

GESAMP - Using science to advise the UN system for the past 50 years

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Chair of GESAMP





GESAMP

The Joint Group of Experts on the
Scientific Aspects of Marine
Environmental Protection

An inter-agency body of the United
Nations established in 1969

*Purpose: 'to provide authoritative, independent,
interdisciplinary scientific advice to organizations and
governments to support the protection and sustainable use
of the marine environment.'*



IMO



FAO



UNESCO



IOC



WMO



UNIDO



IAEA



UN



UNEP

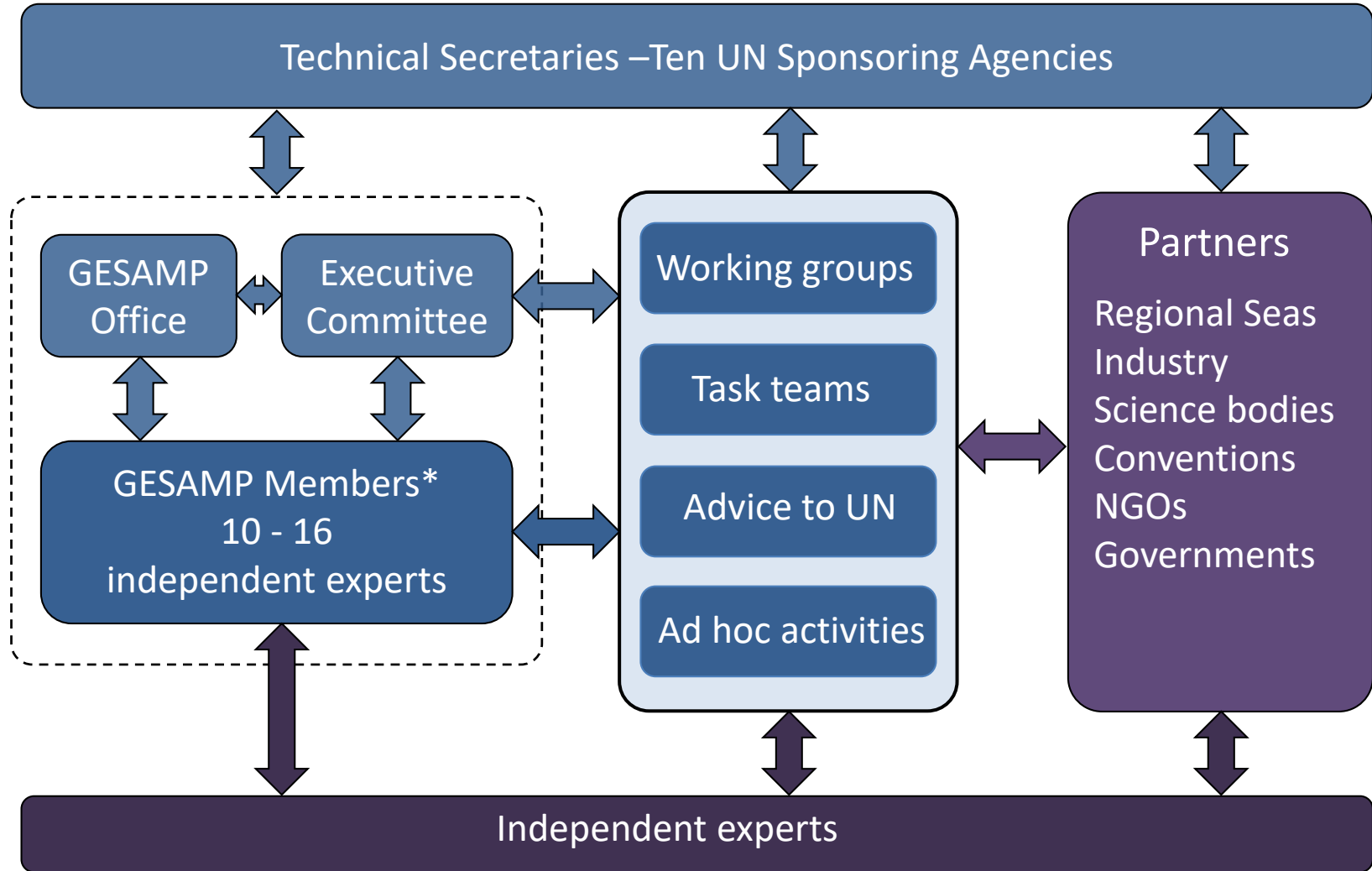


UNDP



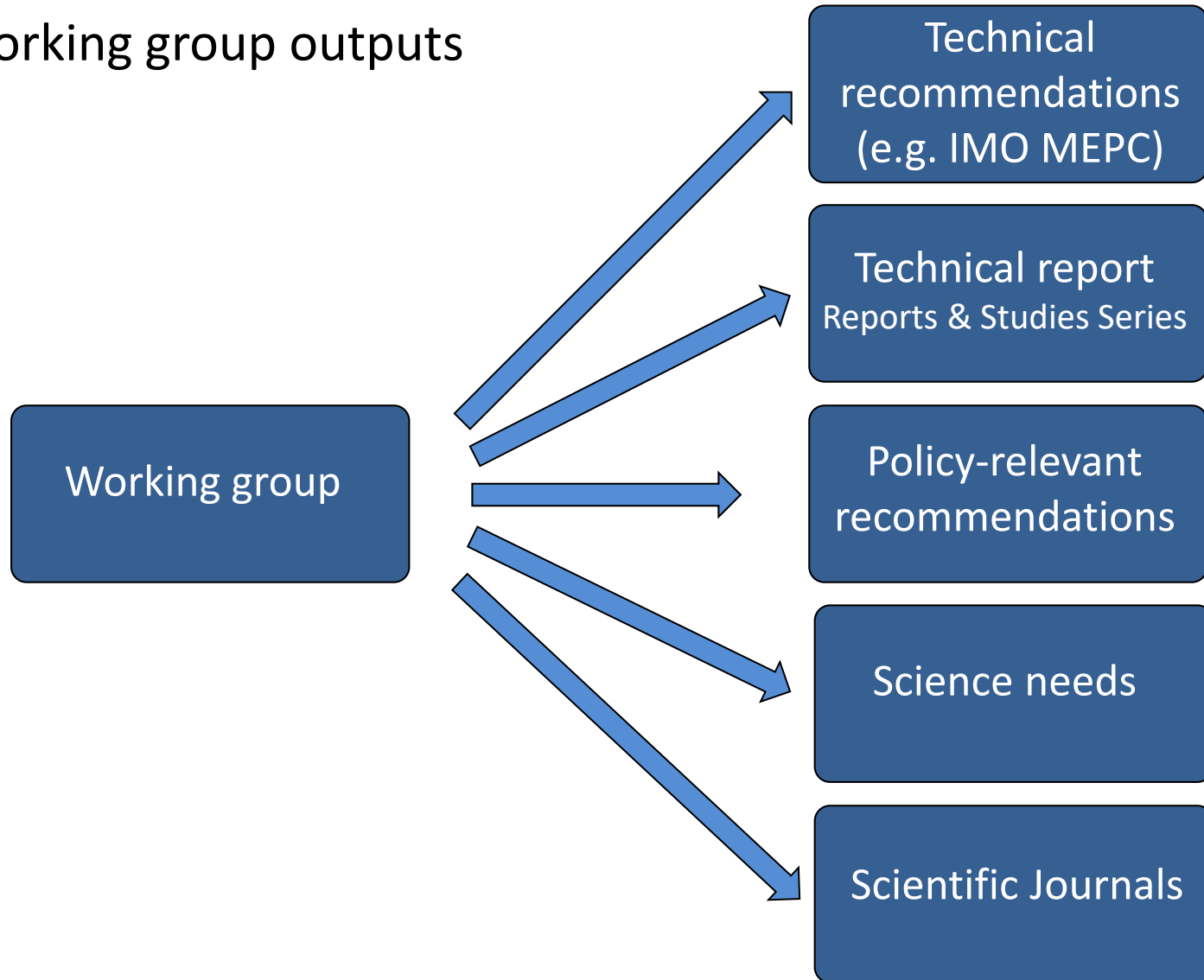
ISA

How GESAMP functions



* Membership (2019): Australia, Canada, India, Jordan, Germany, Netherlands, South Africa, UK, USA

Working group outputs



The collage consists of five vertically stacked images:

- Top Image:** A large red oil tanker ship, the *BPCL INDIAN*, sailing on the ocean.
- Second Image:** A large industrial ship, possibly a bulk carrier, with two large white waterfalls discharging into the ocean.
- Third Image:** A close-up of a large, dark, textured object, possibly a piece of marine debris or a large fish.
