A	NO	N/A
Union Island, VC	NO	N/A	NO	N/A
Carenage, TT	YES	NO	NO	N/A
British Virgin Islands, UK *NTRB refers to Regional	NO	N/A	YES	YES

Therefore, of the 54 eligible respondents (whose eligibility was confirmed by the community's TRRP application), only 20.37% submitted a response. Fifty percent of all survey responses were submitted by an individual not identified on a TRRP application.

3.2 Response Submission Trends

The administration period of 24 days, spanning from June 4, 2024 to June 28, 2024, yielded 22 responses out of the desired 38. Despite a total of 43 attempts to complete the survey, every incomplete response was eventually followed by a completed submission.

As such, the completion rate of the survey was 51.16%. Notably, 45.45% of the responses (10 out of 22) were submitted after the initial deadline.

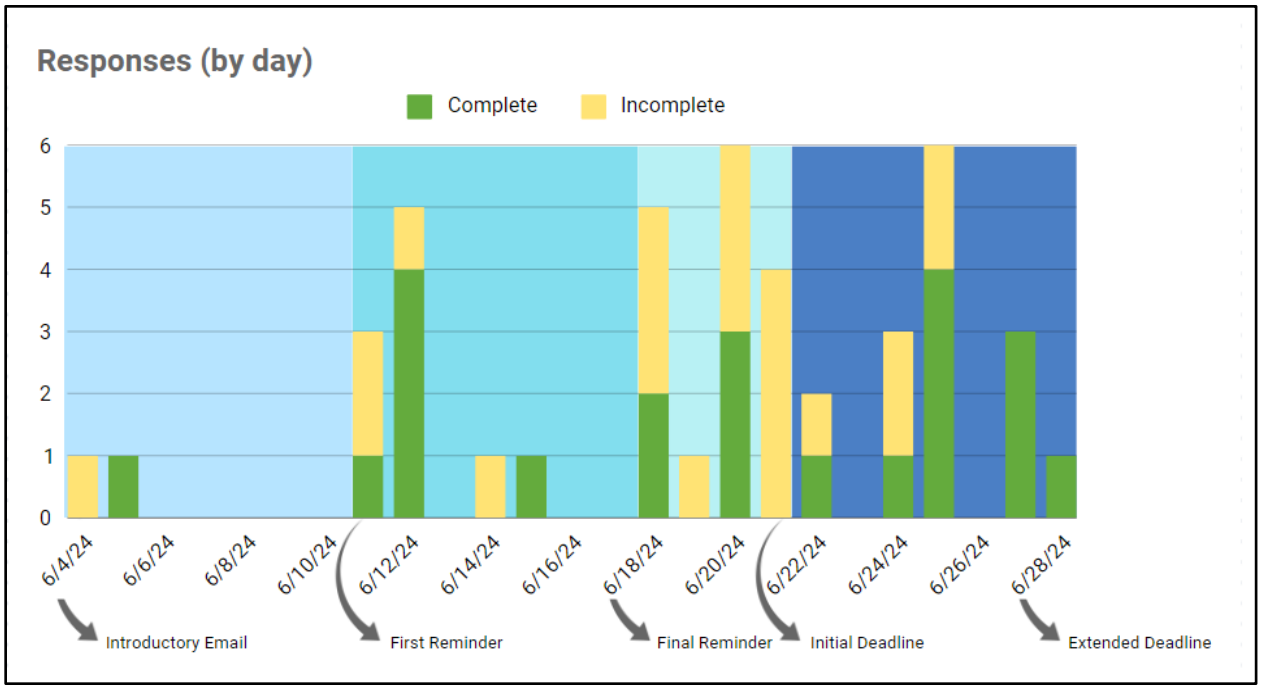

Figure 4. Survey Responses By Day.

Table 4. SurveyMonkey Response Completion Times in hh:mm:ss

	Sample	NTRB/RTRB Respondents	LTRC Respondents
Total Time Contributed	07:34:36	03:01:27	04:33:09
Average Completion Time	25:15	22:40	27:18
Longest Response Time	01:06:16	01:06:16	01:02:43
Shortest Response Time	04:07	04:25	04:07

**Four of 22 responses were excluded from these calculations, as they were submitted via PDF.*

3.2.1 Respondent Sample Attributes

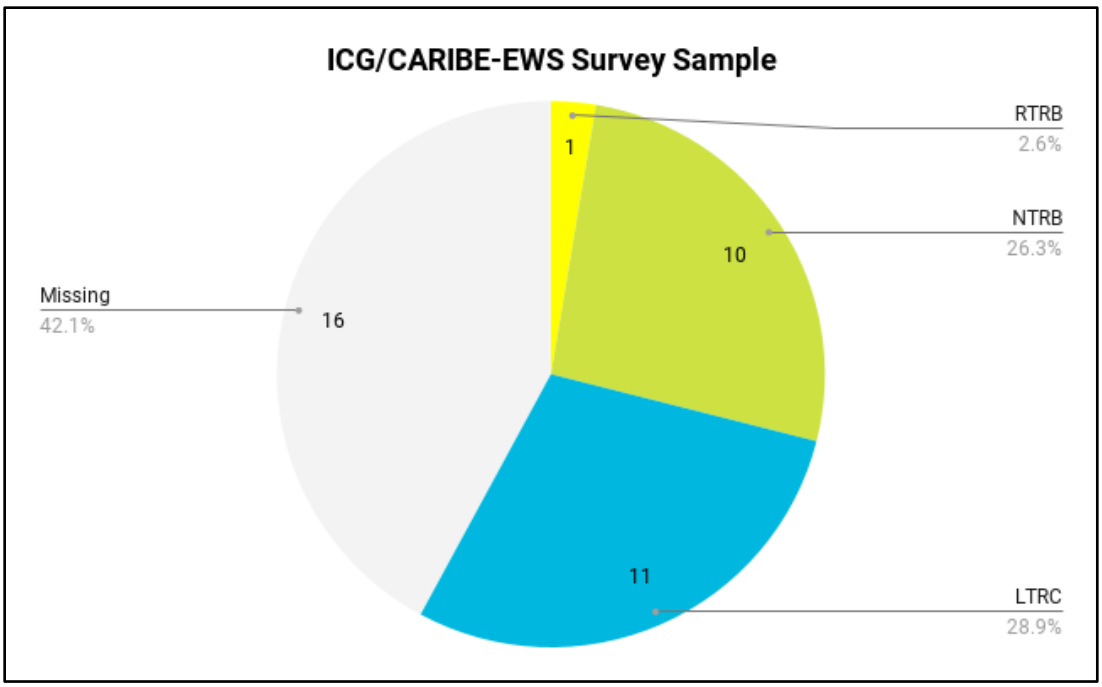

Figure 5. Pie Chart of the ICG/CARIBE-EWS Sample of Survey Respondents.

The intended sample of 38– 2 RTRB, 17 NTRB, and 19 LTRC respondents– fell short by sixteen responses. Within the actual sample of 22, eleven responses were submitted on behalf of NTRB/RTRBs[3], and the remaining eleven on behalf of LTRCs.

Out of the 19 Tsunami Ready communities surveyed, 16 submitted at least one response, while only 6 communities submitted both requested responses. The six communities that met this criterion are:

1. Shermans/St. Lucy to Mullins/St. Peter, BB (recognized 2020)
2. Carriacou and Petite Martinique, GD (recognized 2019)
3. Old Harbour Bay, JM (recognized 2021)
4. Corn Island, NI (recognized 2019)
5. Saint Kitts and Nevis (recognized 2022)
6. Laborie, LC (recognized 2024)

Additionally, three communities did not provide any responses:

1. Tornabé/Tela, HN (recognized 2019)
2. Saint George Parish, VC (recognized 2023)
3. Union Island, VC (recognized 2020)

[3] Only one response out of 22 was made on behalf of a Regional Tsunami Ready Board (RTRB). For this community (Saint Kitts and Nevis), the RTRB response was categorized with the NTRB responses.

The overall participation rate was 84.21%, with 16 out of 19 communities participating. However, the success rate, defined as the proportion of communities submitting both requested responses, was 31.58% (6 out of 19).

3.3 ICG/CARIBE-EWS Feedback on Tsunami Ready

Question 7 sought to establish a baseline for perceptions of the effectiveness of the Tsunami Ready Recognition Programme guidelines. As Figure 6 demonstrates below, 21 of 22 respondents consider the guidelines generally effective, with 6 going as far to say that they are very effective. No comments elaborating on these ratings were left.

