# Preparedness for oil spill environmental monitoring: An international perspective

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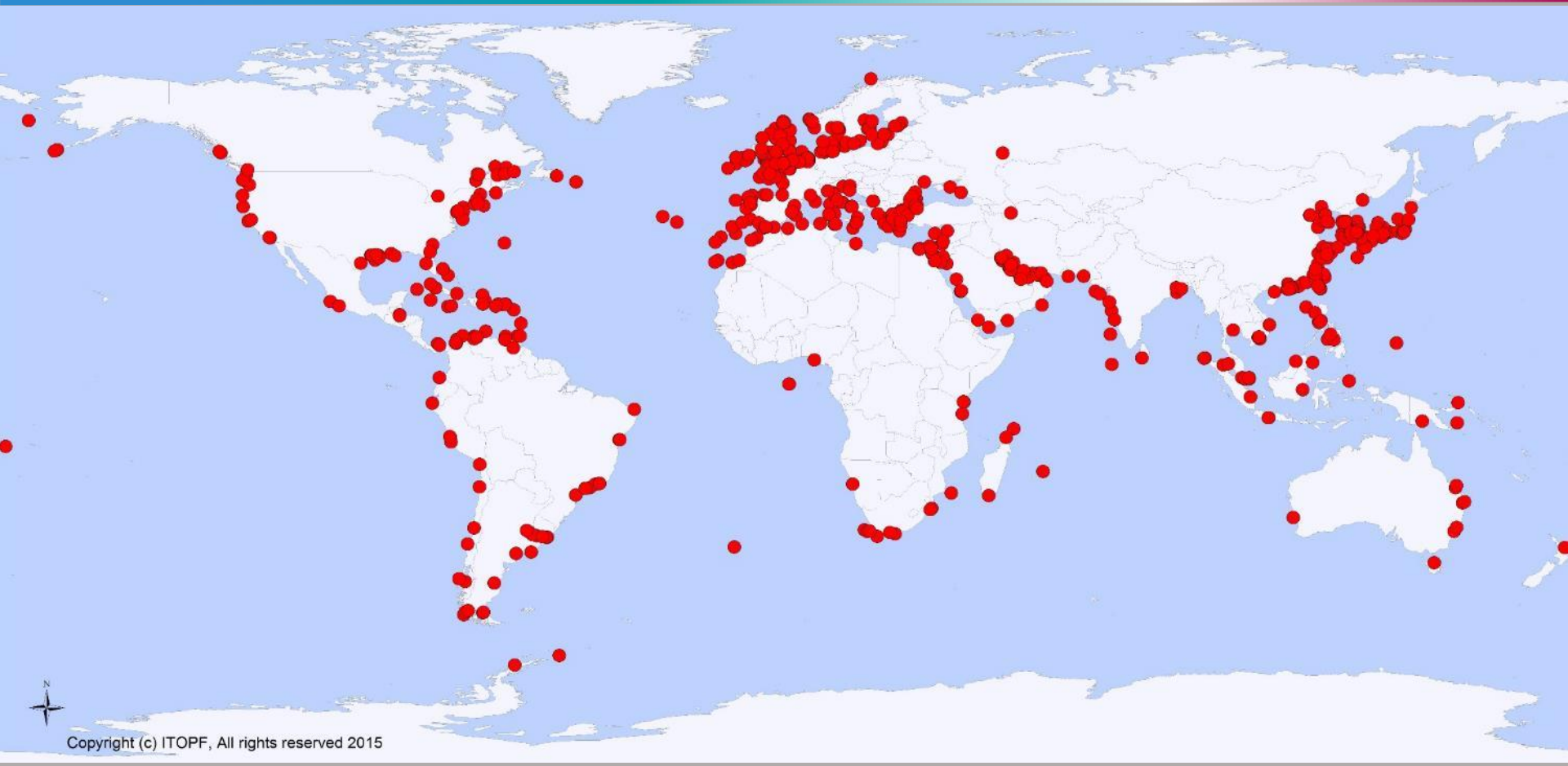
# ITOPF's perspective




