RESPONSE CHALLENGES

Petroleum Association of Japan SYMPOSIUM

Thomas S. L. Sturgeon**, Technical Advisor**

RESPONSE
CHALLENGES

COMMAND & CONTROL

Advances in technology
= Less Spills
= Less Practical Experience

LOW SULPHUR FUEL OILS

PLASTICS

ESG - SUSTAINABILITY

ITOPF
BACKGROUND

Multi-lingual
Fluency in English, Japanese, Spanish, French, Portuguese, Russian

Multi-skilled
Biologists, Chemists, Environment Scientists, Geologists, Engineers

ITOPF STAFF
37

19
RESPONDERS

24 365 7

+44 (0)20 7566 6998
(Please do not email for an emergency situation)

TECHNICAL
5
SERVICES

ITOPF

ITOPF SERVICES

SPILL RESPONSE

IMPACT ASSESSMENT

CLAIMS ANALYSIS

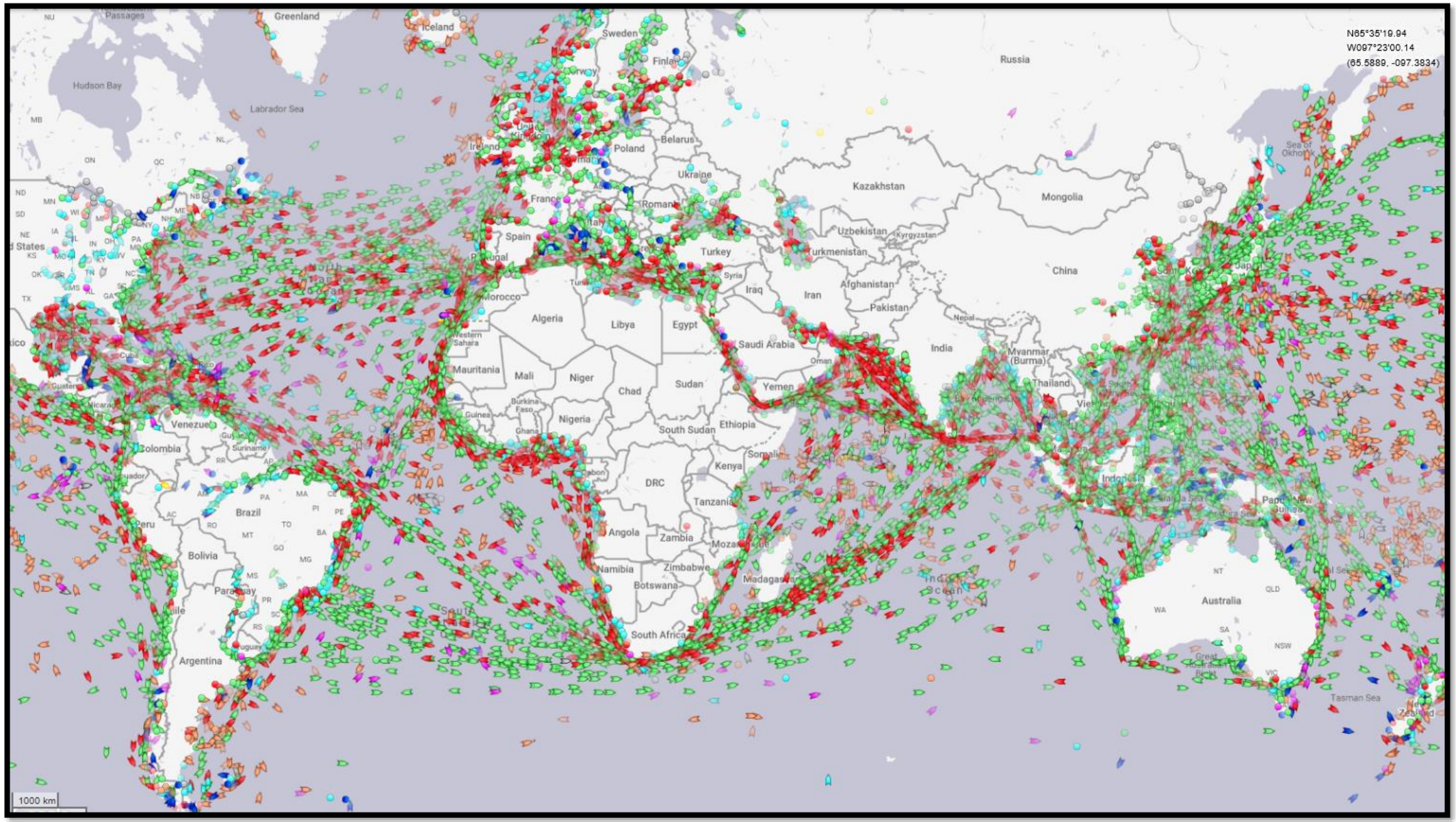
INFORMATION SERVICES

CONTINGENCY PLANNING & ADVISORY

TRAINING & EDUCATION

FUNDING

GLOBAL SHIPPING INDUSTRY



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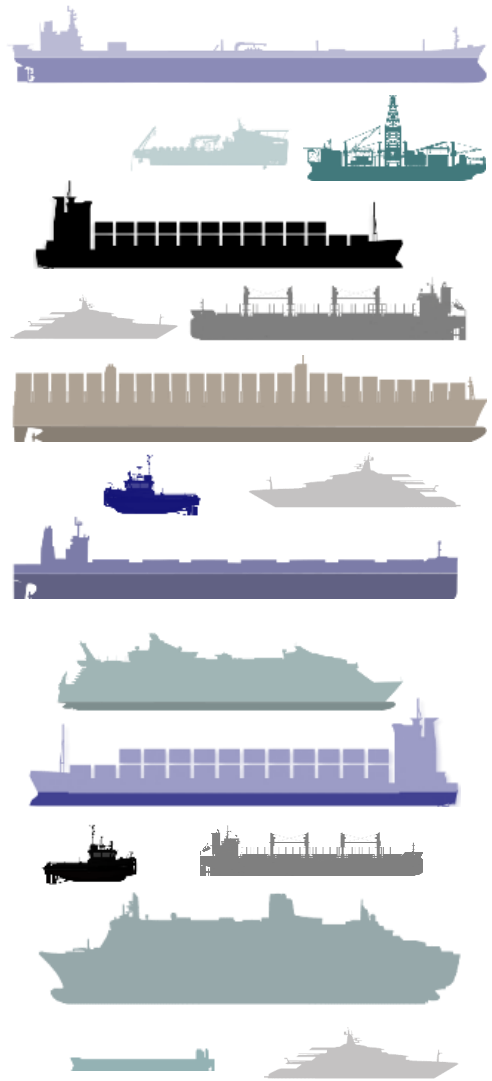
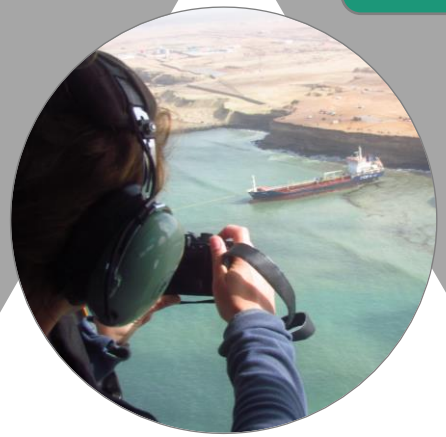
ITOPF'S SHIPOWNER MEMBERS & ASSOCIATES



FUNDING

TECHNICAL ADVICE



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SPILL RESPONSE COMMUNITY & STAKEHOLDERS

China MSA

IOPC Funds Fipol Fidac

SM

UNEP

Nō te rere moana Aotearoa MARITIME NEW ZEALAND

海上保安庁 Japan Coast Guard

NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce

MPA Singapore

IMO

IBAMA MMA

IGP&I

Transport Canada

environment, forestry & fisheries Department: Environment, Forestry and Fisheries Republic of South Africa

Maritime & Coastguard Agency

Prefectura Naval Argentina

ACP Autoridad del Canal de Panamá

SANCCOB

ITOPF'S REMIT ?