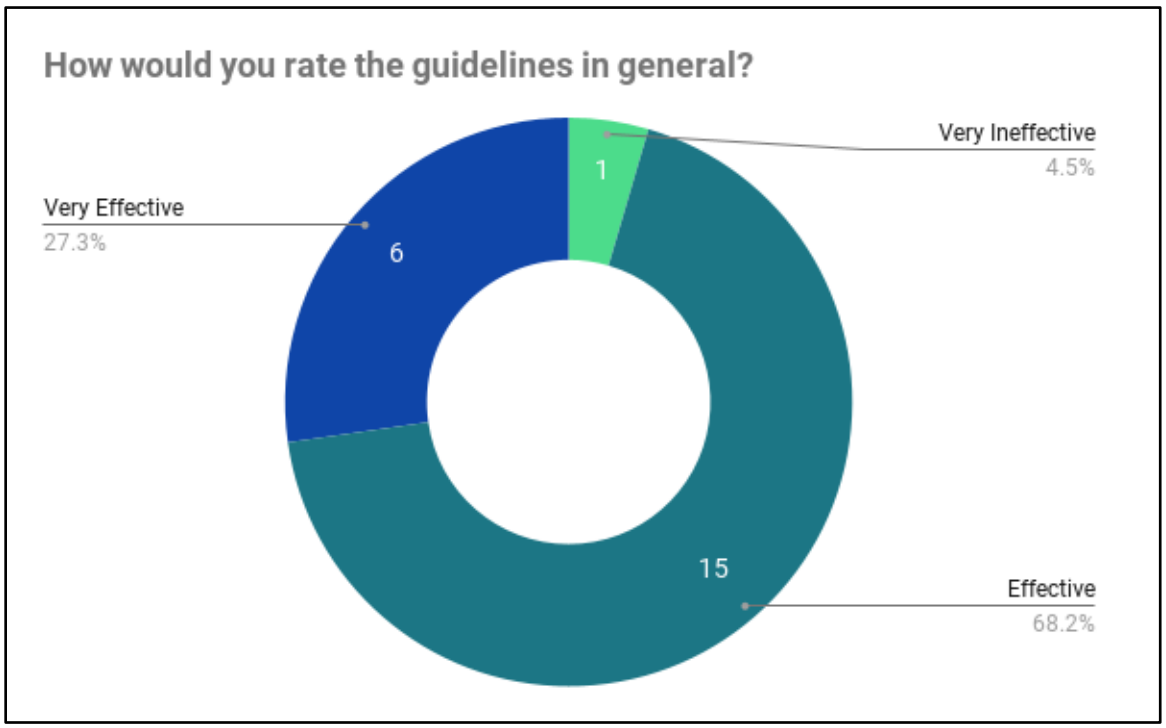

Figure 6. General ratings of Tsunami Ready guidelines.

In response to the question, "Are there additional indicators that are recommended to be considered for inclusion?" 95.5% indicated that no additional indicators were recommended. One respondent (NTRB St. John's, AG) suggested the inclusion of indicators such as "demonstrated community ownership through community-initiated mini projects, including locally designed community public education and awareness activities, such as signs and school community competitions."

3.3.1 Programme Effectiveness Feedback

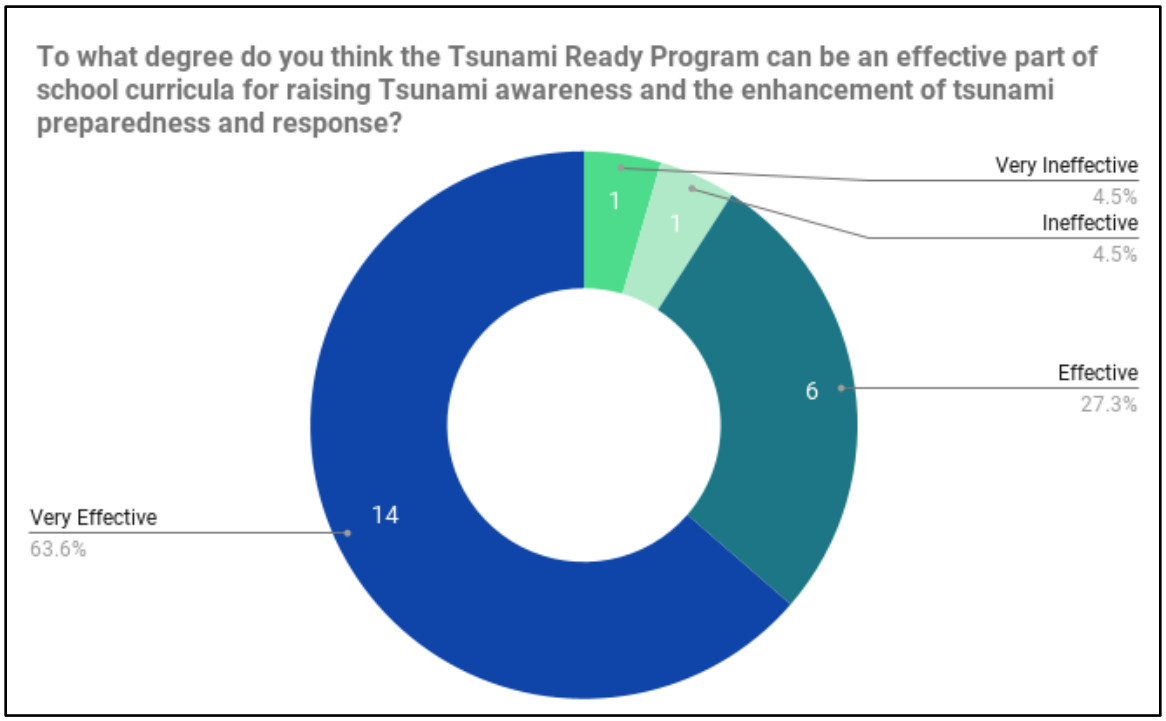

Figure 7. Results of Question 9 on tsunami education.

Figure 7 illustrates the perceived effectiveness of the Tsunami Ready Recognition Programme in school curricula, as reported by respondents. The majority considered the program *Very Effective* in raising tsunami awareness and enhancing preparedness and response. Only one respondent viewed the program as *Ineffective*, with no accompanying comments provided.

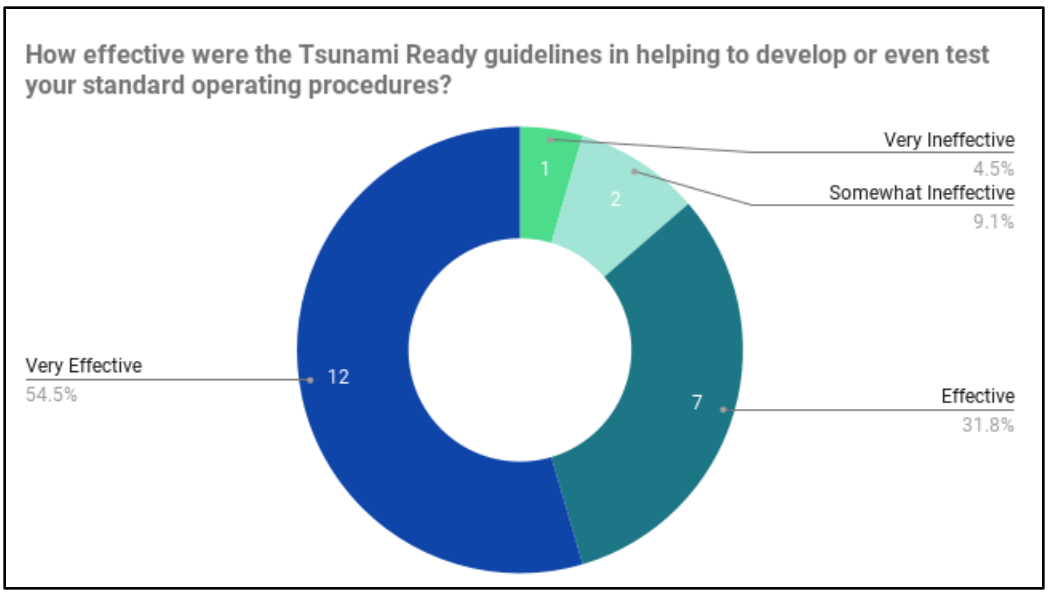

Figure 8. Results of Question 10 on standard operating procedures.

Regarding Figure 8, the program's effectiveness in helping the community to develop or test their standard operating procedures was rated as *Somewhat Ineffective* by RTRB Saint Kitts and Nevis due to the inability to answer the question, as the respondent was not part of any national or local authority. LTRC Deshaies also rated *Somewhat Ineffective*, with the explanation that in France, municipalities are already required to have crisis management plans that meet several Tsunami Ready criteria. The respondent further noted the fact that recognition mandates compulsory prevention activities and emphasizes the importance of redundancy in communication methods.