- Not-for profit organisation funded by the world's shipping industry
- Primary objective: promote effective response to ship source spills of oil and HNS
- Activities include all aspects of spill response, from the initial assessment of a situation, through to the long term monitoring and damage and claims assessment activities
- Based in London but provide a global service

# International framework: preparedness and liability for ship source spills

| | IMO instrument/s | Environmental monitoring provisions |
|---|---|---|
| Prevention | MARPOL | Air quality only |
| Preparedness and response | OPRC '90<br><br>OPRC-HNS PROTOCOL 2000 | None |
| Liability and compensation | CLC 92 & Fund Conventions<br><br>HNS Convention (not in force)<br><br>CLC 92 & Fund Conventions | Environmental monitoring studies when there is evidence of **significant environmental impact**<br><br>Scale of studies should be **proportional to the extent of contamination and** the predicted effects |

# Preparedness for environmental monitoring

- Environmental damage or impact assessment will usually be based on the liability regime in place in that particular country.
- In ITOPF's experience, legislation in place around the world falls into three broad categories:

IMO Conventions: CLC '92 and Fund, 2001 Bunkers Convention, HNS Convention

National system unrelated to international regime

National legislation directly transposes Convention text

National legislation fully or partially transposes Convention text, may incorporate other national legislation

State has not ratified Conventions, uses multiple environmental instruments to determine liability, environmental damage assessment and remediation procedures

# Approaches to environmental damage quantification around the world

No defined approach

Japan

IMO regime

UK

Fixed formulae based on spill volume

Egypt, Turkey, Russia, South America

None or poorly defined

Science based approach

Highly prescriptive, not always science based

International regime with national top-up scheme

New Zealand and Australia

Contingent valuation methods, habitat equivalency analysis other theoretical approaches

South America, USA, China, Spain, Italy

- Inconsistent approaches frequently lead to an ineffective use of already limited resources
- In some cases lack of knowledge and scientific information can result in actual damage to the environment going undetected

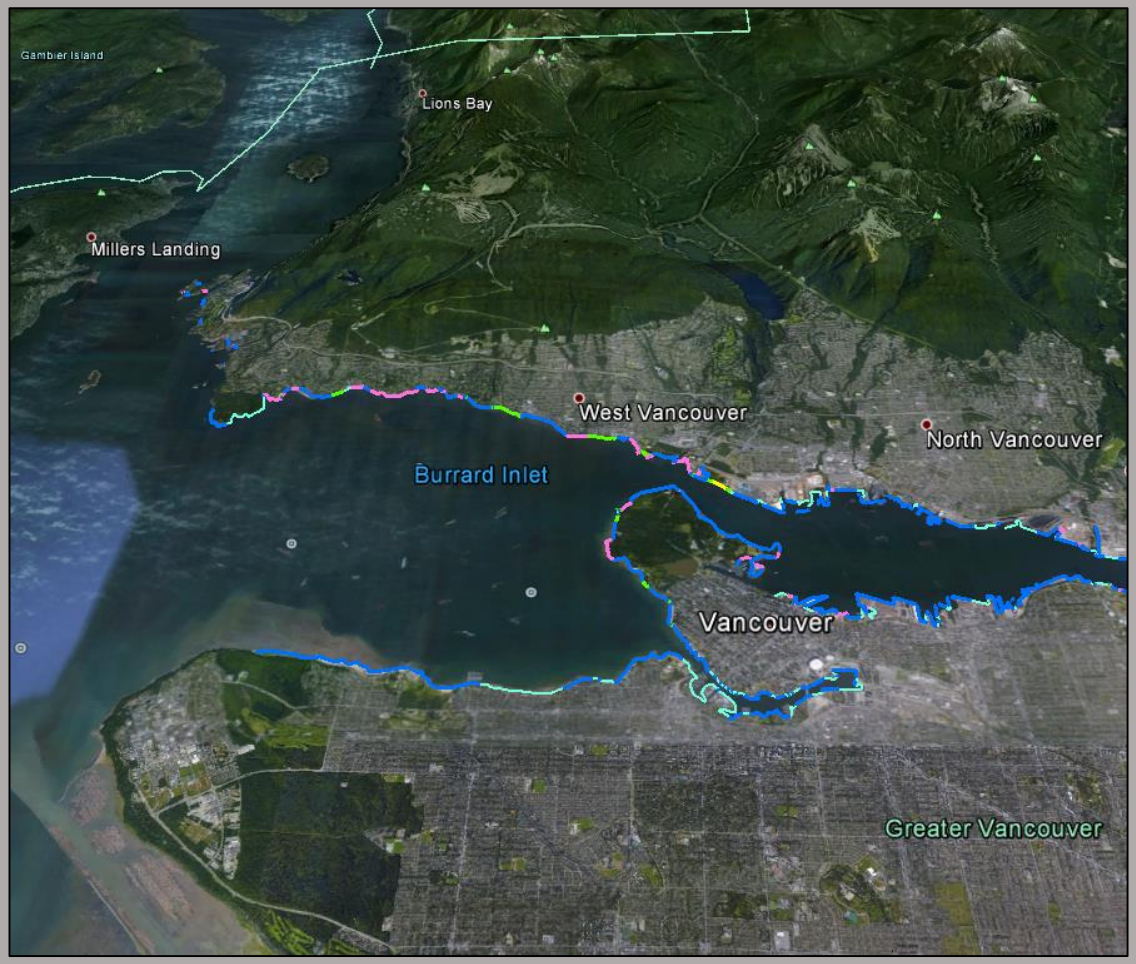
# Why monitor after a spill?

