



Smart Seas Toolkit for Disaster Resilience Project
ITU/CTU/TATT Project

Smart Seas Project Update

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Vulnerability of Small-Scale Fisherfolk (SSF)



Physical Exposure & Digital Exclusion...

- **Fatal Profession:** Fishing is globally claiming 32,000 annual fatalities at sea (FAO 2020) ranked as the most dangerous job
- **Undecked Vessels:** SSF comprise 90% of the global fleet, operate in open, undecked boats without basic emergency safety systems
- **Double Vulnerability:** They are physically vulnerable on the sea, but digitally & financially isolated from national grids.



...Amplified by Impacts of Climate Change...

- **Exacerbated Conditions:** Climate change increases the magnitude and frequency of severe natural disasters in the Caribbean
- **Forced Migration:** Increasing sea temperatures drive fish further away from coastlines
- **Unfit Vessels:** SSF must navigate much further offshore into open sea waters for which their vessels were never structurally designed... leaves them further exposed

Response: Smart Seas Project

How it Started (Dec 2021)

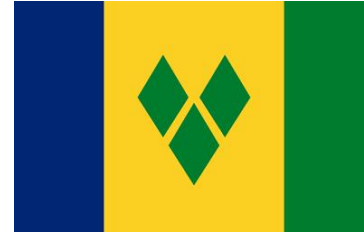
Countries



Trinidad & Tobago



Barbados



St. Vincent & The Grenadines



Grenada

Aim: increase the resilience and preserve lives of Caribbean small-scale fishers (SSF) through ICTs, with emphasis on the associated **enabling environment**

Dimensions: The Enabling Environment



Policy & Reg



Operations

Capacity



Technology



Duration

Mar 2021 to Jun 2026

Planned Benefits & Products

Best Practice



Gap Analysis

Current State



Smart Seas Toolkit



Procurement



Agenda

Outputs



Capacitated Ecosystem



Enabling Environment



Resilient SSF

Outcomes

Impact

Smart Seas: ...How it's Going...

Phase I ended Jun 2026

Countries:

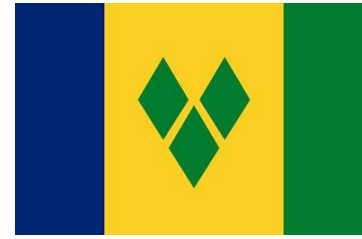
Workshop, Conf & Proc.



Trinidad & Tobago



Barbados

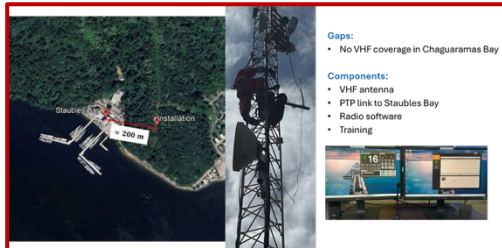


St. Vincent & The Grenadines

Workshop



Grenada



Interventions Across ALL Dimensions:



Policy & Reg

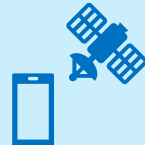


Operations

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Technology



Benefits & Products

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Smart Seas Toolkit



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Gap Analysis: Gaps & Other Findings in...

UN Conventions & Recs

- **Overlap in notification reqs**
IMO GISIS⁴; ITU MARS⁵/List IV
- **Compliance**
e.g. notification⁶: 80% of CTU Member States had never notified ITU MARS on their coast stations
- **Country membership**
IMO: 30%, FAO: 20%, WMO: 15%

Ecosystem

- **Knowledge of process flows**
What agency is responsible for discharging mandates under UN Conventions & Recs?
- **Roles & responsibilities**
Gaps & overlaps: notification, registration, ...
- **Engagement**
Room for more collaborations and support across agencies within the ecosystem

Policy Environment

- **Currency of policies & related artefacts**
Consider maritime areas and SSF as underserved in USF
- **Official agreements**
e.g. on rescue co-ordination

Regulatory Environment

- **Inclusive regs & related artefacts**
Maritime area coverage in USF
- **Official documentation**
e.g. monitoring measures

Operations

- **Early warning systems**
- Met & sea state data
- Radio **coverage** within MRCC
- GMDSS **certification**

Capacity

- **Relevant curricula & certification schemes** for Caribbean SSF & coast stations
Reduced & context-appropriate

⁴ Global Integrated Shipping Information System

⁵ Maritime mobile Access and Retrieval System

⁶ World Meteorological Organization

Smart Seas: ... What's Next...