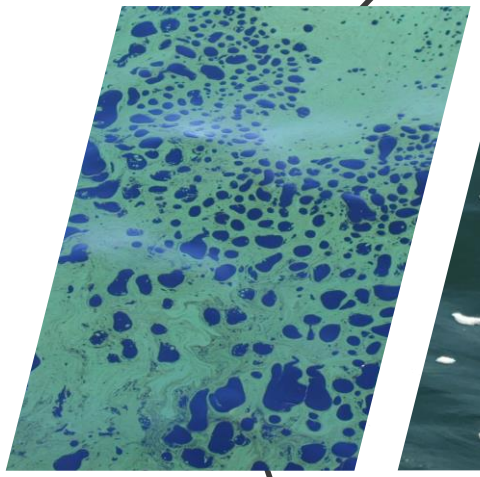
OTHER SUBSTANCES CARRIED BY SHIPS

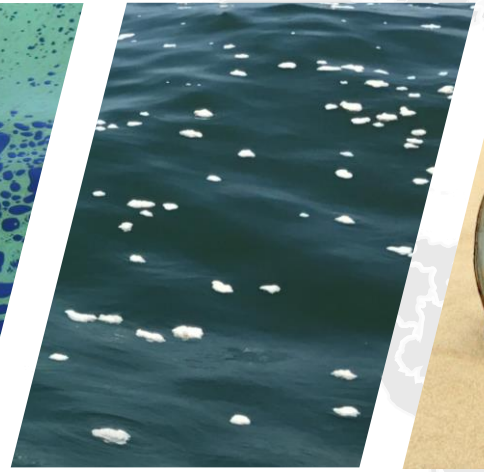
Coal

Carcasses

Nurdles

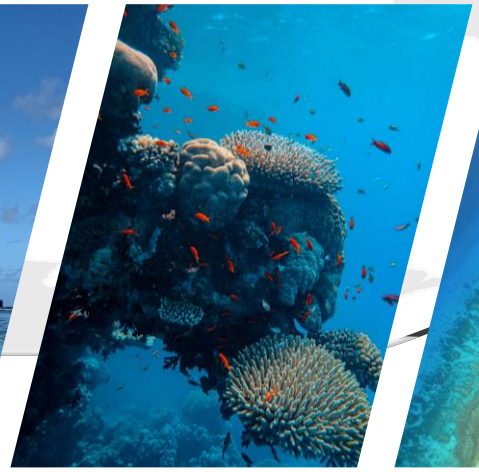
MINERAL & VEGETABLE OILS

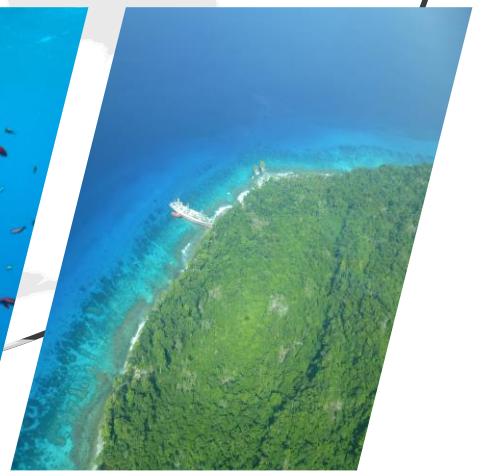




CHEMICALS

CORAL REEF GROUNDINGS





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RESPONSE ACTIVITES

Incident Remote Advice – Last 12 months

ITOPF

RESPONSE ACTIVITES

Incident Attendance in the last year

EMERGENCY CONTINGENCY PLANNING

24th Jan 2023: Ishigaki Island JAPAN

2023-01-24

ITOPF notified of grounding via emergency phone & requested on-site 24th Jan.

2023-01-25

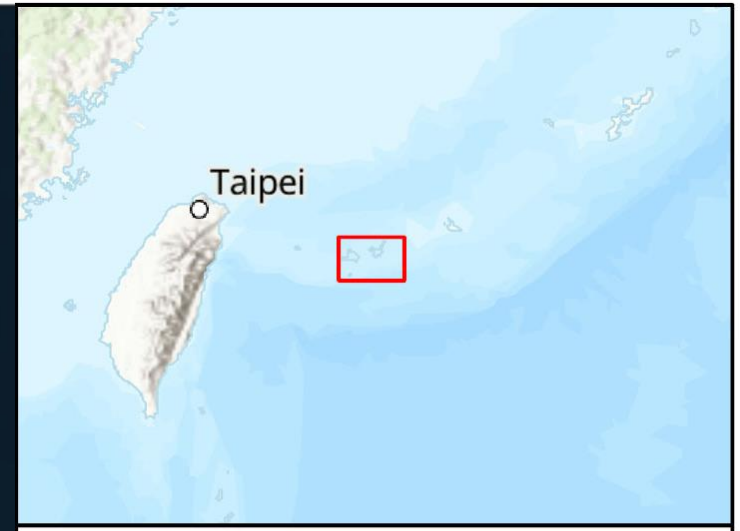
2 members of the ITOPF Technical Advice staff mobilized & arrive in Ishigaki 26th Jan.

2023-01-28

ITOPF begins pre-spill shoreline surveys (assisted by NSC, then CSA for logistical support)

ITOPF

Yaeyama Islands 八重山列島, Japan 日本



Incident location

Shoreline survey data

Sites surveyed

Ishigaki

Kayama

Iriomote

Kohama

Taketomi

Aragusuku

Kuroshima

Hateruma

ITOPF

N

0 2.5 5 10 Km

24°20'

24°

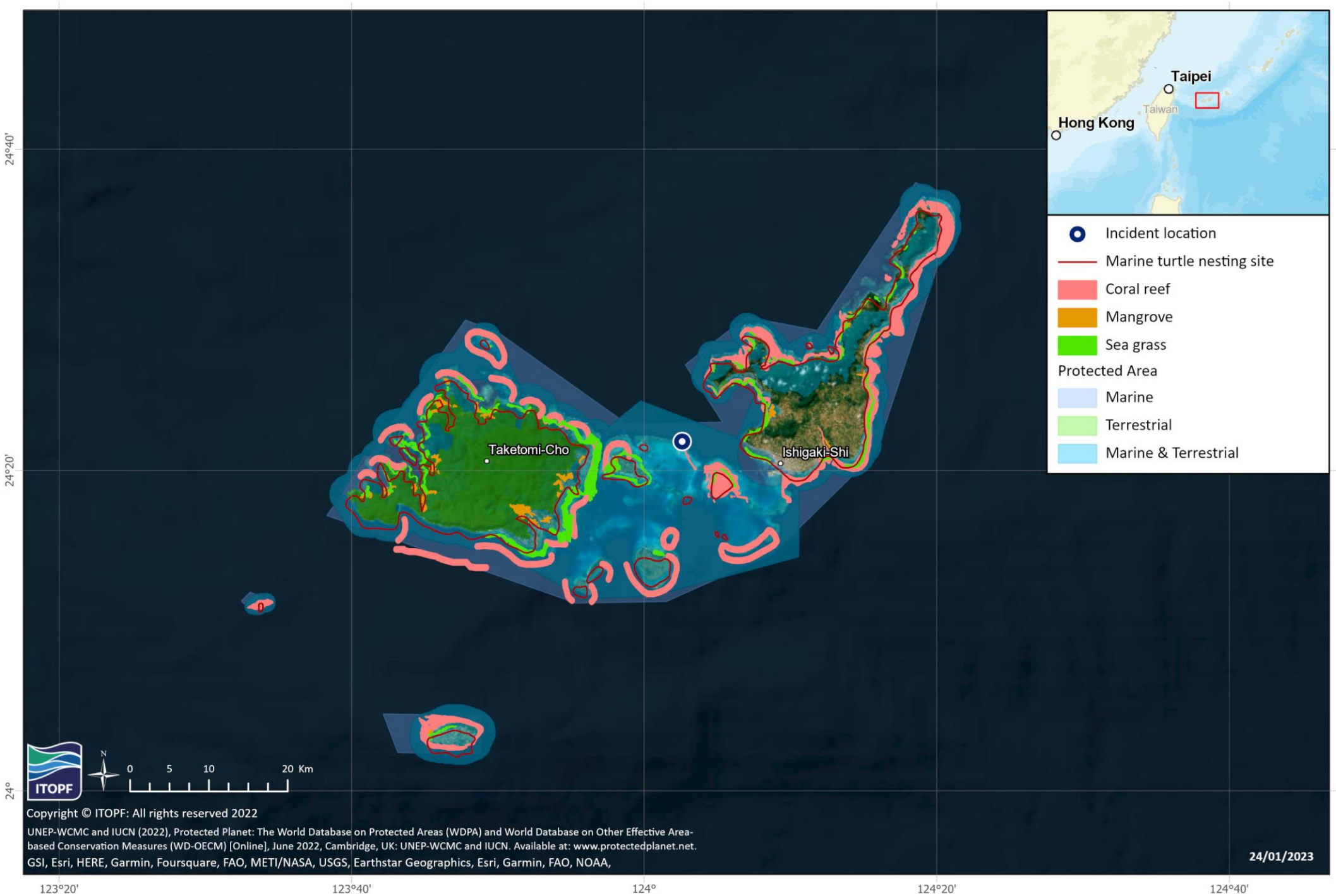
123°40'