| IMO REGIME | OPA '90/CERCLA | ELD |
|---|---|---|
| **'Ship-owner'** liable | **'Responsible Party'/'Owner or operator'** liable | **'Operator'** liable |
| Compensation for **loss of profit** for impairment of the environment | Compensate economically injured (**economic loss**) | ELD **not applicable** to claims for **economic loss**. |
| Reasonable measures of **reinstatement of the environment** actually undertaken or to be undertaken;<br>including:<br>- **Actual restoration of damage** (mat also include some aspects of complementary restoration if relevant)<br>**- Case by case basis** | Compensate the public for **loss of goods & services** of non-economic resources; Make the public whole<br>including:<br>- **Primary** restoration<br>- **Compensatory** restoration (**interim losses**) | Restoring damaged **natural resources** and or **services** to/towards their baseline condition;<br>including:<br>- **Primary** restoration<br>- **Complementary** restoration<br>- **Compensatory** restoration (**interim losses**) |
| Limitation based on **GT of vessel** and **fund limits**. | Limitation based on **GT of vessel** and **fund limits**. | Largely depends on implementation of **LLMC.**<br>**No compulsory insurance requirement** |

# Common issues encountered: why monitor, and for how long?

- Assumption that presence of **oil = injury/ damage**
- Monitoring undertaken to meet academic objectives

Vancouver, 2015




Objective: *to monitor rate of depuration of mussels*

Objective: *to find contaminated samples*

# Common issues encountered: what to monitor?

AMADEO 1, Chile, 2014

| Oceanographic data | Water chemistry | Sediment | Biodiversity |
|---|---|---|---|
| Temperature, salinity, Lagrangian currents (summer and winter) | Total suspended solids, cholorophyll a, pH, turbidity | Granulometry, grain diameter, sorting coefficient, symmetry and Wentworth scale | Surveys of birds, marine mammals, intertidal and sub-tidal benthic fauna |

# Common issues encountered: what to monitor?

Korea: National Marine Pollution Act

To be implemented for every release that incurs a response

**1. Natural Environment**

- Metrological conditions
- Currents, tides
- Marine geology
- Oil contamination
- Marine ecosystem