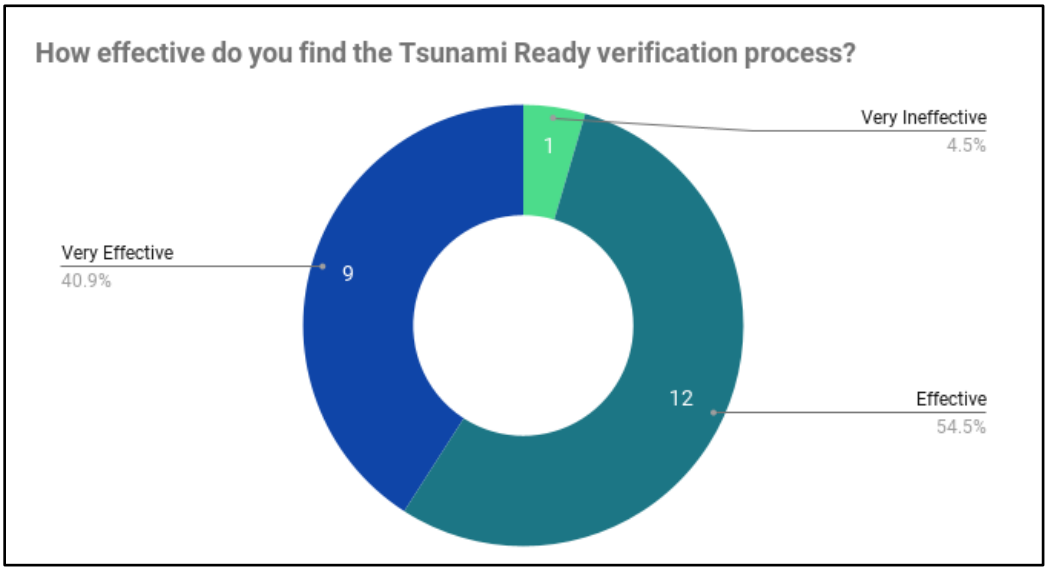

Figure 9. Results of Question 11 on the Tsunami Ready verification process.

Figure 9 displays the results of Question 11, which inquired after the effectiveness of the Tsunami Ready verification process. Most of the sample found it *Effective* or *Very Effective*. No comments elaborating on these ratings were left.

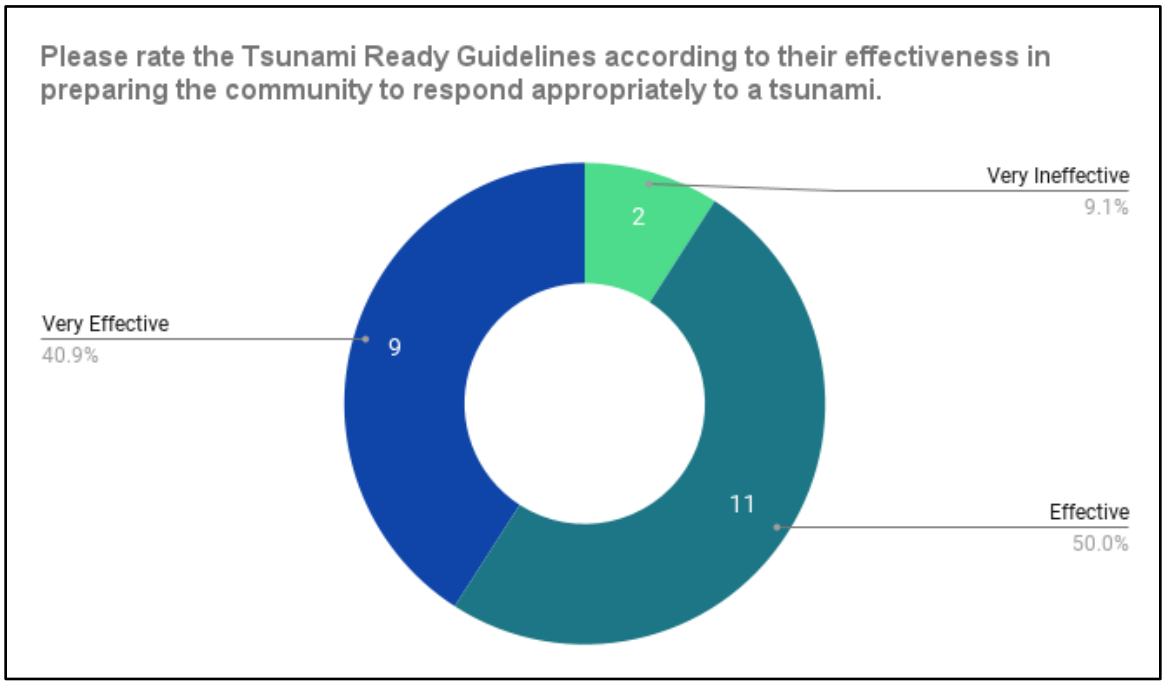

Figure 10. Results of Question 12 on tsunami response preparedness.

As shown in Figure 10, 20 of 22 respondents found that the Tsunami Ready Guidelines were at some level effective in preparing the community to respond appropriately to a tsunami. NTRB St. John's, however, found them *Very Ineffective* given that the community lacks awareness and requires more education.

3.3.2 Feedback on Implementation Difficulty

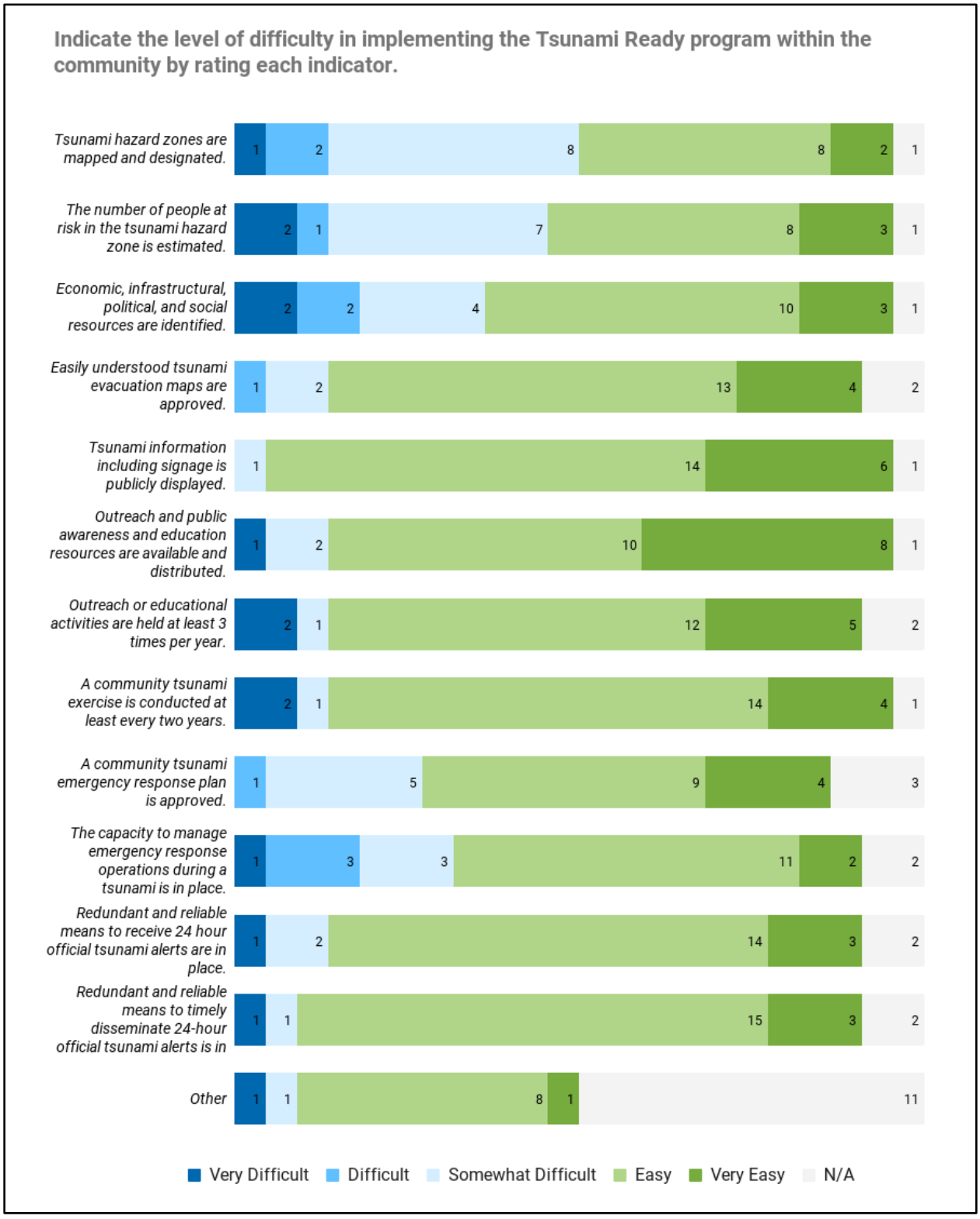

Figure 11. Summary of Implementation Difficulty by Indicator Ratings.