124°

124°20'

13/02/2023

ITOPF



UNEP-WCMC and IUCN (2022), Protected Planet: The World Database on Protected Areas (WDPA) and World Database on Other Effective Area-based Conservation Measures (WD-OECM) [Online], June 2022, Cambridge, UK: UNEP-WCMC and IUCN. Available at: www.protectedplanet.net.

GSI, Esri, HERE, Garmin, Foursquare, FAO, METI/NASA, USGS, Earthstar Geographics, Esri, Garmin, FAO, NOAA,

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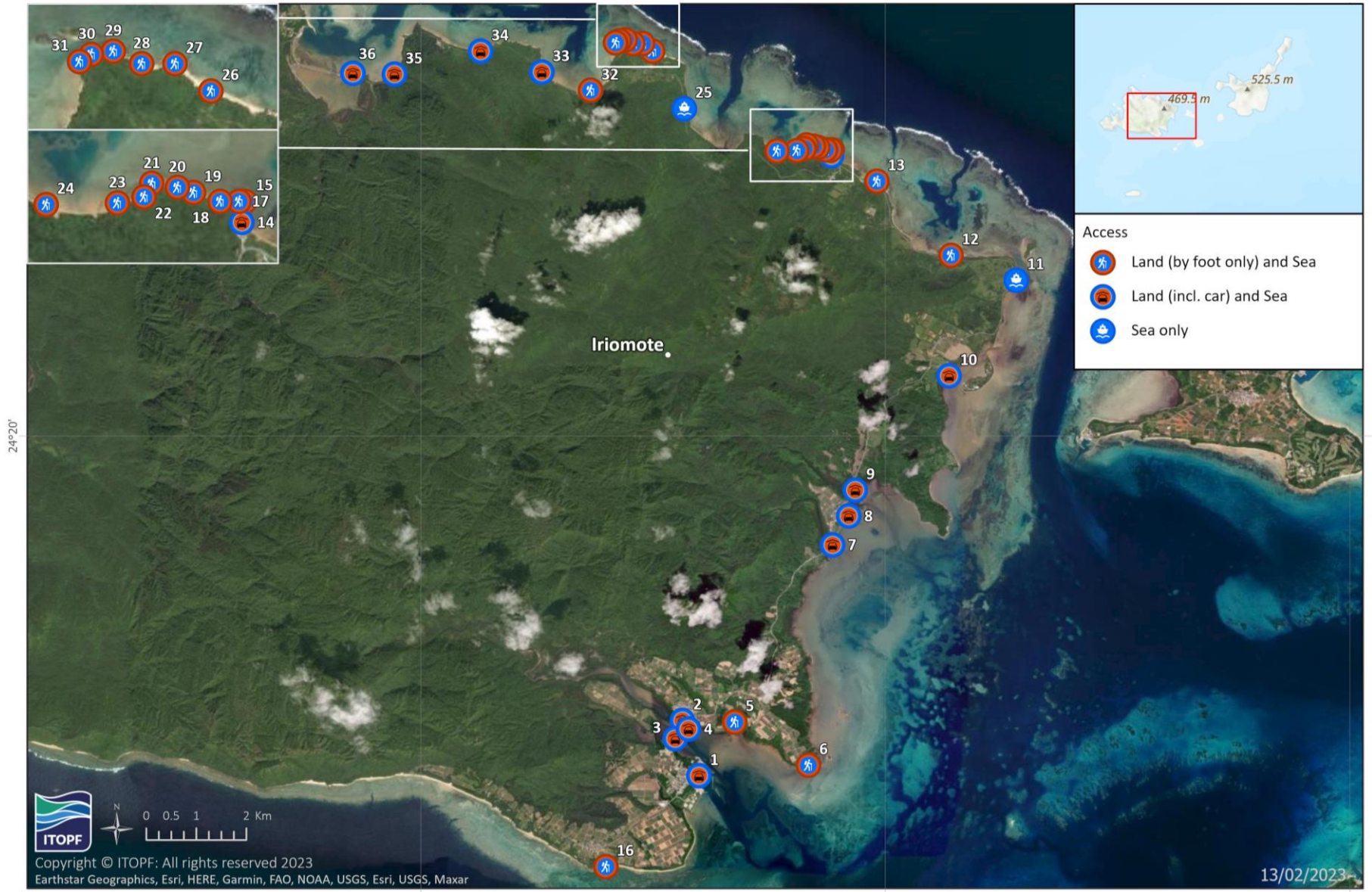
SHORELINE CLEAN-UP PLAN

Pre-spill shoreline survey data

EXAMPLE: IRIOMOTE



SHORELINE CLEAN-UP PLAN

Pre-spill shoreline survey data

Shoreline Type
海岸線タイプ

Proposed Clean-up Technique
提案されたクリーンアップ手法

Site number on map, coordinates and description
位置

	Bedrock (coral) cliff with pockets of bedrock platform/ramp (some sand). Bedrock (coral) platform in the LI. Paved road access to the backshore although there is no direct car access to the beach (approx. 5 metres of narrow dirt road). Some plastic pollution observed.		Manual collection Low-pressure flushing
Bedrock Ramp/Platform	**Site 3** (24°15'14.0"N 123°59'58.3"E) – Bedrock platform/ramp from this point towards the west. No car access.		Manual collection Low-pressure flushing High-pressure washing if necessary
Manmade	**Site 1** (24°15'13.1"N 124°00'06.1"E) – Manmade shoreline (Kuro Island's port i.e., concrete walls, tetrapods, and riprap) although some small pockets of sandy shoreline were observed.	 	Low-pressure flushing High-pressure washing
			Manual collection Low-pressure flushing High-pressure washing