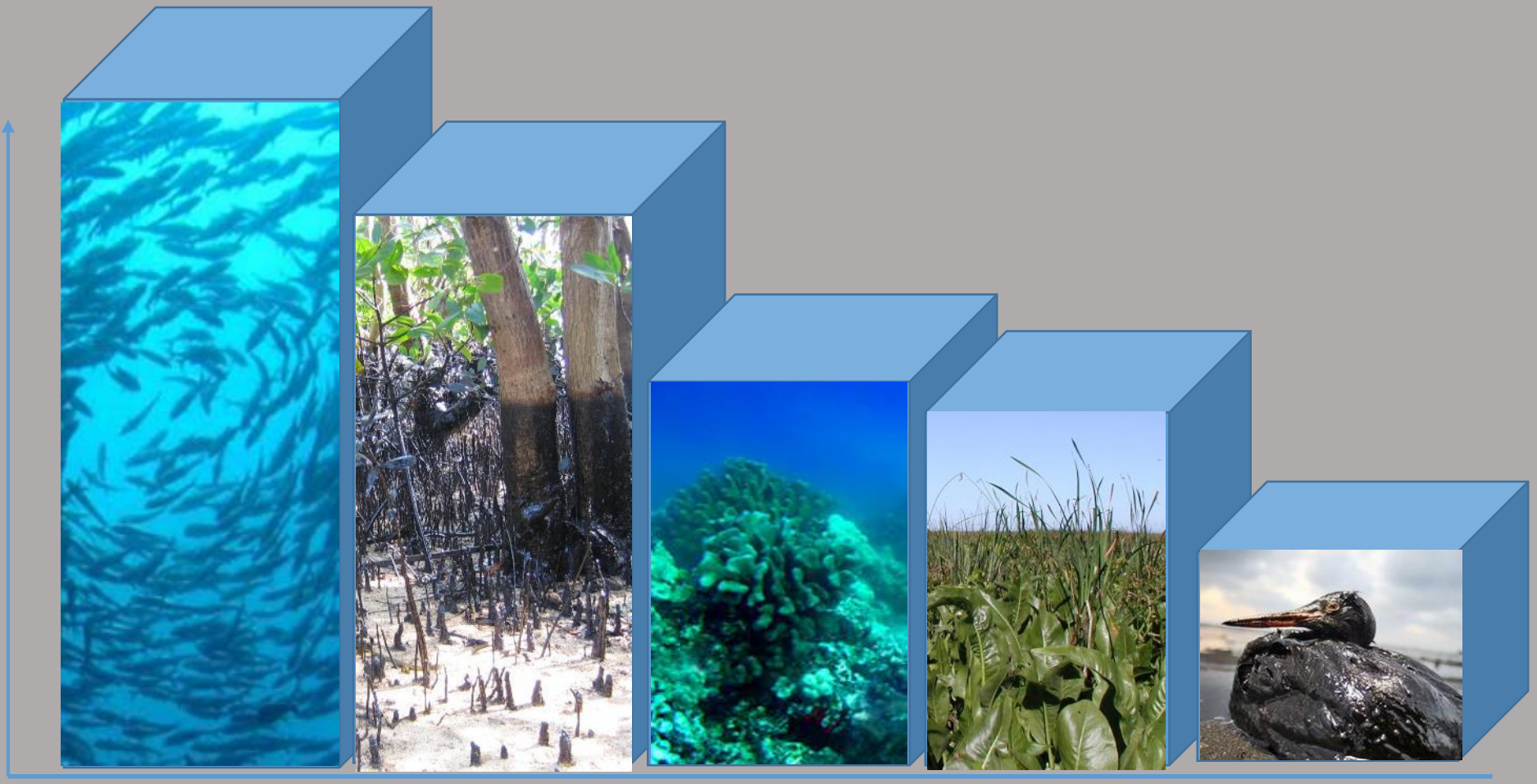
**3. Socioeconomic environment**

- Population
- Residence
- Industry
- Fisheries

**2. Living environment**

- Utilisation of coastal and offshore regions
- Seafood safety
- Contamination of public facilities