Figure 11 demonstrates each indicator's difficulty ratings, with blue conveying some level of difficulty and green some level of ease. Of the 12 indicators (*see Section 1.1*), the respondents found ASSESS-1 the most difficult to implement, citing several challenges despite receiving external support:

- ➔ NTRB Omoa found the task very difficult due to a lack of bathymetric data, insufficient funds, time constraints, and communication challenges between COPECO and the UNESCO Costa Rica Office.
- ➔ LTRC Carriacou & Petite Martinique and LTRC Old Harbour Bay reported that missing signs and a lack of local mapping resources made the process somewhat difficult, respectively, with LTRC Old Harbor Bay needing post-recognition training to build capacity. NTRB Old Harbor Bay had to rely on external expertise from the University of Costa Rica for tsunami modeling, and capacity building for their Disaster Coordinator was conducted in Barbados.
- ➔ LTRC Fort-Liberté and LTRC Shermans/St. Lucy to Mullins/St. Peter struggled with local bathymetry and perceived inaccuracies in public information, respectively.
- ➔ NTRB St. John's noted difficulties dependent on the availability and access to bathymetric data.
- ➔ LTRC Deshaies benefited from a research program providing accurate tsunami modeling, though such data is often costly and unavailable.

Conversely, the respondents found PREP-2 the easiest to implement:

- ➔ NTRB Omoa found it very easy due to pre-developed printed materials and media support since 2017.
- ➔ LTRC British Virgin Islands and LTRC Old Harbour Bay both reported ease in implementation with support from planning departments and timely community display of signs.
- ➔ NTRB Old Harbour Bay found it easy working with ITIC and received necessary files for standardized signage replication.

However, several respondents noted complications: LTRC Portsmouth found the process time-consuming and complicated due to local permission requirements, while NTRB St. John's and LTRC Carriacou & Petite Martinique mentioned challenges with vandalism, and LTRC Deshaies and LTRC Christ Church West needed assistance to overcome installation challenges.

Additional feedback received regarding difficulties in implementing the Tsunami Ready program is shown in Table 5.

Table 5. Implementation Feedback on Additional Indicators

ASSESS-2	The number of people at risk in the tsunami hazard zone is estimated.
Very Difficult for NTRB Omoa due to challenges in lack of bathymetric data, insufficient funds and time, and communication barriers. *Very Difficult* for LTRB Shermans/St. Lucy to Mullins/St. Peter and LTRB Christ Church West because of data collection issues. *Somewhat Difficult* for LTRC Portsmouth and LTRC British Virgin Islands because census records and information were outdated. *Easy* for NTRB Old Harbour Bay, NTRB St. John's, and LTRC Deshaies because there was accurate, year round resident and STATIN data, which facilitated the process. *Very Easy* for LTRC Corn Island because of utilization of neighborhood leaders for participatory house-to-house visits for data collection. *Very Easy* for NTRB Laborie due to availability of an existing database.	
ASSESS-3	Economic, infrastructural, political, and social resources are identified.
Very Difficult for LTRC Portsmouth because data wasn't detailed nor available at community level. *Difficult* for LTRC Shermans/St. Lucy to Mullins/St. Peter and LTRC Christ Church West because information was difficult to collect. *Somewhat Difficult* for LTRC Fort-Liberté because a meeting was needed to organize process to identify resources. *Somewhat Difficult* for NTRB St. John's because of polarized communities influenced by socio-political factors. *Easy* for LTRC British Virgin Islands and NTRB Old Harbour Bay because information about such resources are mapped in national GIS databases. *Easy* for LTRB Deshaies because crisis management plan already covers the required information. *Very Easy* for LTRC Old Harbour Bay because Local Sustainable Development Plan and hazard database provided necessary information. *Very Easy* for NTRB Laborie due to possession of community knowledge.	
PREP-1	Easily understood tsunami evacuation maps are approved.
Very Difficult for NTRB Omoa due to budget constraints and unsuccessful collaboration with external support. *Somewhat Difficult* for LTRC Carriacou & Petite Martinique Because signs are being damaged by people. *Somewhat Difficult* for LTRC Shermans/St. Lucy to Mullins/St. Peter because finalized maps faced public perception challenges regarding flood line placement. *Easy* for LTRC British Virgin Islands, NTRB Old Harbour Bay, LTRC Christ Church West, and LTRC Deshaies because of assistance from planning departments and previous research projects that validated and ground-truthed information. *Very Easy* for LTRC Fort-Liberté, noting that local bathymetry is a known issue for the inundation map but didn't pose significant difficulty.	
PREP-3	Outreach and public awareness and education resources are available and distributed.
Somewhat Difficult for LTRC Shermans/St. Lucy to Mullins/St. Peter due to challenges with information	

distribution handled by the Community Emergency Organization.
Easy for LTRC British Virgin Islands, NTRB Old Harbour Bay, and LTRC Christ Church West with active participation coordinated by local organizations and guidance of ITIC, CTIC, and CTWP.
Very Easy for NTRB Carriacou & Petite Martinique, LTRC Fort-Liberté, NTRB St. John's, and LTRC Deshaies because of annual experience conducting activities and managing funding requirements.

PREP-4 Outreach or educational activities are held at least 3 times a year.

Very Difficult for NTRB Omoa due to budget constraints, which necessitated extensive fundraising efforts.
Very Difficult for LTRC Shermans/St. Lucy to Mullins/St. Peter due to challenges in holding and coordinating project-related meetings.
Somewhat Difficult for LTRC Fort-Liberté because of required funding to support activities.
Easy for LTRC British Virgin Islands, LTRC Old Harbour Bay, and NTRB Old Harbour Bay due to CARIBE WAVE, Shake Out, and World Tsunami Day participation.
Easy for LTRC Portsmouth, but flexible strategies are used due to challenges in attendance/participation.
Very Easy for NTRB Carriacou & Petite Martinique, NTRB Laborie, and LTRC Deshaies because community's experience and culture support successful outreach activities.
Very Easy for NTRB St. John's given effective collaboration with the Safe School initiative.

PREP-5 A community tsunami exercise is conducted at least every two years.

Very Difficult for NTRB Omoa due to challenges with funding, coordination, and community perception issues where some do not take preparedness seriously.
Very Difficult for LTRC Fort-Liberté because of required funding to support drill activities.
Somewhat Difficult for LTRC Old Harbour Bay because of COVID-19, which affected the execution of planned drills.
Easy for NTRB Old Harbour Bay, managing to conduct national communications tests and joint exercises with industrial facilities despite COVID-19 challenges.
Easy for LTRC British Virgin Islands, NTRB Carriacou & Petite Martinique, NTRB St. John's, and LTRB Deshaies given annual participation in CARIBE WAVE exercises.
Easy for LTRC Corn Island, LTRC Shermans/St. Lucy to Mullins/St. Peter, LTRC Christ Church West, NTRB Laborie, and LTRC Portsmouth with guidance and coordination by the Department of Emergency Management.

RESP-1 A community tsunami emergency response plan is approved.

Very Difficult for NTRB St. John's because of challenges mitigated by private sector involvement during initial drafting.
Somewhat Difficult for LTRC British Virgin Islands and LTRC Saint Kitts and Nevis due to challenges posed by lack of manpower and resources.
Somewhat Difficult for LTRC Shermans/St. Lucy to Mullins/St. Peter and LTRC Christ Church West because of uncertainty regarding recent updates to the approved plan.

RESP-2 The capacity to manage emergency response operations during a tsunami is in place.

Difficult for LTRC Shermans/St. Lucy to Mullins/St. Peter and LTRC Christ Church West given concerns about the continuity of training and equipment provision.
Somewhat Difficult for LTRC Old Harbour Bay and NTRB Old Harbour Bay because of communication challenges among agencies.
Somewhat Difficult for NTRB St. John's due to resource and scheduling challenges for continuous agency training.

Easy for LTRC British Virgin Islands, though noting that several agencies must be involved for this to be possible.
Very Easy for NTRB Laborie, adding that the project also created a general awareness of the need to be prepared.

RESP-3 Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place.