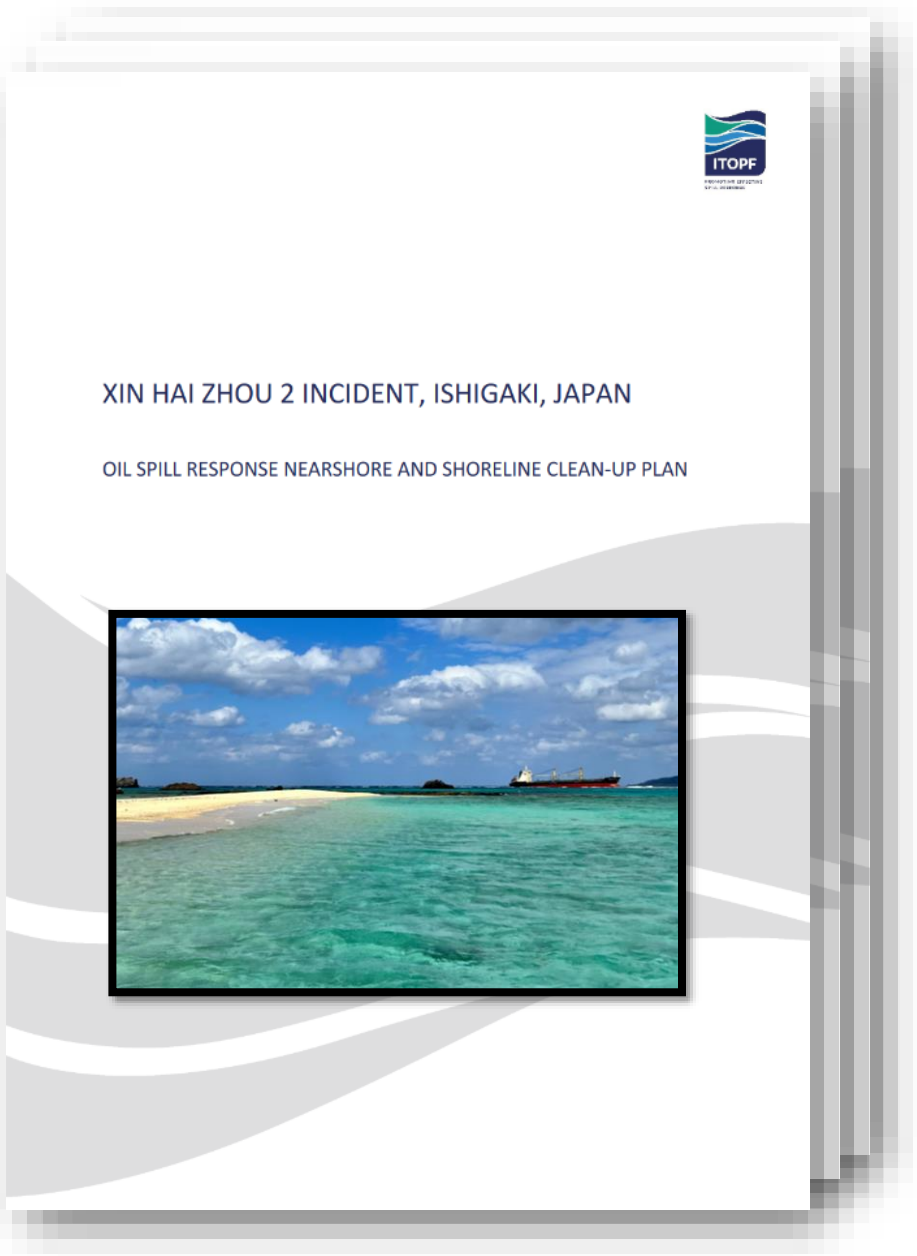
SHORELINE CLEAN-UP PLAN

v1.0 submitted 2023-02-13

1. Roles & Responsibilities
2. Site Map and Zone Delineation
3. Overview of Site Categories
4. Nearshore Response Strategy
5. Overview of Shoreline Clean-up Techniques
6. Phases of Clean-up & Application of Techniques
7. Team Organization
8. Monitoring and Reporting
9. Waste Management Plan

APPENDIX I: Pre-Spill Shoreline Survey Data

APPENDIX II: Examples of Site Specific Clean-up Plan



RESPONSE
CHALLENGES

COMMAND & CONTROL

Advances in technology
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LOW SULPHUR FUEL OILS

PLASTICS

ESG - SUSTAINABILITY

PERU

Port of El Callao

Date: 15th Jan 2022

Incident: Crude oil spill

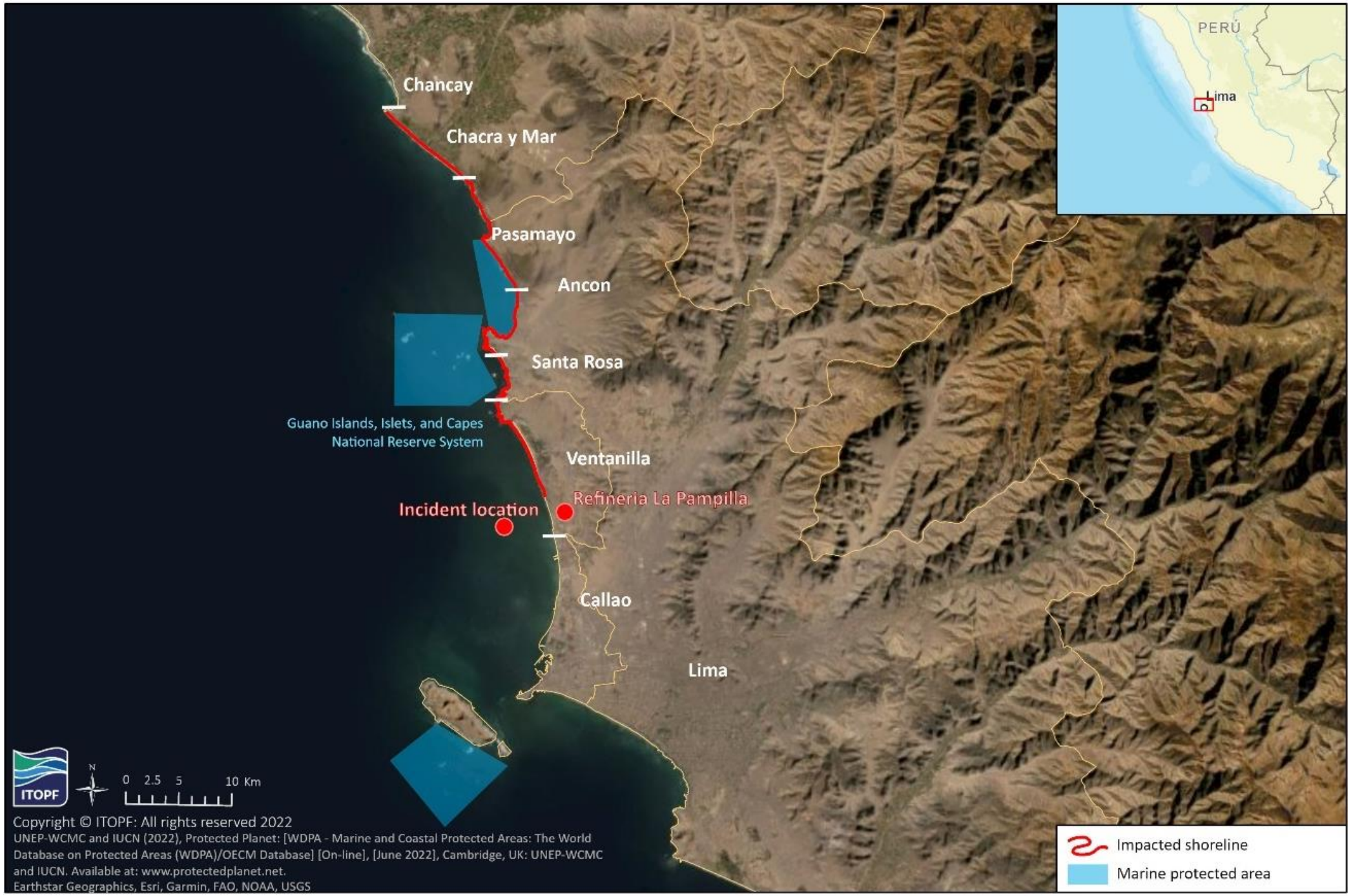
Reported volume: 1,470 MT

~50 km of impacted shoreline

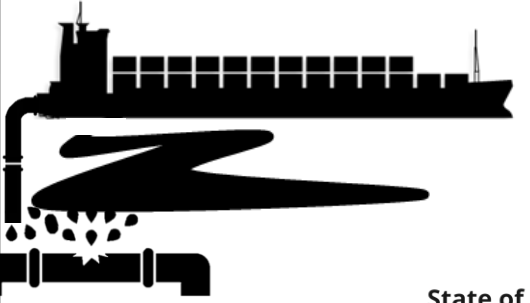
Only 50% of the shoreline was accessible

National Oil Spill Contingency Plan dated 1993

Covid era



Source: Aljazeera



Peru Crude Oil Spill

La Pampilla Oil Refinery [redacted]

~1,600 m³ Crude

Government

State of Environmetnal Emergency

NOSCP 1993

Ministry of Environment (MINAM)

Institutional Coordination

Local Governments

Ministry of Health

Ministry of Fisheries (FONDEPES)

Ministry of External Affairs

Coastguard (Navy)

Technical Advisory Committee

Technical Group Meeting/ Surveys

MINAM | REPSOL | NAVY

OEFA | SERFOR | DIGESA

ANA | IMARPE | CONIDA

SERNARNP | ITOPF

Non-Technical Group Meeting

Local Governments

National Port Authority (APN)

Repsol Incident Management Team (IMT)

Incident Commander

Incident Command System (ICS) in use

Government Communication Team

Technical Communications Team

Compliance Team

Technical Staff Team

At sea opertions

Shoreline Operations

Planning

Security, Safety & Environment

Procurement & Logisitics

Advisors (OSRL & LAMOR)

Contractors

Logistics

Supervision

Wildlife (Aiuká)

SCAT (OCC)

Seguridad & proteccion

Environmental Impact (ERM)

MARE DORICUM

Standard P&I

ITOPF

RESPONSE CHALLENGES
COMMAND & CONTROL

Advances in technology & preparedness:
= Less Spills
= Less practical response experience, & Less command & control practice communicating with key stakeholders.