# What to monitor: areas of most concern, ITOPF cases



Fisheries

Mangroves

Coral

Marshes

Birds

# Common issues: generic sampling, not bespoke to oil (or HNS)

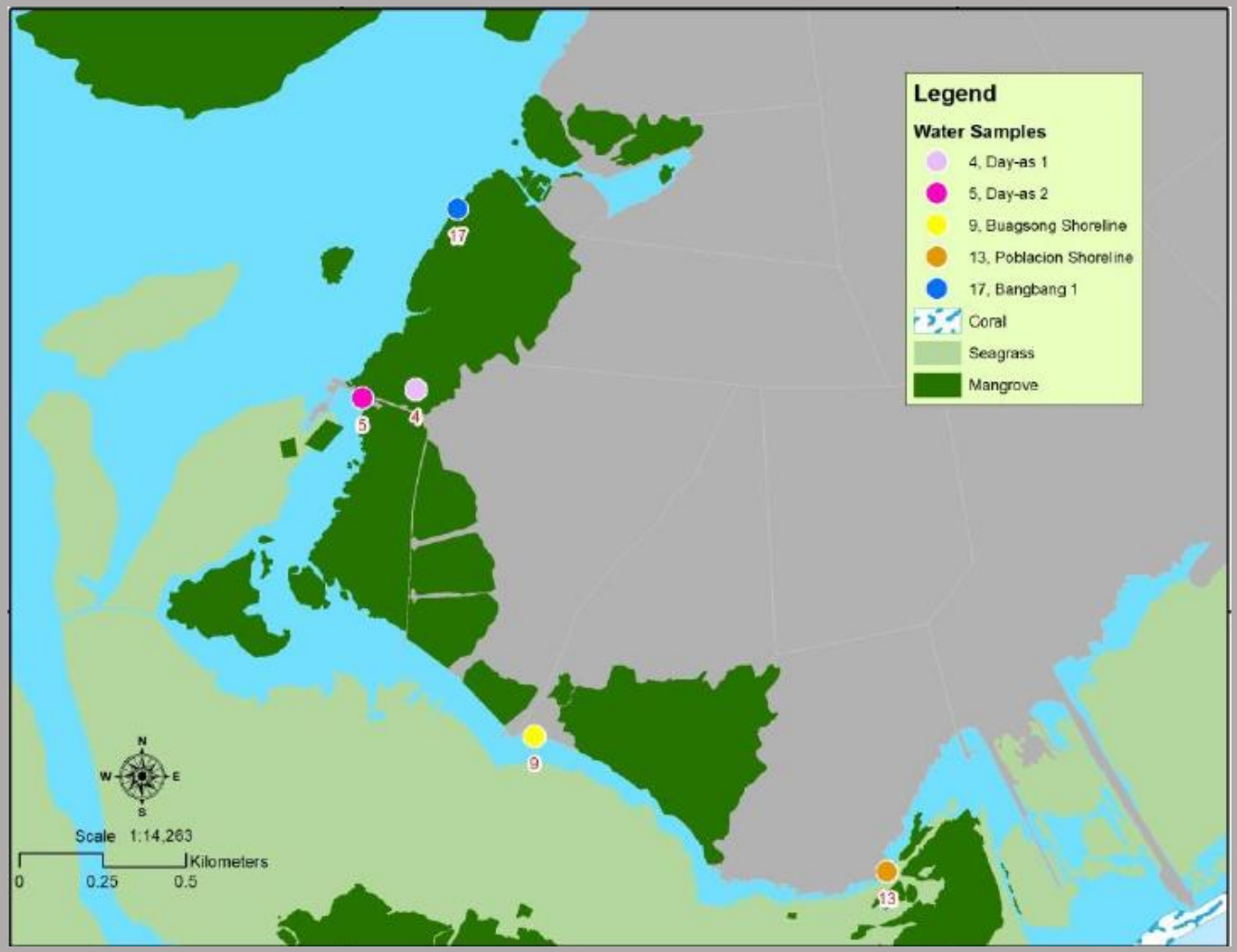
- Absence of oil spill specific knowledge and understanding amongst academics and responsible institutions

Philippines, 2013

PAH in sediments measured, 9 months after spill according to US EPA guidelines.