Somewhat Difficult for LTRC Fort-Liberté, as monitoring center is no longer functional.
Somewhat Difficult for NTRB St. John's because government resourcing priorities make capacity assessments and local focal point upgrades time-consuming.
Easy for NTRB Laborie, LTRC Shermans/St. Lucy to Mullins/St. Peter, and LTRC Christ Church West because procedures are established and systems are operational, both supported by other agencies for effectiveness.
Very Easy for DMC Omoa, noting that Standard Operating Procedures facilitated processes.
Very Easy for LTRC British Virgin Islands, LTRC Old Harbour Bay, and NTRB Old Harbour Bay with an established Tsunami Warning Focal Point in place.

RESP-4 Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place.

Somewhat Difficult for NTRB Old Harbour Bay because communication includes only five methods but is currently undergoing expansion with additional sirens.
Somewhat Difficult for NTRB St. John's given initial challenge in training agencies to adopt required protocols.
Easy for LTRC British Virgin Islands, LTRC Old Harbour Bay, LTRC Portsmouth, LTRC Shermans/St. Lucy to Mullins/St. Peter, and LTRC Christ Church West given established procedures, operational systems, and multi-alert communication methods.
Very Easy for NTRB Omoa, LTRC Corn Island, and NTRB Laborie because there are multiple established alert dissemination methods which are supported by other agencies.

OTHER General comments on Tsunami Ready implementation difficulty.

Very Difficult for LTRC Fort-Liberté to maintain certain indicators because of the bad socio-political situation in Haiti.
Somewhat Difficult for NTRB Old Harbour Bay because Tsunami Warning Focal Points are still not very clear on their respective roles and responsibilities despite having a National Tsunami Plan and Community-Based Tsunami Plan.
Easy for LTRC Old Harbour Bay, though a parish tsunami plan is needed for St. Catherine to strengthen the existing SOPs in Old Harbour Bay.
Easy for LTRC British Virgin Islands,as a lot has been done to support tsunami awareness, readiness, and alertness across the region over the years.

In addition to feedback on effectiveness and difficulty, several respondents shared general comments about the Tsunami Ready Recognition Programme:

- LTRC British Virgin Islands: "*Guidelines have been useful in helping us to prepare for hurricane seasons.*"

- ➔ LTRC Old Harbour Bay: "*The Tsunami Ready Recognition program strengthens the community preparedness to respond to a tsunami. The community members are equipped with the knowledge and information that they need to evacuate once a tsunami warning is issued by the relevant authorities. The Municipal Corporation was made aware of some of the needs of the community based on the program.*"
- ➔ NTRB Old Harbour Bay: "*We welcome the Tsunami Ready Recognition Programme and are working with UNESCO / CTIC to have the community of Port Maria accredited. We look forward to continued capacity building especially in the area of writing individual SOPS for the key agencies: TWFP (MSJ and Jamaica Constabulary Force and Earthquake Unit) so that they will have written guidelines and agreements going forward.*"
- ➔ LTRB Saint Kitts and Nevis: "*Very time friendly and easy to implement.*"
- ➔ NTRB Carriacou & Petite Martinique: "*We are very appreciative of the Tsunami Readiness Program. But we still have some shortcomings to overcome. Due to financial constraints, we have yet to complete signage installation in the Mt.Pleasant area. Additionally, we are still investigating the accusation of an early warning siren system which can simultaneously alert the entire island.*"
- ➔ NTRB Corn Island and NTRB Bluefields: "*Possibly, the Tsunami Recognition Program should be run on a national level steered by the national civil protection agency and the NTWC, as it will be very difficult to do it on a regional or global scale.*"
- ➔ LTRC Corn Island: "*The program is very important for our municipality as it promotes us as being well-prepared for tsunami alerts. Information is key and aligns with our goal of providing our residents with sufficient knowledge of natural disasters. This contributes to the overall well-being of our population, as well as that of national and foreign tourists who visit our island.*"
- ➔ LTRC Fort-Liberté: "*The new guidelines are further better than the old. The Tsunami Ready Recognition Program is the best way to prepare for the tsunami. However there are 2 indicators that are not easy to realize. There are 1)Tsunami evacuation map because of the local bathymetry to realize an inundation map 2) The tsunami signs that can be vandalized. We must have constant awareness to avoid that.*"
- ➔ NTRB Shermans/St. Lucy to Mullins/St. Peter: "*It needs to be more localized by bringing community involvement.*"
- ➔ LTRC Shermans/St. Lucy to Mullins/St. Peter: "*It has generally worked well but has to be a continuous process as community emergency organization executive membership can change on an annual basis.*"

- ➔ NTRB Carenage: "*To improve the speed and ease of implementation of the program, a committee of stakeholder agencies should be created.*"
- ➔ NTRB Laborie: "*The program is a very valuable one and actually assisted in enhancing awareness of the community's vulnerabilities. It is set out in such a way to make it easy to comprehend and to assess your progress.*"
- ➔ LTRC Portsmouth: "*It's a great program and needs to be done in communities in Dominica. Perhaps there can be a short documenting of successes and challenges / lessons learned in first time implementation so that newer countries or communities can have a smoother process.*"
- ➔ NTRB St. John's: "*Resource mobilization and priority in fiscal planning for SIDS is still a major hurdle to the speed of implemented upgrades.*"
- ➔ LTRC Deshaies: "*I responded promptly on behalf of the municipality of Deshaies, which I have been supporting in this initiative since 2017. The municipality is particularly proactive and was the first to install evacuation signs. This is usually the most challenging aspect to get approved by local officials, who often view such signage negatively concerning tourism. As a member of the FWI NTRB, I believe it is important for the NTRB to support municipalities by adapting the Tsunami Ready guide to meet the specific needs of each country. It would be beneficial for the IOC UNESCO to request each NTRB to develop a tailored framework for their respective countries. This approach could also ensure a certain level of standardization across countries, such as the number, shape, and size of signage to be installed.*"

4 Discussion

The project detailed above was conducted according to the timeline outlined in Figure 1 with few key deviations. Given the survey implementer's lack of prior knowledge and expertise regarding tsunamis, ICG/CARIBE-EWS organizational procedures, and the UNESCO-IOC Tsunami Ready Recognition Programme itself, additional time throughout the project was dedicated to orientation and training efforts, thus restricting the true project timeline.

Furthermore, in pursuing this project under a 10-week timeline, it should be noted that the period for analysis and reporting was understandably condensed to allow for the longest possible period to receive survey responses.

4.1 Insights from Survey Implementation Process

In retrospect, it is clear that successful implementation of the pilot survey relied upon the ability to connect with and incite action from eligible respondents.

Regarding the former, there were several challenges to overcome, such as the collection of the Tsunami Ready Recognition Programme application forms which contained the contact information required to initiate administration. Obtaining these forms was also pertinent to survey administration for recipient usage, particularly for those contacts from communities who received their recognition years prior. Most application forms were accessible from the *UNESCO-IOC Tsunami Ready Recognition Programme- Caribbean* website, with the exception of certain recently recognized (Portsmouth and Laborie) and non-English speaking (Deshaies, Bluefields, Corn Island, Tornabé/Tela, Omoa)

communities, as well as those recognized during the COVID-19 pandemic in 2020 (St. John's, Carenage, Union Island, Shermans/St. Lucy to Mullins/St. Peter).

However, even once all applications were gathered, there were still challenges to connect with eligible respondents, both literally and in terms of email engagement. Tables 1 and 2 allude to such, summarizing the engagement metrics of the introductory email and reminder emails respectively. As demonstrated in Table 1, the survey was administered to 71 individuals, 54 of which were eligible to provide a response and were able to be contacted through 67 email addresses. However, 10 of these addresses were invalid because they couldn't be found or were unable to receive mail, and only 5 submitted a read receipt. Together, these two metrics define the introductory deliverability and email engagement rate (represented by the read receipt return rate) of 85.07% and 8.77% respectively among eligible respondents.

In an effort to preempt deliverability errors that could contribute to low email engagement, the introductory email states, "*If you are not the corresponding individual in question or there have been changes in your community's NTRB or LTRC roles since recognition, please refer me to the appropriate person(s).*" Even so, only one recipient of 71 followed up with a contact correction. Ultimately, it was this overwhelming lack of recipient confirmation from the introductory email that prompted external efforts to connect with community contacts by the ICG/CARIBE-EWS stakeholders, such as the utilization of Whatsapp as an alternate survey administration method. This route was pursued for 8 communities, who together received 17 Whatsapp messages in total.

Table 2 elaborates on eligible respondent engagement with the first and final reminder emails after adjustments were made to the email lists. Six of the 48 first reminder recipients were new, and their contact information was obtained through sidebar correspondences with Tsunami National Contacts and local contacts known by the ICG/CARIBE-EWS stakeholders. Neither reminder was particularly effective in confirming connection with recipients either, with the first reminder returning a 6.00% read receipt return and the final reminder a 22.73% read receipt return.