Problem?
This can lead to inefficient stakeholder communication & collaboration when a significant spill occurs.

Solutions?
- Regular realistic exercise scenarios.
- Periodic reviews of National Contingency Plans.
- Sharing of knowledge & lessons learnt across boarders & sectors.

RESPONSE
CHALLENGES

COMMAND & CONTROL

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LOW SULPHUR FUEL OILS

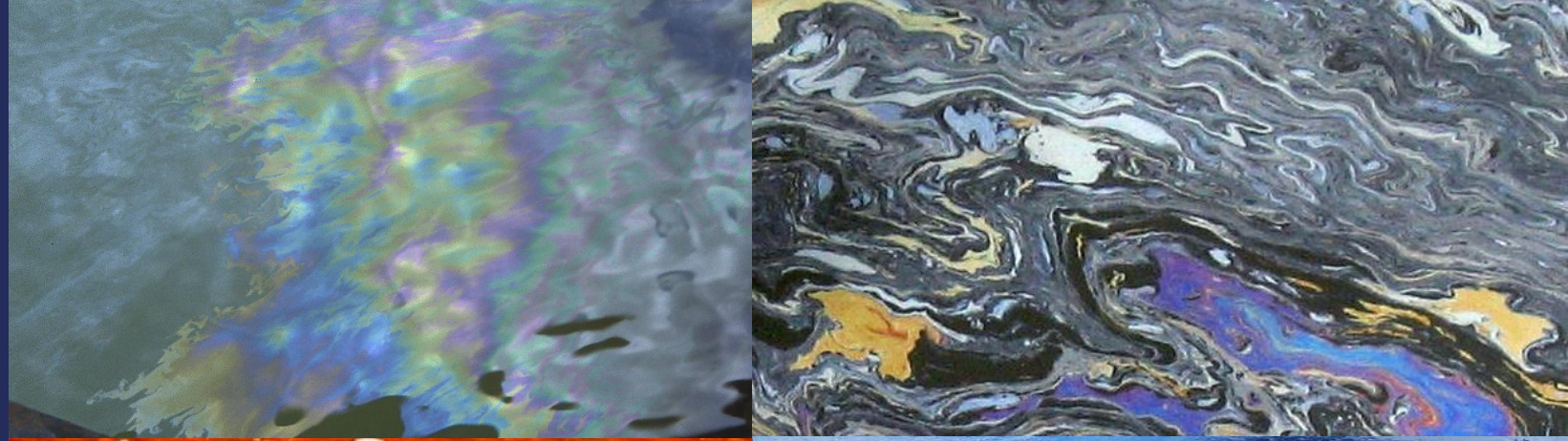
PLASTICS

ESG - SUSTAINABILITY

LOW SULPHUR FUEL OIL CHARACTERISTICS

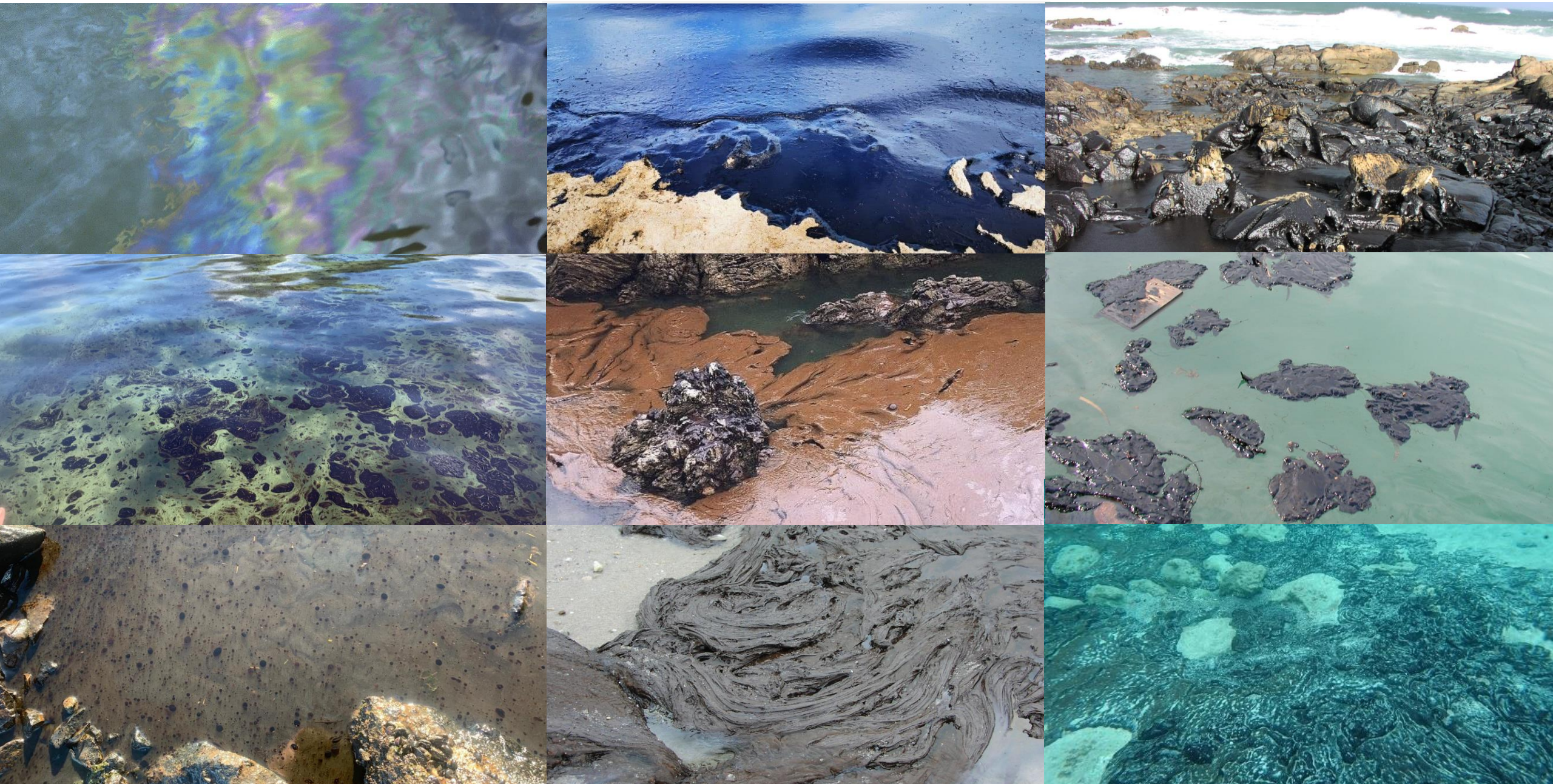
- LSFOs have **highly variable characteristics.**
- **Limited** peer reviewed scientific **studies** discuss LSFO characteristics in relation to oil spill response.
- Research conducted to date suggests that VLSFOs typically have;
  - **higher pour points** than HSFOs.
  - **lower densities** than HSFOs.
  - **lower viscosities** than HSFOs; as well as a broader spread of viscosities in comparison to HSFOs.