No reference site, no attempt to establish causality

Pyrogenic versus petrogenic origin PAHs

# ITOPF cases: most frequently sampled parameters

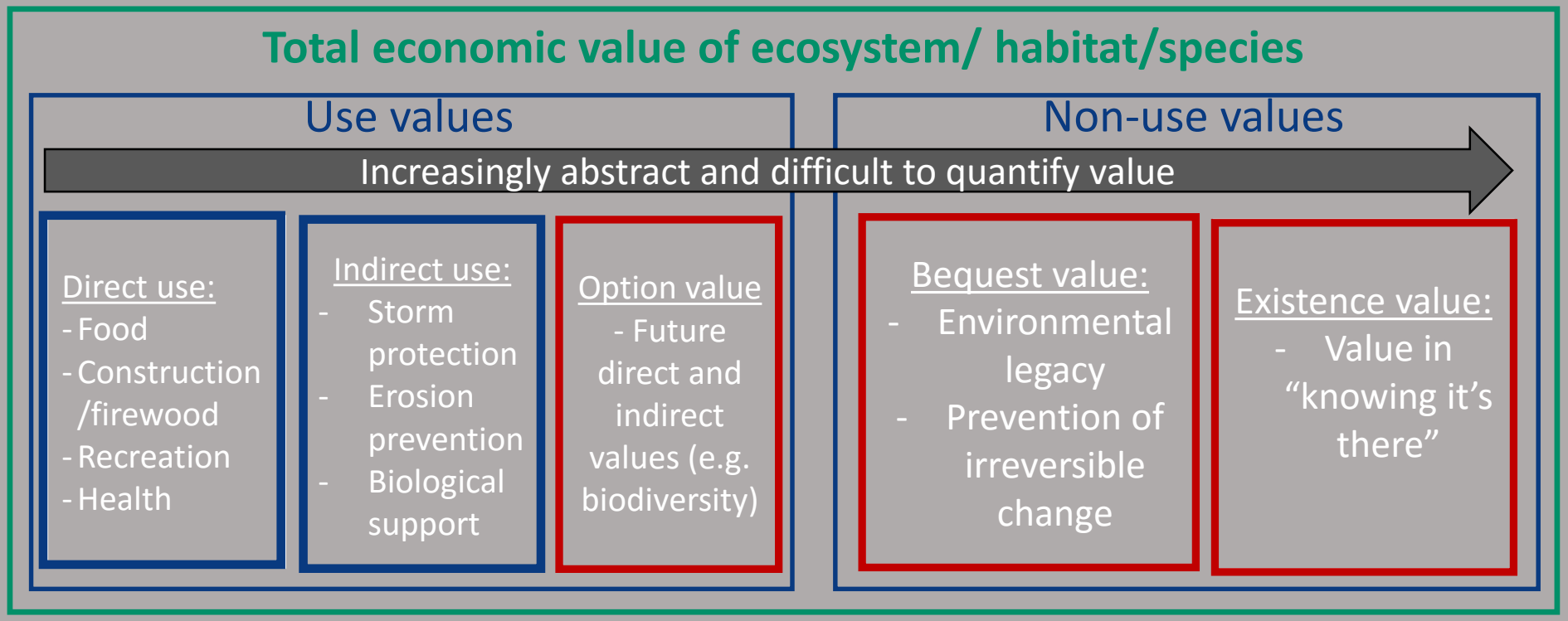
Water/ sediment/ biota

Habitat surveys

Taint testing

Air monitoring

# Common issues: methods for damage quantification




Admissible under IMO regimes if financial loss can be shown to have occurred.