Jul 2026 ++

Phase II Countries:



Trinidad & Tobago



Barbados



St. Vincent & The Grenadines



Grenada



The Bahamas

National Project

Interventions Across All Dimensions:



Policy & Reg

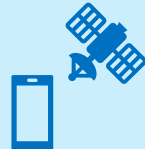


Operations

Capacity



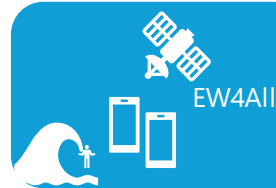
Tech & Early Warnings



Start Date?

2027

Planned Benefits & Products



EW4All



Smart Seas Toolkit



Procurement & Training



Apps & Tech

Outputs



Capacitated Ecosystem



Enabling Environment



Resilient SSF

Outcomes

Impact

Lessons Learnt & Key Challenges

Lessons Learnt

- **Resilience & inclusion** requires **multi-sector coordination**: telecoms, maritime, fisheries, disaster management, met, etc.
- SSF (underserved) should be **considered by design**, not as an afterthought – incorporated into ITU-D resolutions
- Tech alone is insufficient: policy & reg, capacity, financing, etc.
- Sustainability requires **institutional ownership** beyond the project
- Stakeholder mapping and engagements need to **begin early**
- Outreach & capacity building - **translate policy recs. into action**

Key Challenges

- **Underdeveloped data ecosystem**: SSF, maritime incidents and coverage
- Different levels of institutional **readiness** and **interests** across countries
- **Fragmented** or **overlapping** responsibilities across agencies
- **Funding** & long-term **sustainability**
- Need to better integrate maritime comms into **NETPs**, **USF** and **EWS**

Key Takeaway

Phase I has sparked the flame; next stage must focus on **implementation**, **institutionalization** and **scaling**



Appendices

Strengthening Enabling Env: Smart Seas Project

Essential (emergency comms: lifesaving)



VHF Radio

Source: ICOM



VHF-DSC Radio

Source: Standard Horizon



AIS-SART

Source: SAMYUNG ENC



Satellite EPIRB

Source: Daniamant

GMDSS

Non-essential (regular comms & livelihoods)



Satellite Phone

Source: Inmarsat



PLBs

Source: ACR



Cellular Phone



Direct to Device

Source: Thuraya

Non-GMDSS

Smart Seas Toolkit

Informational Resources

Checklists

Guidelines

Templates

Guidelines & Templates

Data Collection Resources

REGULATION

Compliance Tracking

UN Compliance:



Checklists



Opportunity Estimator

OPERATIONS

Strengthening the Ecosystem

Ecosystem



Ecosystem Maps 2022



Agency Role Specification

Info product Dev & Dissemination



Register of Carib. Coast Stations



Map of Carib. Coast Stations



Key Website Messaging Resources

Data Collection



Register of Incidents at Sea



MRCC & Coast Station Survey



UN-Compliant Licensing Form



RF Measurement Planning & Execution Resources



TTO Measurement Strategies & Tools



Guidelines to Specify Sea Area A1



VHF Channel Usage Specification

Ltd. Coast Station Ops



Operationalizing Limited Coast Stations



Radio Guide for Limited CS Ops

SSF Radio Ops



Float Plan:

- Register
- Checklist



Radio Guide for SSF

CAPACITY

Knowledge, Skills & Resources

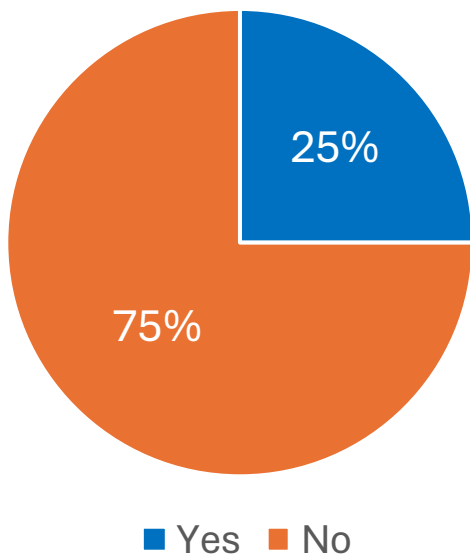


Nominal VHF Radio Curricula for:

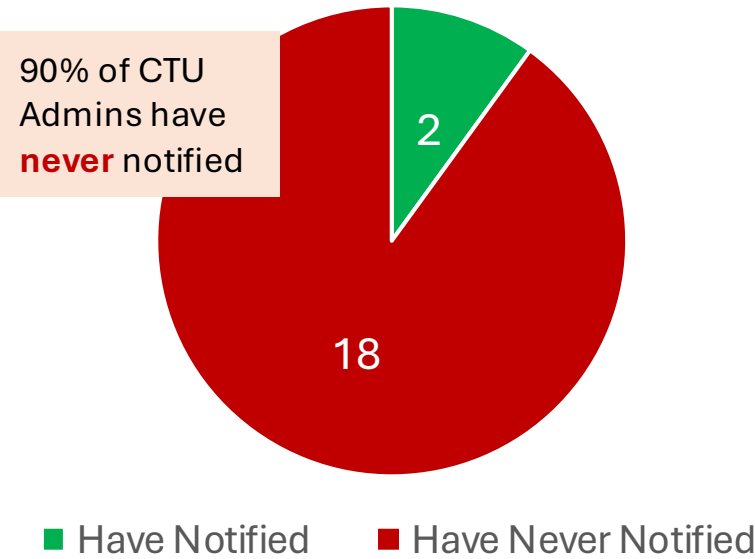
- SSF
- CS

Sample Data for CTU Member States

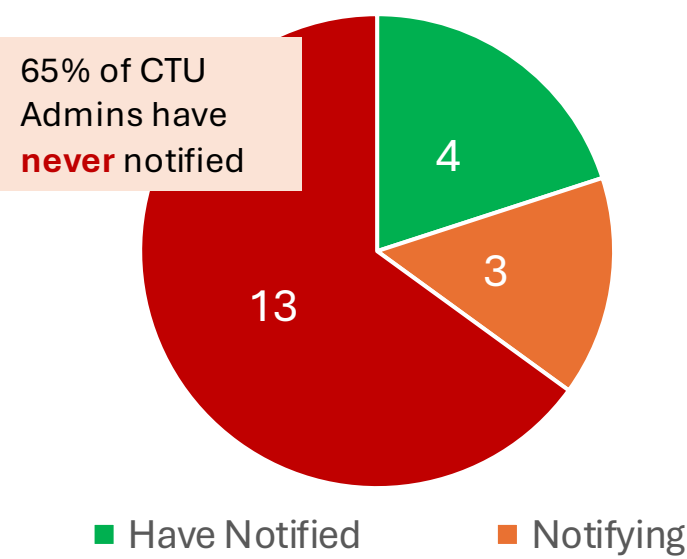
Maritime Coverage in
USF Frameworks



List IV Notification Status
(Pre-Smart Seas/Dec 2021)