Scarlett et al., 2021 & Sørheim *et al., 2020* (SINTEF)



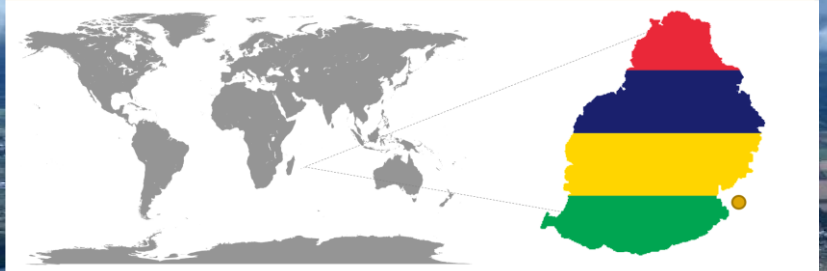

Fate and Behaviour

Oil properties dictate weathering & behaviour at sea! This influences environmental impact & the clean-up strategies that should be adopted.



WAKASHIO

25th July, 2020



Source: MPF/PHS

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Oil Spill: 6th August 2020 Volume: ~ 1000m³

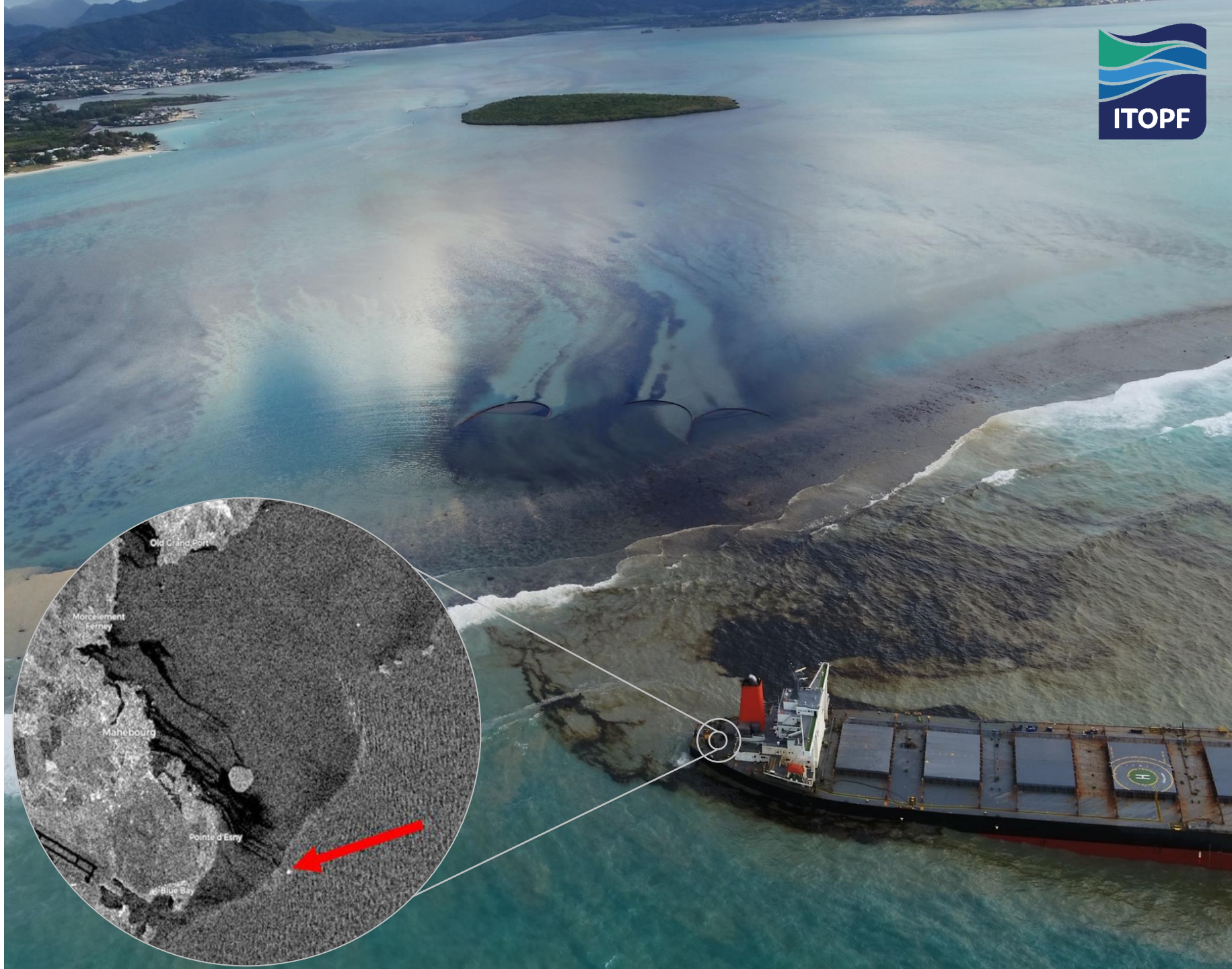
MV WAKASHIO

- Latest Contingency Plan Revision: 1990
- Shoreline clean-up: **5 months**
- Bow section: Removed & scuttled
- Stern: Removed ~1 year later

  Feb 2021 - Jan 2022.

Some ‘Firsts’:

- **First** major oil spill in Mauritius
- **First** major oil spill during the COVID-19 pandemic
- **First** major spill of Low Sulphur Fuel Oil



International Requests for Assistance

Mauritius declares environmental emergency after oil spill

Country's prime minister has asked France for help in tackling the disaster

▲ People gather to look at the stranded MV Wakashio ship which is leaking oil. Photograph: Dev Ramkhelawon/L'Express Maurice/AFP/Getty Images

The Indian Ocean island of Mauritius has declared a "state of environmental emergency" after a Japanese-owned ship that ran aground offshore days ago began spilling tons of fuel.

sky news

Home UK World Politics US Climate Science & Tech Business Ents & Arts

Mauritius declares environmental emergency after mass oil spill from grounded tanker

The ship was carrying nearly 4,000 tons of fuel when its hull cracked.

Saturday 8 August 2020 06:44, UK

BBC BBC Account Home News Sport Weather iPlayer Sounds

NEWS

Home Coronavirus Brexit UK World Business Politics Tech Science Health Family & Education

World Africa Asia Australia Europe Latin America Middle East US & Canada

MV Wakashio: Emergency declared as Mauritius tackles oil leak

Volunteers in Mauritius are scrambling to create cordons to keep oil leaking from an offshore vessel away from the island.

The MV Wakashio ran aground on a coral reef off the Indian Ocean island on 25 July. At least 1,000 tonnes of oil is thought to have leaked into the waters surrounding the nation.