As such, it could be said that the implementation of the pilot survey was somewhat hindered by the official method chosen to administer the survey to eligible respondents. Email correspondence with the contacts listed on the Tsunami Ready Recognition Programme applications was minutely effective in producing responses to the survey, yielding only 10 of the desired 38.

However, it is crucial to consider another significant factor— the recipients themselves, specifically those identified on the TRRP applications. Of the 54 eligible respondents (whose eligibility was confirmed by the community's TRRP application) initially contacted through the introductory email, only 20.37% submitted a response. A substantial portion of survey respondents (13 of 22) were not listed community contacts, raising questions about the reach and engagement of the survey within the intended stakeholder group. This discrepancy suggests a potential disconnect between the designated contacts and the broader community of stakeholders involved in Tsunami Ready implementation efforts, which may have further influenced the email engagement rate, survey response rate, and the overall effectiveness of the pilot study.

4.2 Pilot Survey Success

The success of the pilot survey is pivotal in determining the survey's utility as a tool for future evaluations of the Tsunami Ready Recognition Programme and benchmarking its implementation among the ICGs. This section begins to assess such success by examining two key dimensions of the output received from the ICG/CARIBE-EWS Tsunami Ready communities.

4.2.1 Survey Participation and Influencing Factors

Out of the 19 ICG/CARIBE-EWS Tsunami Ready communities surveyed, 16 submitted at least one response, resulting in an overall participation rate of 84.21%. However, only 6 communities met the request to submit both responses. This result suggests the possible presence of challenges to participation which factored into the overall success of the pilot survey.

Figure 4 illustrates the distribution of survey responses by day across the survey administration period, presenting responses relative to email deliveries and the specified deadlines. In total, 22 responses of the requested 38 were obtained in the allotted 24-day period, leaving the sample completion rate at a mere 51.16%. Ten of these responses were submitted by the extended deadline, which reinforces the previous conclusions about the survey's administration. Such an extensive period of low engagement could indicate that the initial email correspondence and reminders

were not effective in providing concise instructions, or that respondents required more time than initially allowed.

However, there are more substantive factors that could explain the level of participation, given the fact that there were 21 incomplete responses made by respondents before they submitted a complete response. Furthermore, as shown in Table 3, the average completion time was 25 minutes and 15 seconds, though the range of response times extended from 1 hour, 6 minutes, and 16 seconds at the longest to 4 minutes and 7 seconds at the shortest. The wide range in completion times, coupled with the high number of incomplete responses, could suggest that the survey was found to be complex, leading to abandonment or prolonged completion times, especially given that the response resulting from the longest completion time (NTRB Old Harbour Bay) was considerably detailed.

Survey complexity as a whole could perhaps be contemplated in terms of challenges posed by its design. Firstly, the survey was created in English, even though several recipient communities are non-English speaking. Secondly, the survey on SurveyMonkey was set up in a way that respondents could not see all of the questions at once. There was an introduction page reiterating the instructions and deadlines, followed by a second page for respondents to input information about themselves and their community. All incomplete responses were complete up to this second page, meaning they did not address any of the substantive questions about Tsunami Ready implementation found on the third page. Given that all incomplete responses were made by individuals who eventually submitted a complete response, it is safe to say that these individuals saw the questions on the third page and were initially unprepared to submit responses, prompting them to revisit the survey later.

Further, in terms of question clarity, a few respondents reached out to the survey implementer with difficulties submitting the survey because of the structure of Question 13, which featured a matrix with comment boxes. There was confusion about what to submit for the "Other" row, leading the survey implementer to later correct the design of the question to make it optional and specify on the matrix itself to use that row to leave any general comments about implementation difficulty. This issue, however, was not encountered by individuals who filled out the PDF version of the survey. Another error that may have impeded responses was the use of *Disaster Management Committee* instead of *National/Regional Tsunami Ready Board* when asking for respondent affiliation.

There are any number of other explanations for the level of participation as well, such as variations in respondent familiarity with the subject matter. National/Regional Tsunami Ready Boards and Local Tsunami Ready Committees were equally represented in the sample, although local respondents provided much more written feedback via comments. The familiarity of eligible respondents with their community's implementation of the program could also have been influenced by time, as 10 of the 19 communities in question received their recognition before 2021 (*see Appendix 2*). Even so, this factor is not exactly supported by the results of the pilot survey. In reviewing the 6 communities that submitted both requested responses, 2 were recognized as far back as 2019. In addition, there were 2 communities among the 19 that received their recognition this year, and only 1 submitted both responses.

Taken together, these metrics indicate that while some respondents were able to complete the survey quickly, many struggled in preparing their response, highlighting a need for improvements in survey design, clarity, and overall user experience to ensure higher completion rates and more consistent completion times in future iterations.

4.2.2 Survey Feedback Quality

In continuing to examine the success of the pilot survey, another key question emerges: given the survey's current design and structure, what kind of feedback did it yield?

Figures 6 through 11 describe the feedback received from the pilot survey administered among ICG/CARIBE-EWS Tsunami Ready communities. Between NTRB/RTRB and LTRC responses, there was no substantial difference in the insightfulness or detail of the comments provided. A notable exception to this was the sole response received from a RTRB, made on behalf of Saint Kitts and Nevis. The respondent was entirely unqualified to assess the program and its implementation in the community through the questions asked, as they were not part of any national or local authority. This fact in and of itself, however, suggests a shortcoming of the survey in accounting for and eliciting feedback from the perspective of RTRBs.

In general, the sample considered the TRRP guidelines effective, with 27.3% going so far as to designate them very effective. Only one respondent suggested the inclusion of an additional indicator– one that would cover demonstrated efforts by the local community to initiate and design public education and awareness projects. In

evaluating specific aspects of the program, the sample felt that Tsunami Ready was overwhelmingly very effective in raising tsunami awareness and enhancing tsunami preparedness and response. The Tsunami Ready verification process was also found to be effective, as well as the program guidelines in preparing the community to respond appropriately to a tsunami. At the same time, a few found the guidelines somewhat ineffective in helping to develop or test their standard operating procedures.

More detailed feedback was obtained about the level of difficulty in implementing the Tsunami Ready program, represented in Figure 11 and Table 5. Out of the 12 indicators, the sample considered ASSESS-1 the most difficult to implement, with the majority of communities outsourcing map development due to challenges such as limited bathymetric data, resources, expertise, and funding. Interestingly, some respondents even viewed their reliance on external support as a challenge, which contrasts with the feedback for PREP-2, the easiest indicator to implement, where external support was seen as beneficial. Feedback on the implementation of the remaining indicators and the program in general, outlined in Table 5, further highlighted a trend of issues related to communication barriers, data accuracy and collection issues, and resource allocation.

The general comments submitted about the Tsunami Ready Recognition Program emphasize its usefulness in facilitating community preparedness and safety. Respondents noted that the program is useful in preparing for hurricane seasons and strengthens overall tsunami response readiness by equipping community members with necessary evacuation knowledge. The program enhances awareness of community vulnerabilities, contributing to the well-being of residents and tourists by providing essential knowledge about natural disasters. However, there are challenges, such as difficulties in resource mobilization, fiscal planning for Small Island Developing States, and maintaining continuous readiness. More localized efforts and community involvement were requested, along with a mechanism to document successes and lessons learned to aid future implementations.

4.3 Evaluation of Survey as a Feedback Mechanism

Though it fell short in bolstering engagement and participation from the intended sample, the survey was largely effective in (1) assessing the difficulties in implementing the Tsunami Ready program among communities in the ICG/CARIBE-EWS and (2) beginning to gauge the usefulness of the program. The feedback obtained did not represent the whole of the region nor the experiences of NTRB/RTRBs and LTRCs, but it was sufficient in distinguishing shared challenges faced by communities in the region,

as well as a collective outlook on the program. In this way, it achieved its objective to provide insight into the program's strengths and deficiencies.

Nevertheless, it seems that the survey was not the most productive in yielding sufficient feedback on the effectiveness of the Tsunami Ready Recognition Programme. It prompted respondents to focus largely on the ineffective, which restricted the nuance of the feedback because most respondents within the pilot sample found the program elements in question some level of effective. Of course, there are insights to be gained in plainly confirming effectiveness, but in doing so, information about the strengths of the program are lost, limiting the extent to which the implementation of the program can be benchmarked and evaluated.