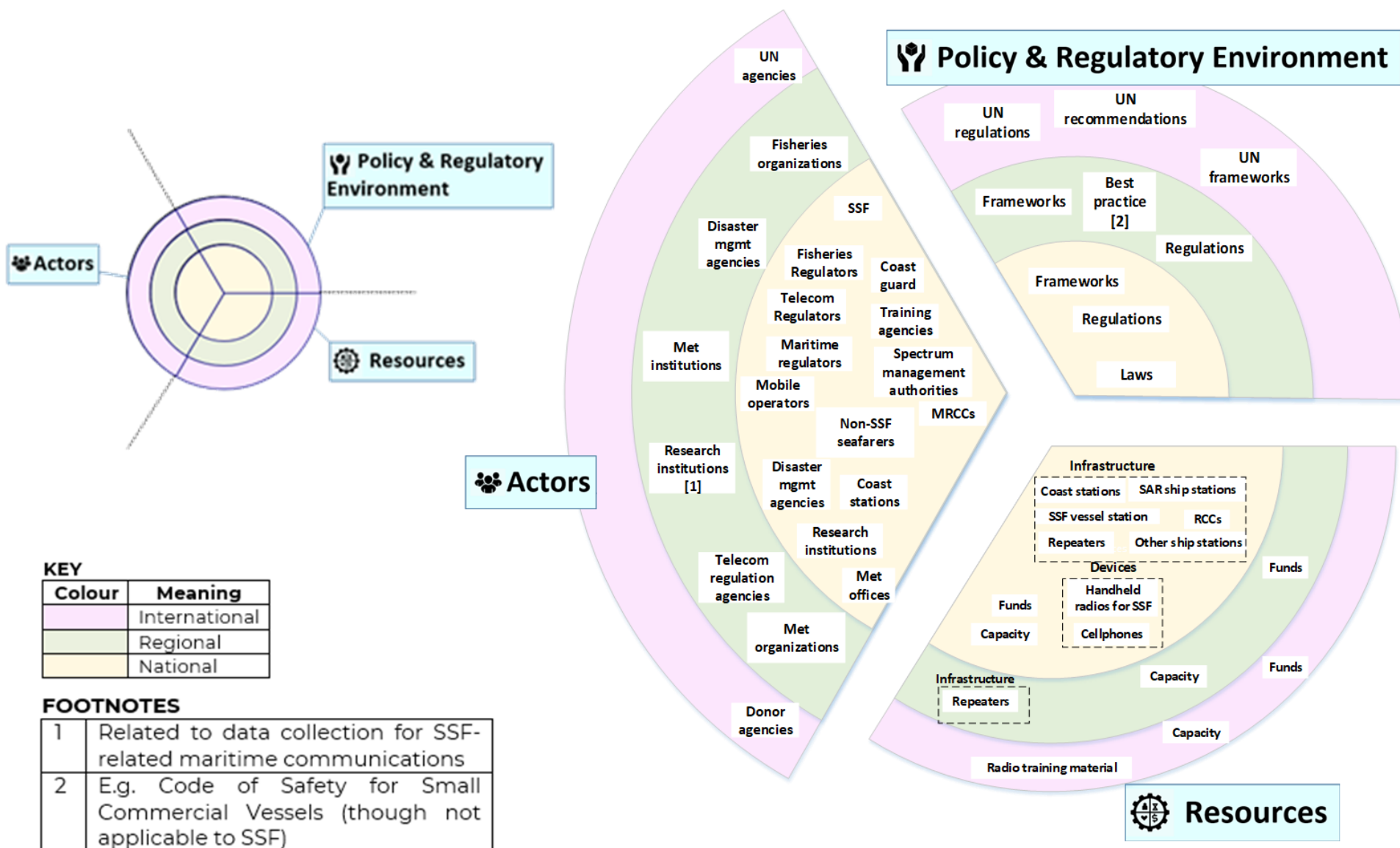


List IV Notification Status
(as of Jun 2026)



We have supported 2 CTU Member States in filling notification gaps, and is currently working with 3 more: Belize, Barbados, The Bahamas