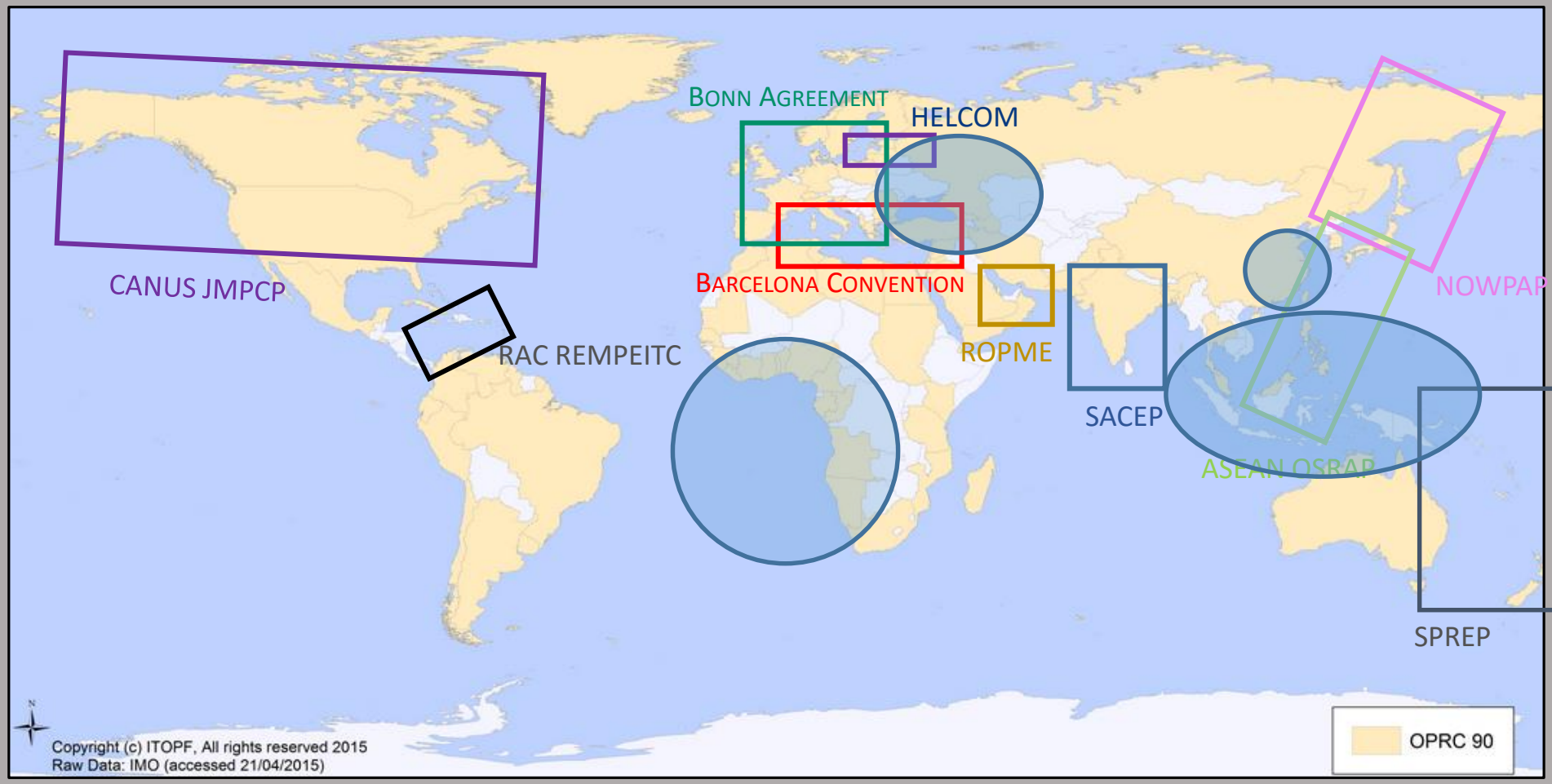
Inadmissible under IMO regimes

Reinstatement of the environment where ecologically sensitive species or habitats are concerned may fall into non-use values, but will not be based on abstract, non-market valuation studies.