Despite this, based on the assessment of the survey administration period and pilot survey success, it could be said that the limited success of the survey in benchmarking the effectiveness of the Tsunami Ready program was not necessarily the result of the mechanism itself. Surveys, by nature, offer a structured and quantifiable means of collecting feedback, allowing for a broader range of responses and more refined data analysis. Unlike meetings with NTRB and LTRC representatives, which can be subject to biased reporting and considerable organizational costs, and written reports, which may vary in completeness and cost time, surveys ensure standardization while also encouraging personalized contributions. Additionally, the use of SurveyMonkey enhanced this approach with its specific design features and comprehensive data collection capabilities, surpassing those of platforms like Google Forms. Any technical challenges encountered can be mitigated by the continued use of both the digital survey and a supplementary PDF copy, as demonstrated in the pilot, ensuring accessibility.

As such, the limited success demonstrated by the pilot is rather a reflection of the need for refinement in the survey design and administration method. In future iterations, participation and engagement could be bolstered by more concise instructions, as well as a more demonstrated effort to familiarize eligible respondents with the purpose of the survey. Regarding the feedback itself, the lack of effectiveness evaluation provided by the survey arguably arose with the framing of its questions, which caused confusion among respondents and redirected them away from certain topics. An adjustment to the language of Questions 7, 9, 10, 11, and 12, for example, could elicit more in-depth assessments if they request respondents to provide comments explaining the reasoning behind ratings, regardless of if they found the element of the program in question ineffective.

Expanding the pool of questions could also be beneficial for both benchmarking and program evaluation purposes. As currently designed, the survey encourages respondents to recommend any additional indicators to be considered for inclusion but does not prompt a response on whether any existing indicators should be removed. These two questions are equally productive in weighing the effectiveness of the program, so the inclusion of both could better assist in ensuring the guidelines remain relevant and useful in building the readiness of communities to respond to tsunami events.

Moreover, the pilot survey did manage to succeed as a tool for evaluating the program itself, but this feat relied heavily upon the space for general comments. To improve the clarity of the purposes of the survey for respondents and better indicate the kind of feedback sought after, it could be advantageous to include a question that specifically asks respondents to identify the most valuable product of Tsunami Ready. The inclusion of such a question would therefore enable stakeholders to evaluate the effectiveness and usefulness of the program using feedback on both the implementation process and results of the program.

5 Recommendations for Future Implementation

In summary, the findings from the pilot survey on the implementation of the Tsunami Ready Recognition Programme in the ICG/CARIBE-EWS reveal critical insights into the challenges and successes faced by communities recognized since 2019. Despite its reduced return from all NTRB/RTRBs and LTRCs, the survey saw engagement from 16 of 19 communities, who together underscored the program's ease in facilitating public outreach, tsunami education, and the establishment of standardized procedures and operational systems. The feedback further emphasized the program's overall utility in building community preparedness and response, not only to tsunamis but also hurricanes. To enhance the strength of program implementation, additional support is needed to fill the gaps in its data collection and accuracy, internal expertise, communication barriers, funding, and resource mobilization.

Regarding the survey's effectiveness as a tool for future evaluations of the Tsunami Ready Recognition Program, it is clear that adjustments need to be made to smoothen its implementation process. The pilot encountered several difficulties that hindered its overall return, such as contacting eligible respondents, confirming email delivery, and obtaining the intended number of responses. Furthermore, the survey was limited in eliciting comprehensive feedback about the effectiveness of the program due to issues such as respondent involvement in implementation, variations in response detail, time since community recognition, and survey design errors.

Given the challenges faced in the survey implementation process, it is recommended that a national Tsunami Ready contact be established. This role would address deficiencies not only in the implementation of the Tsunami Ready Program but also in its continued management among recognized communities. The project highlighted a disconnect with some communities due to administration changes, resulting in outdated contact information and communication barriers. By creating a national Tsunami Ready contact, feedback from surveys can be elicited more efficiently, in that the contact could oversee the coordination of responses from the most informed respondents. This liaison would also assist in collecting information about the communities, tracking their progress, and facilitating communication between local and national/regional levels. Ultimately, the establishment of such a role would provide more accurate and informed representation of the communities to program administrators, thereby increasing the effectiveness of the survey as a tool for future evaluations.

To further the outcomes of the survey, it is suggested that the survey, with the improvements to its design discussed above, be implemented immediately upon a community's recognition as Tsunami Ready. This timing will help avoid any loss of detailed feedback over time, ensuring that insights are gathered while the experiences and knowledge of the individuals involved in the program's implementation are still fresh. Additionally, implementing the survey at the time of recognition will provide a more accurate and timely assessment of the program's effectiveness, capturing the immediate impact and areas for improvement. It also ensures that the enthusiasm and momentum generated by the recognition are harnessed, potentially leading to higher response rates and more engaged feedback.

Lastly, coupled with the implementation of the survey upon recognition, consideration should be given to the development of an annual reporting mechanism on the Tsunami

Ready guidelines. As indicated with the ICG/CARIBE-EWS recommendation to administer a Tsunami Ready evaluation form at its 16th Session, it is a top priority to ensure that the program remains efficient and effective in its requirements. The pilot survey, while moderately successful in promoting and improving the program collectively, highlighted the need for more frequent and specific assessment about the utility and status of the guidelines in preparing communities for tsunami events. An annual reporting mechanism would provide a structured opportunity for communities to give ongoing feedback, enabling continuous improvement and adaptation of the guidelines. Such a mechanism would also help maintain involvement with the communities, offering a regular platform for them to provide updates between recognition and renewal.

Collectively, the adoption of these recommendations in future Tsunami Ready Recognition Programme evaluations will assist in monitoring program efficacy and progress, thereby building on the success of the pilot survey and assuring the maintenance of continual readiness among all communities across the ICGs.

Appendix 1. Feedback Survey on the Implementation of the UNESCO-IOC Tsunami Ready Recognition Programme

Feedback Survey on Implementation of UNESCO IOC Tsunami Ready Recognition Program

Introduction and Background

ONLINE QUESTIONNAIRE AVAILABLE UNTIL 21 June 2024.

Dear CARIBE-EWS Tsunami National Contact/Tsunami Ready Community Contact/Chair of National/Regional Tsunami Ready Board:

Over the past years, Tsunami Ready recognitions have been conducted within several Member States of the ICGs. This pilot survey, intended to be used within all ICGs, has been prepared to receive feedback from stakeholders who have received or renewed Tsunami Ready recognition in the CARIBE-EWS region.

Your response will greatly assist in benchmarking the current effectiveness of the recognition program and provide insight into the strengths, as well as gaps or deficiencies, to promote and improve the program collectively and, through the program, the readiness of communities to respond to tsunami events, whether local or distant. Furthermore, your contributions will assist in fine tuning the survey for its administration in other ICGs.

We recommend that you consult with your board or community members before answering the survey. For easy access to your community's Tsunami Ready Recognition Program Application, visit ioc-unesco.org. Once such information and feedback has been gathered, the survey should only take about 10 minutes to complete.

Two responses are requested for each community receiving/renewing their recognition status. One response would reflect the opinion of the **Regional or National Tsunami Ready Board** (Regional or National, depending on the recognition level), and the second, the corresponding **Tsunami Ready Committees** of the community being recognized. In order to gather these consolidated viewpoints, the corresponding bodies can request stakeholders to complete this form individually and use it as a basis for their consolidated response.

We kindly request that all parties complete this form by **June 21, 2024**. Thank you for your participation.

If you have any questions or problems, please contact:

Grace Lemoine, ITIC-CAR (NOAA) Intern
(grace.lemoine@noaa.gov)

2. Tsunami Ready Community Contact Information

1. Information of person completing the questionnaire:

Name _____

Organization _____

Email Address

_____

Phone Number _____

2. The answers represent the feedback of the

○ Local Tsunami Ready Community ○ Disaster Management Committee

3. Name of the community being recognized:
Please select one only.

- ○ Bluefields
- ○ British Virgin Islands
- ○ Cahuita
- ○ Corn Island
- ○ Deshaies
- ○ Fort-Liberté
- ○ Laborie
- ○ St. George Parish
- ○ St. John's
- ○ St. Kitts and Nevis
- ○ Shermans, St. Lucy to Mullins, St. Peter

4. Country of the community being recognized:

- ○ Antigua and Barbuda
- ○ Barbados
- ○ British Virgin Islands
- ○ Grenada
- ○ Guadeloupe (France)
- ○ Haiti
- ○ Nicaragua
- ○ St. Kitts and Nevis
- ○ St. Lucia
- ○ St. Vincent and the Grenadines

5. Level of Recognitions:

◯ National/Territorial ◯ Local Community

6. Indicate the circumstance of the recognition.

◯ First Time Recognition ◯ Renewal (specify number of renewal): __

3. Tsunami Ready Recognition Program Evaluation

Provide feedback on the effectiveness of the Tsunami Ready Recognition Program guidelines and their implementation. We encourage additional explanatory comments to your ratings. For easy access to your community's Tsunami Ready Recognition Program Application, visit ioc-unesco.org.