Read more: Volunteers race to keep oil spill away from Mauritius

9 August 2020 | BBC News | Africa

RESPONSE
CHALLENGES

COMMAND & CONTROL

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LOW SULPHUR FUEL OILS

PLASTICS

ESG - SUSTAINABILITY

X-PRESS PEARL
Case study

Sri Lanka

Source: Sri Lankan Airforce

SHIP-SOURCE SPILLS OF

PLASTIC PELLETS

Source: Getty Images

RESPONSE CHALLENGES

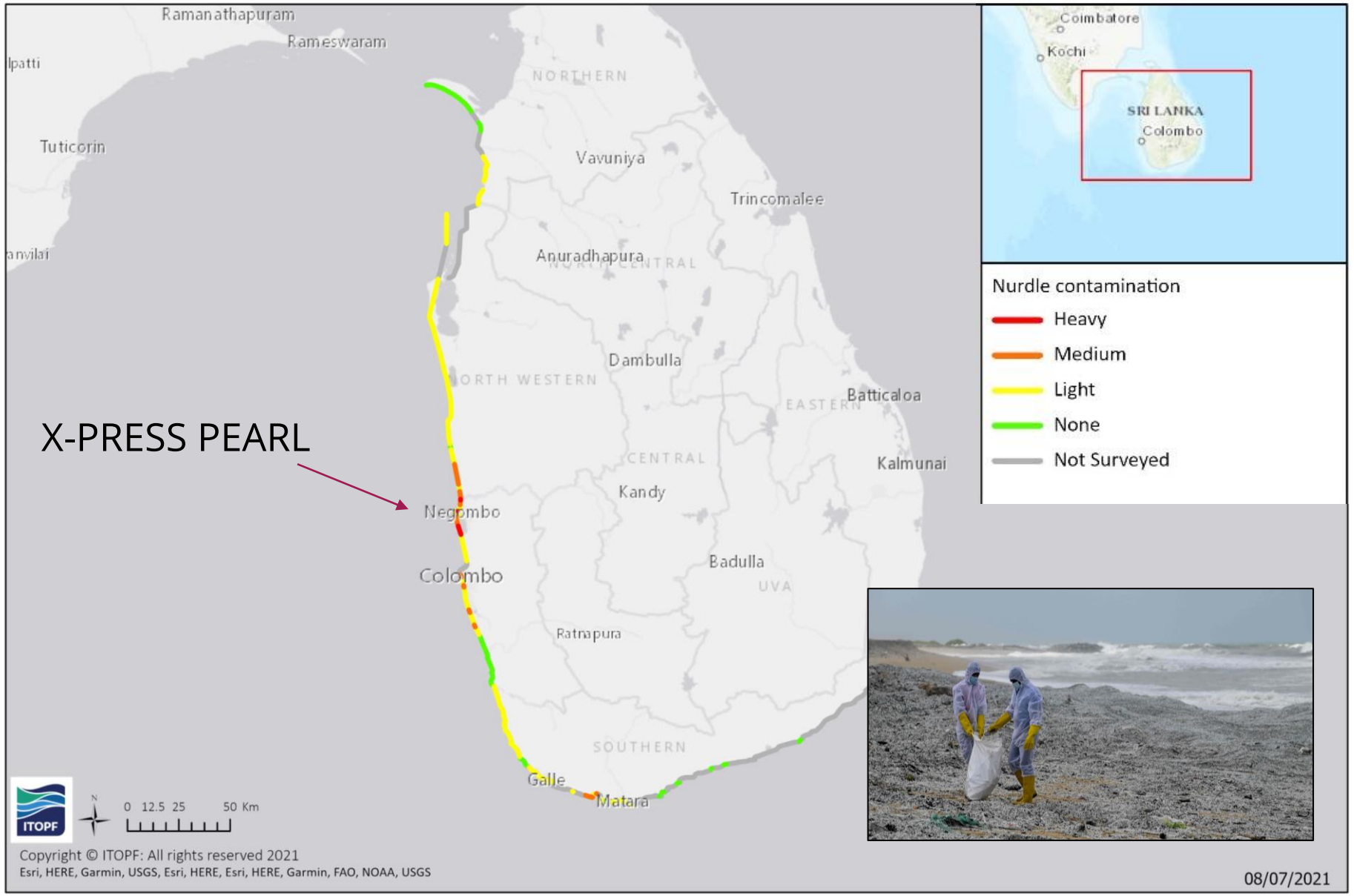
Highly mobile and dynamic

RESPONSE CHALLENGES

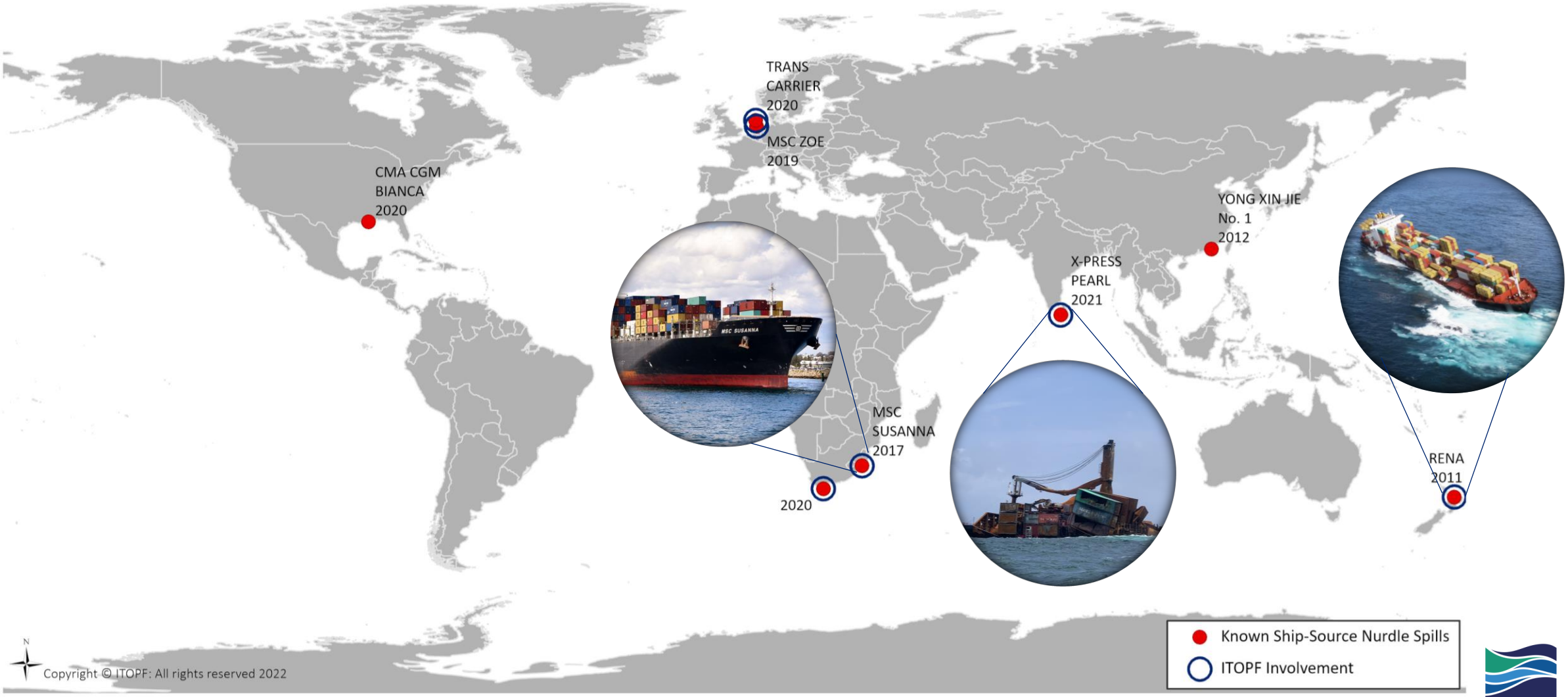
Highly mobile and dynamic

RAPID PRIORITISATION FROM COMMAND & CONTROL

- Drift modelling
- Container location & source control
- Shoreline surveying & Identification of hot spots
- Deployment of clean-up teams
- Contamination mapping
- Marine debris indicates natural collection points.



How widespread is the problem?



RESPONSE CHALLENGES MICRO PLASTICS

- How do we reduce plastic pollution spill risk?
  - Packaging & transportation…
- What are the environmental impacts?
- At what point do you terminate clean-up?
  - % Recovery
  - Financial threshold?
- Recovery efficiency: Should macro-plastic recovery be favoured over microplastic recovery?
- How do you determine baseline conditions, when plastic pollution is widespread globally?