Multidimensional Ecosystem Map

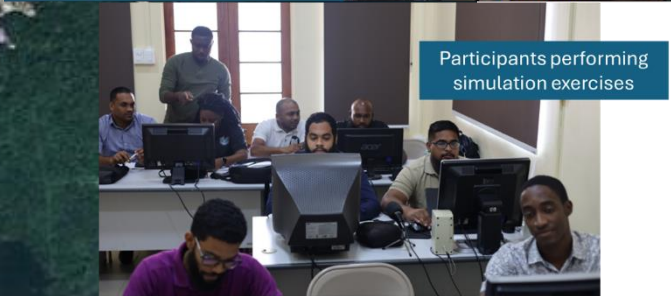
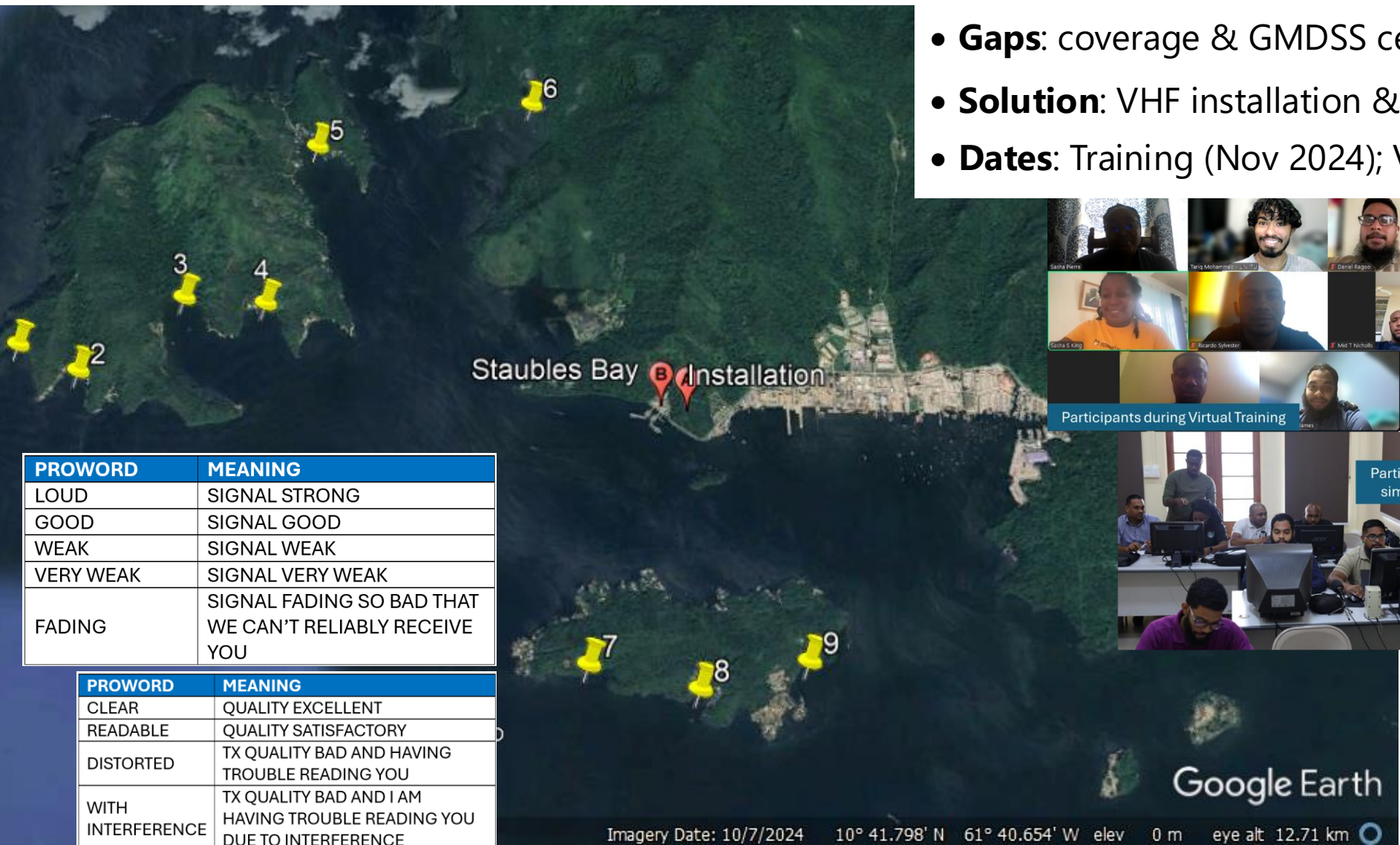


VHF Equipment & Training for TTCCG

- **Gaps:** coverage & GMDSS certifications
- **Solution:** VHF installation & training for 10 personnel
- **Dates:** Training (Nov 2024); VHF installation (Mar 2025)

PROWORD	MEANING
LOUD	SIGNAL STRONG
GOOD	SIGNAL GOOD
WEAK	SIGNAL WEAK
VERY WEAK	SIGNAL VERY WEAK
FADING	SIGNAL FADING SO BAD THAT WE CAN'T RELIABLY RECEIVE YOU

PROWORD	MEANING
CLEAR	QUALITY EXCELLENT
READABLE	QUALITY SATISFACTORY
DISTORTED	TX QUALITY BAD AND HAVING TROUBLE READING YOU
WITH INTERFERENCE	TX QUALITY BAD AND I AM HAVING TROUBLE READING YOU DUE TO INTERFERENCE
UNREADABLE	TX SO BAD THAT I CANNOT READ YOU



Capacity Building: Trinidad and Tobago, Grenada



- Multi-stakeholder participation
- Lessons learnt
- Need for future interventions



Key Activities: Phase II

1. Policy & regulatory support

support for compliance of beneficiary countries with UN Conventions and Treaties and review and rollouts of the Smart Seas Toolkit

3. Early warning system support

procuring and deploying meteorological sensors and weather stations for maritime and coastal meteorological data and early warning systems etc.; these investments will provide enhanced safety of life at sea

5. Outreach

collab with key agencies in the sector, on related projects, as well as promo media to increase project awareness

2. Gap analyses, capacity building & proc

identifying & filling gaps in coverage, and strengthening the capacity within the ecosystem through sustainable training programmes; VHF procurements for fisherfolk, coast guards and other coast stations to improve maritime coverage & support border security

4. Digital Transformation

leveraging emerging technologies such as artificial intelligence (AI4SmartSeas), and others to support the maritime data ecosystem and fisheries value chain