7. How would you rate the guidelines in general?

Very Ineffective	Ineffective	Somewhat Ineffective	Effective	Very Effective
◯	◯	◯	◯	◯

If ineffective, what areas should be addressed?

_____

_____

_____

_____

8. Are there any additional indicators that are recommended to be considered for inclusion?

Yes	No
◯	◯

If yes, what areas?

9. To what degree do you think the Tsunami Ready Program can be an effective part of school curricula for raising Tsunami awareness and the enhancement of tsunami preparedness and response?

Very Ineffective	Ineffective	Somewhat Ineffective	Effective	Very Effective
○	○	○	○	○

10. How effective were the Tsunami Ready guidelines in helping to develop or even test your standard operating procedures?

Very Ineffective	Ineffective	Somewhat Ineffective	Effective	Very Effective
○	○	○	○	○

If ineffective, what areas should be addressed?

_____

_____

_____

11. How effective do you find the Tsunami Ready verification process?

Very Ineffective	Ineffective	Somewhat Ineffective	Effective	Very Effective
○	○	○	○	○

If ineffective, what areas should be addressed?

_____

_____

_____

12. Please rate the Tsunami Ready Guidelines according to their effectiveness in preparing the community to respond appropriately to a tsunami.

Very Ineffective	Ineffective	Somewhat Ineffective	Effective	Very Effective
○	○	○	○	○

If ineffective, what areas should be addressed?

_____

_____

_____

13. Indicate the level of **difficulty** in implementing the Tsunami Ready Program within the community by rating each indicator.

	Very Easy	Easy	Somewhat Difficult	Difficult	Very Difficult	N/A (specify why)
Tsunami hazard zones are mapped and designated.	○	○	○	○	○	○

Comments:

The number of people at risk in the tsunami hazard zone is estimated. ○ ○ ○ ○ ○ ○

Comments:

Economic, infrastructural, political, and social resources are identified. ○ ○ ○ ○ ○ ○

Comments:

Easily understood tsunami evacuation maps are approved. ○ ○ ○ ○ ○ ○

Comments:

Tsunami information including signage is publicly displayed. ○ ○ ○ ○ ○ ○

Comments:

Outreach and public awareness and education resources are available and distributed.	○	○	○	○	○	○

Comments:

Outreach or educational activities are held at least 3 times per year.	○	○	○	○	○	○

Comments:

A community tsunami exercise is conducted at least every two years.	○	○	○	○	○	○

Comments:

A community tsunami emergency response plan is approved.	○	○	○	○	○	○

Comments:

The capacity to manage emergency response operations during a tsunami is in place.	○	○	○	○	○	○

Comments:

Redundant and reliable means to timely receive 24 hour official tsunami alerts are in place.	○	○	○	○	○	○

Comments:

Redundant and reliable means to timely disseminate 24-hour official tsunami alerts is in place.	○	○	○	○	○	○

Comments:

Other (put in comments)	○	○	○	○	○	○

Comments:

14. Please utilize the space below to share any general comments about the Tsunami Ready Recognition Program.

_____

_____

_____

_____

_____

Appendix 2. List of Recognition/Renewal Dates and Population in Evacuation Zones by Tsunami Ready Community in the Caribbean & Adjacent Regions

List of Recognition/Renewal Dates and Population in Evacuation Zones by Community in the Caribbean & Adjacent Regions

Country	Locality/City/Town	Recognition/Renewal Date	Amount of population to be evacuated
Antigua and Barbuda	St. John's City	2020	*not indicated on form*
Barbados	Christ Church West	Sept 13, 2023	2,061
Barbados	Shermans, St. Lucy to Mullins, St. Peter	Sept 10, 2020	6,000
Costa Rica	Cahuita	June 10, 2024	5000
Dominica	Portsmouth	2024	2,599
France	Deshaies, Guadeloupe	June 16, 2023	600
Grenada	Carriacou & Petite Martinique	Sept 24, 2019	4,250
Grenada	St. Patrick	Sept 20, 2018	4,000
Haiti	Fort-Liberté	Sept 28, 2018	31,835
Honduras	Municipality of Omoa	Sept 2019	51,046
Honduras	Tornabé, Tela	Sept 2019	56,595
Jamaica	Old Harbour Bay	Sept 20, 2021	5,543
Nicaragua	Municipality of Bluefields	Sept 12, 2019	55, 008
Nicaragua	Corn Island	Sept 13, 2019	9,355
Saint Kitts & Nevis		Feb 4, 2022	22,500
Saint Lucia	Laborie	2024	485
Saint Vincent and the Grenadines	Saint George Parish	Sept 15, 2023	8,470
Saint Vincent and the Grenadines	Union Island	June 10, 2020	1,572
Trinidad and Tobago	Carenage	June 10, 2020	5,623
United Kingdom	British Virgin Islands	Nov 2, 2021	30,030

Appendix 3. Introductory Email Template for Survey Administration

Dear **[NTRB Chair]** and **[LTRC Chair]**:

My name is Grace Lemoine, and I am an ITIC-CAR Intern and NOAA/NWS Lapenta Scholar that has been retained to administer a survey on the implementation of the UNESCO-IOC Tsunami Ready Recognition Program via SurveyMonkey. As you know, through efforts like UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) we are collectively trying to ensure that 100% of communities at risk of tsunami across the four ICG regions (i.e., Pacific, Caribbean and Adjacent Regions, Indian Ocean, and North-eastern Atlantic the Mediterranean and connected seas) are prepared for and resilient to tsunamis by 2030.

At its 16th Session, ICG/CARIBE-EWS requested the WG4 Subgroup on Tsunami Ready (reestablished as a Task Team at its 17th Session) with the Caribbean Tsunami Information Center (CTIC) and the International Tsunami Information Center-Caribbean Office (ITIC-CAR) to administer the Tsunami Ready evaluation survey for Tsunami Ready communities recognized since 2019. Furthermore, the UNESCO-IOC Working Group on Tsunamis and Other Hazards related to Sea-Level Warning and Mitigation Systems (TOWS-WG) at its 17th Session recommended the introduction of a Tsunami Ready Evaluation Form in the other ICGs.

At its 17th Session in May 2024, the ICG/CARIBE-EWS accepted the kind offer of ITIC-CAR to provide an intern for a period of 10 weeks to support the implementation of the Tsunami Ready survey in the ICG/CARIBE-EWS. The ICG further recommended the Steering Committee and the Secretariat to evaluate the implementation process in ICG/CARIBE-EWS and inform the ICG/CARIBE-EWS in the implementation of this effort in other ICGs in accordance with the TOWS-WG-XVII recommendation.

This survey is intended to be used as a pilot within the ICG regions and be used as a tool to refine future surveys for administration among the ICGs, and receive feedback from stakeholders who have received or renewed Tsunami Ready recognition in the CARIBE-EWS region. Furthermore, your responses will greatly assist in benchmarking the current effectiveness of the recognition program and provide insight into the strengths, as well as deficiencies, to promote and improve the program collectively and, through the program, the readiness of communities to respond to tsunami events.

In this regard, I hope to obtain two responses that encompass the perspective and experience of **[Name of Recognized Tsunami Ready Community]**. One response should reflect the opinion of the **[Regional or National]** Tsunami Ready Board and the second, the corresponding Local Tsunami Ready Committees. To gather these consolidated viewpoints, the corresponding bodies can request stakeholders to complete this form individually and use it as a basis for their consolidated response.

We recommend that you consult with your board or community members before answering the survey. Your community's Tsunami Ready Recognition Program Application form has been attached below to assist in this endeavor. **If you are not the corresponding individual in**

question or there have been changes in your community's NTRB or LTRC roles since recognition, please refer me to the appropriate person(s).

To access the survey and submit your responses, please utilize the following link: https://www.surveymonkey.com/r/K8P38CH. If you would prefer to print out the survey, please see the attached PDF file below and return a scanned copy of your response via email. I am available to meet at your request to assist you in filling out the survey. Please send a follow up email with your availability if this is the case.

We would like to kindly request that all parties complete the survey by **June 21, 2024**. In case of any questions or problems experienced in completing the survey, please contact me directly.

Thank you for your kind understanding and collaboration.

Kind regards,

Grace Lemoine
ITIC-CAR Intern and NOAA/NWS Lapenta Scholar
grace.lemoine@noaa.gov

Attachments
PDF of Feedback Survey on Implementation of UNESCO IOC Tsunami Ready Recognition Program
PDF of Community Tsunami Ready Recognition Programme Application