RESPONSE
CHALLENGES

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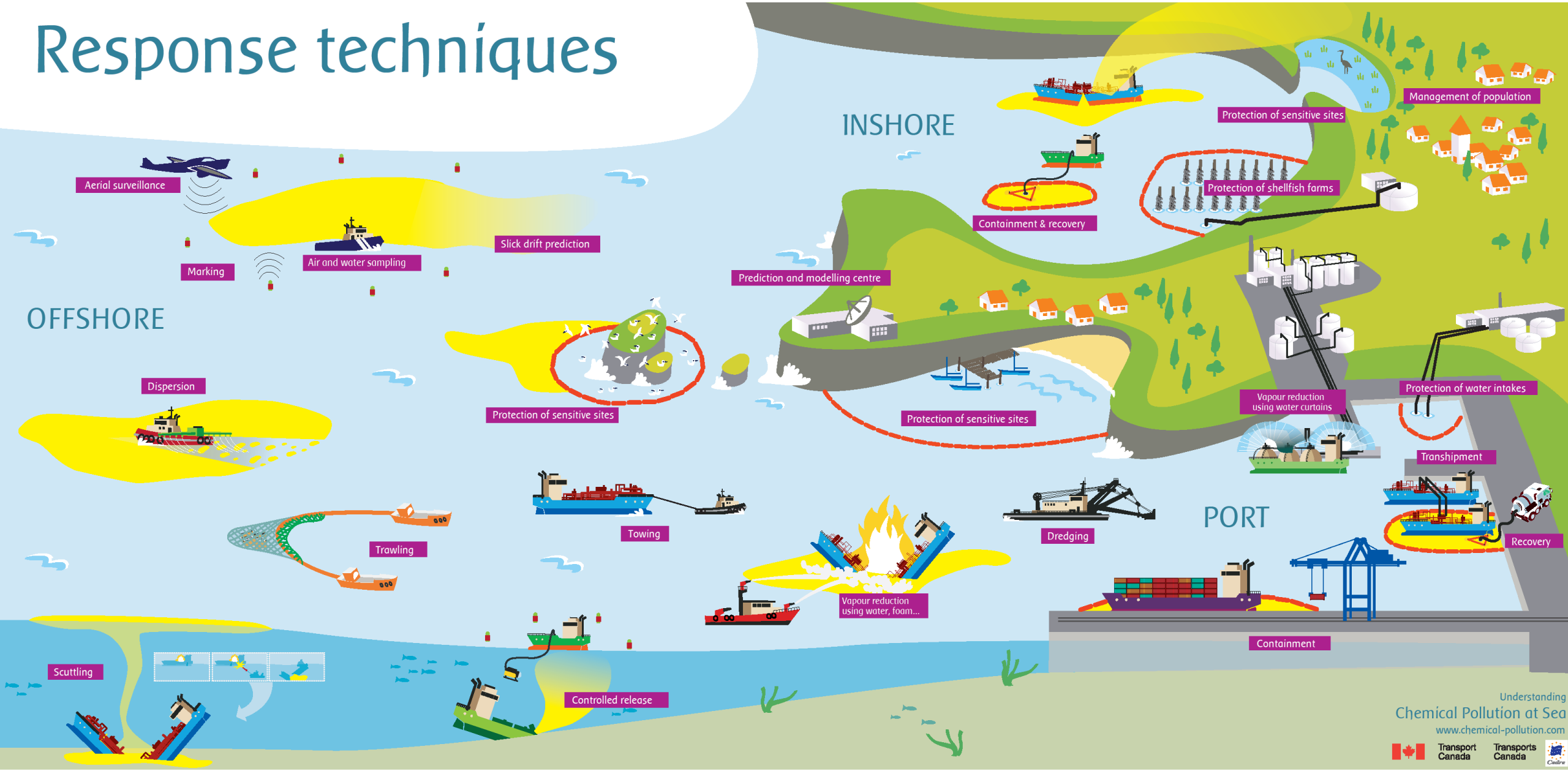
LOW SULPHUR FUEL OILS

PLASTICS

ESG - SUSTAINABILITY

Response techniques



Understanding
Chemical Pollution at Sea
www.chemical-pollution.com

Transport Canada
Transports Canada

SUSTAINABILITY
IN INCIDENT RESPONSE
Environmental, Social & Governance (ESG) considerations

Environmental aspects: Data on **greenhouse gas emissions**, biodiversity loss, pollution, energy use & water management.

Social aspects: Data on employee safety & health, working conditions, diversity, equity, & inclusion.

Governance aspects: Data on corporate governance such as preventing bribery, corruption, diversity of Board of Directors, cybersecurity & management structure.

= Quantitative data to inform decision-making?

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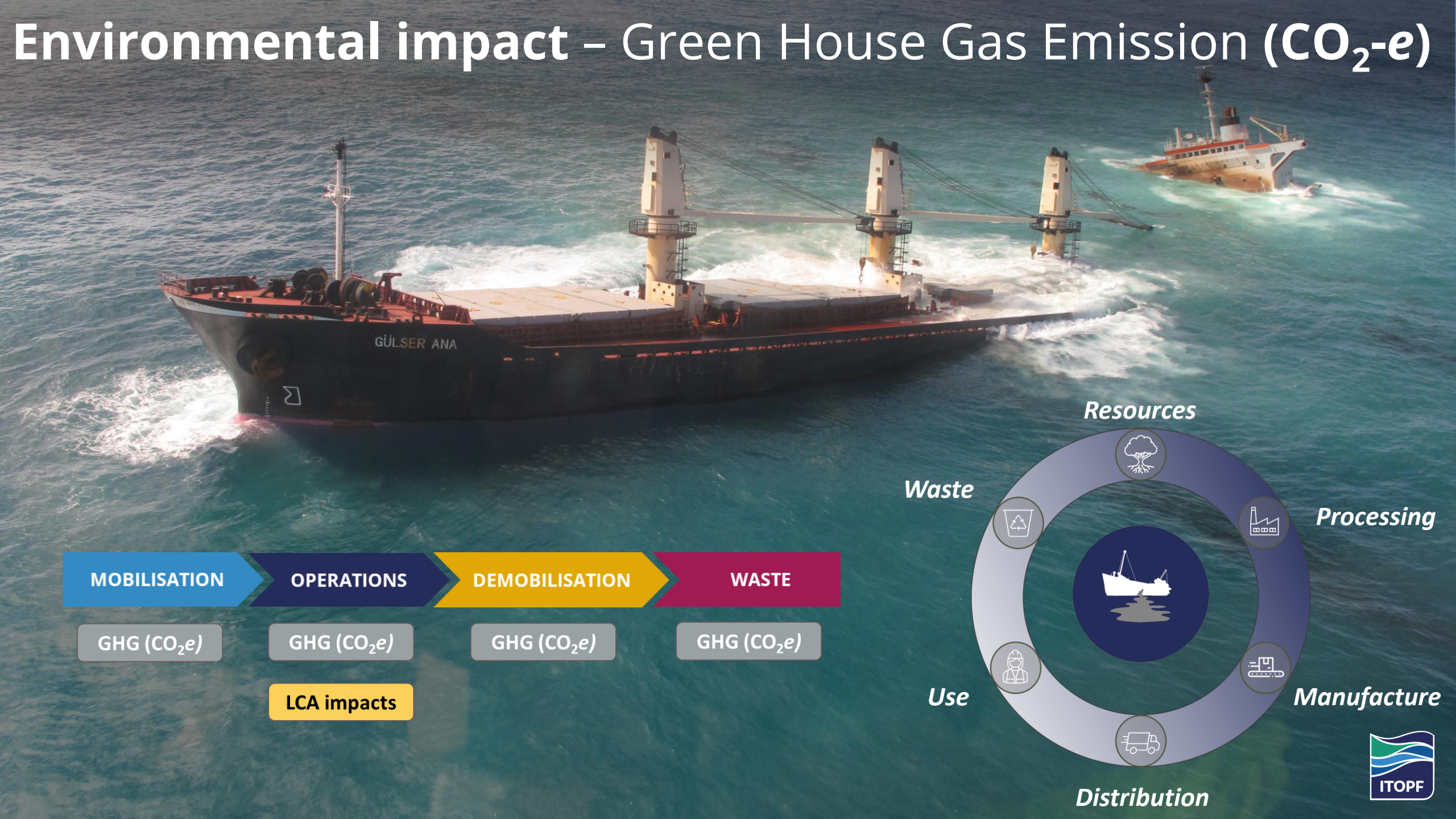
Environmental impact – Green House Gas Emission **(CO_2-*e*)**



MOBILISATION → OPERATIONS → DEMOBILISATION → WASTE

GHG (CO_2e) | GHG (CO_2e) | GHG (CO_2e) | GHG (CO_2e)

LCA impacts

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RESPONSE CHALLENGES

CAN ESG BECOME A FOCUS WITHIN AN EMERGENCY FRAMEWORK?

- How to practically implement ESG factors into response decision-making?
- How do we ensure data is robust & comparable?
- And do we develop a ‘standardised’ methodology & tool for this?
- How do we communicate these issues given the potential sensitivity of information?
- Risk: Avoid “Green washing?”
  - Buzz words - "green" and "eco“

RESPONSE
CHALLENGES

COMMAND & CONTROL
PERU

Advances in technology
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Information
Quantity **> Quality**
Quality > Quantity
Source credibility

LOW SULPHUR FUEL OILS
WAKASHIO

PLASTICS X-PRESS PEARL

ESG - SUSTAINABILITY