- Fourth Image:** A diagram of a marine cloud engineering system. It shows a ship at sea with various components labeled: "Increasing Ocean Reflectivity", "Alkalinity Addition", "Fertilization", "Direct Sequestration", "City Inspired Wind-surge Mitigation", "Direct Sequestration", "Mineralization", "Deep Sequestration", "Artificial Reefing", "Marine Cloud Engineering", "Deep Sequestration", "Direct Sequestration", "City Inspired Wind-surge Mitigation", "Direct Sequestration", "Mineralization", "Deep Sequestration".
- Fifth Image:** A 3D topographic map of the ocean floor, showing depth contours and a red area indicating a specific location. The map includes labels for "Depth (m)", "0", "1000", "2000", "3000", "4000", "5000", "6000", "7000", "8000", "9000", "10000", "11000", "12000", "13000", "14000", "15000", "16000", "17000", "18000", "19000", "20000", "21000", "22000", "23000", "24000", "25000", "26000", "27000", "28000", "29000", "30000", "31000", "32000", "33000", "34000", "35000", "36000", "37000", "38000", "39000", "40000", "41000", "42000", "43000", "44000", "45000", "46000", "47000", "48000", "49000", "50000", "51000", "52000", "53000", "54000", "55000", "56000", "57000", "58000", "59000", "60000", "61000", "62000", "63000", "64000", "65000", "66000", "67000", "68000", "69000", "70000", "71000", "72000", "73000", "74000", "75000", "76000", "77000", "78000", "79000", "80000", "81000", "82000", "83000", "84000", "85000", "86000", "87000", "88000", "89000", "90000", "91000", "92000", "93000", "94000", "95000", "96000", "97000", "98000", "99000", "100000".