Admissible under CERCLA, OPA '90 and other NRD statutes

# POTENTIAL SOLUTIONS

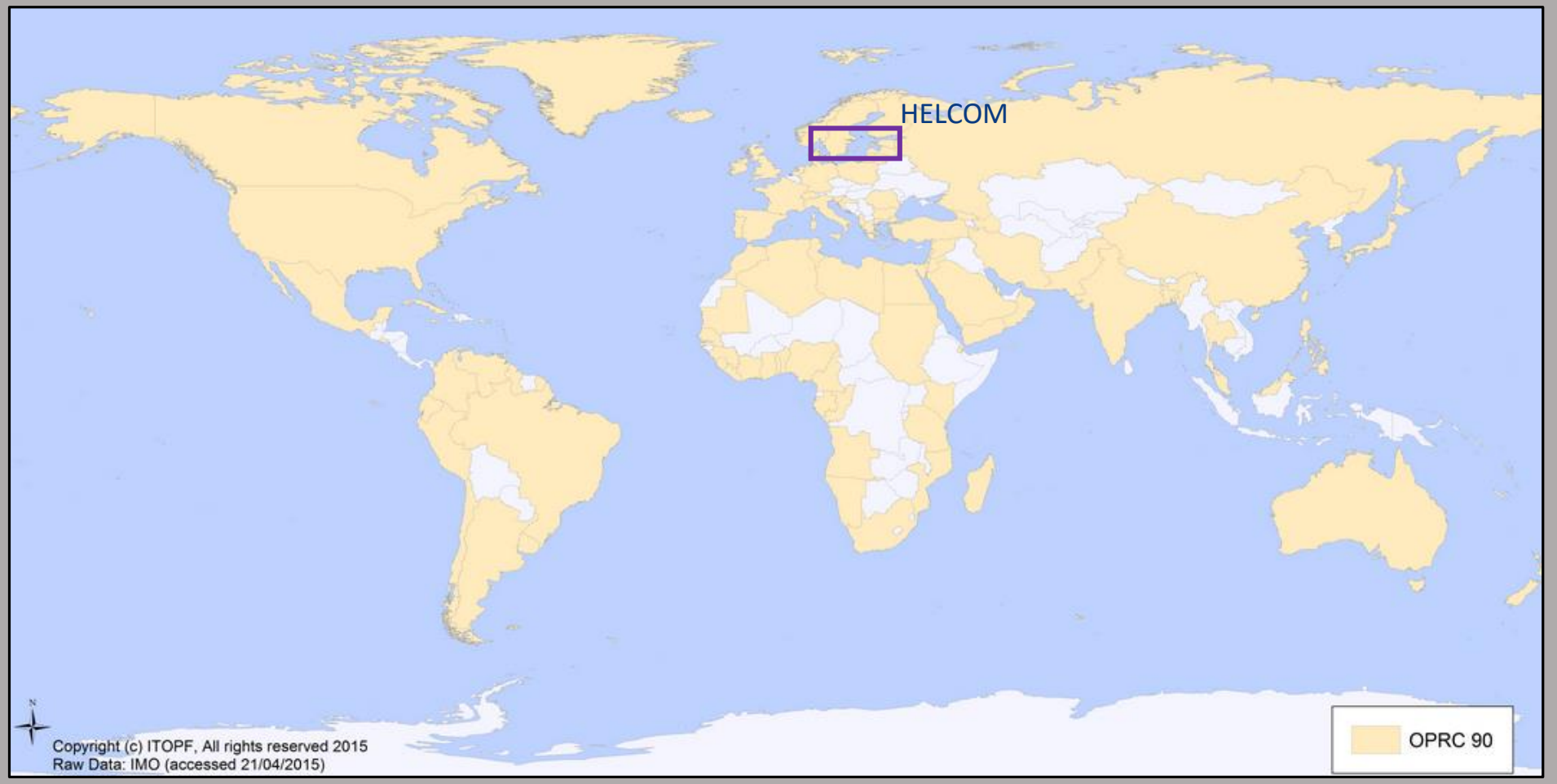
# International cooperation




- Multi-lateral agreements as part of requirements under OPRC
- Joint industry (IPIECA)-IMO initiatives (Global initiative programme)

# International cooperation -integrated, regional guidelines?

The unpredictability of oil or chemical spills, coupled with the dynamism of the marine environment means that each event presents its own set of circumstances and concerns – highly prescriptive methodologies therefore are neither realistic nor practical, however....




- HELCOM Baltic Sea Pilot Project (BALSAM) - tested new concepts for integrated environmental monitoring in the Baltic Sea: identified priority habitats and species, coordinated use of research vessels

# Drills and exercises

Under OPRC 90, regular training and exercises should be built into local, regional and national contingency plans.

- ITOPF rarely encounters drills and exercises where environmental regulators are included in the scenario
- Exercises should seek to include environmental regulators

# Summary of challenges and methods for improvement

| | Challenges encountered | Solutions/examples |
|---|---|---|
| Prevention | • Absence of area specific conservation objectives | Area specific definitions of “significant adverse damage”<br><br>EU Habitats Directive |
| Preparedness and response | • Exclusion of environmental authorities in contingency planning process | Development of technical knowledge for spill specific (acute event) monitoring through regional agreements and information sharing<br><br>Integration of environmental monitoring procedures contingency plans |
| Liability and compensation | • Inefficient use of resources<br><br>• Lack of pre-defined objectives that also aim to establish causality | PREMIAM guidelines – not prescriptive, flexible |

Thank you for your attention

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