A photograph showing the hull of a large ship being cleaned. Two high-pressure water jets are directed at the dark, rusted metal surface, creating large plumes of white spray. The ship is docked at a pier, and a concrete structure is visible in the foreground.

The diagram illustrates various marine biotechnology applications in aquaculture and oceanography. It features a cross-section of the ocean with several key components labeled:

- Marine Cloud Brightening:** Represented by a large white cloud at the top of the ocean.
- Increasing Ocean Reflectivity:** Indicated by a yellow sun icon and a label pointing to the water surface.
- Alkalinity Addition:** Shown as a small boat releasing a substance into the water.
- Pa/N:P Fertilization:** Shown as a small boat releasing a substance into the water.
- Mariculture:** Represented by a large green structure (possibly a cage or platform) in the water.
- Artificial Reproduction / Seeding:** Shown as a small boat releasing a substance into the water.
- Crop Monitoring / Seeding on Seafloor:** Shown as a small boat releasing a substance into the water.
- Direct Injection into Seafloor Sediments:** Shown as a small boat releasing a substance into the water.
- CO₂ Sequestered With Seafloor Waters:** Shown as a small boat releasing a substance into the water.
- Reef Seeding With Seafloor:** Shown as a small boat releasing a substance into the water.
- Mineralization in Rocks Under Seafloor:** Shown as a small boat releasing a substance into the water.

GESAMP Working Group membership:

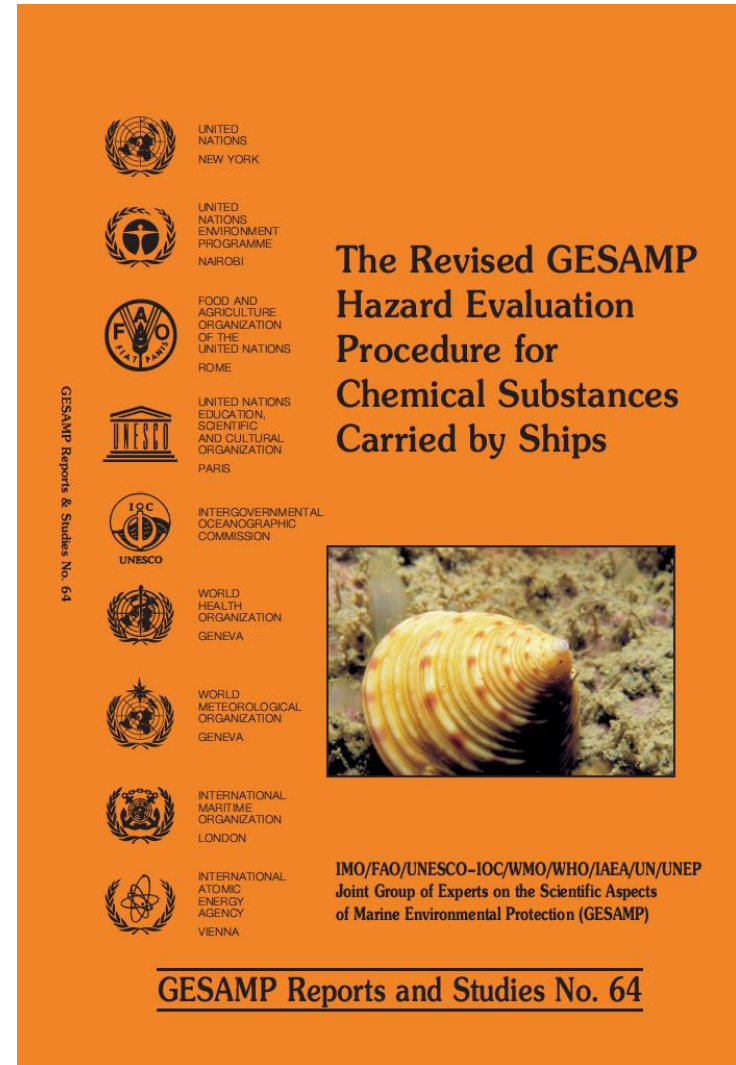
- Expertise & enthusiasm – essential
 - Diverse backgrounds – perspectives, experience & disciplines
 - Geographical representation
 - Gender balance
 - Early career scientist
-
- Natural sciences - physics, chemistry & biology
 - Social sciences – behavioural, political, economics
(WG40, WG41 ...)

Supporting existing governance mechanisms

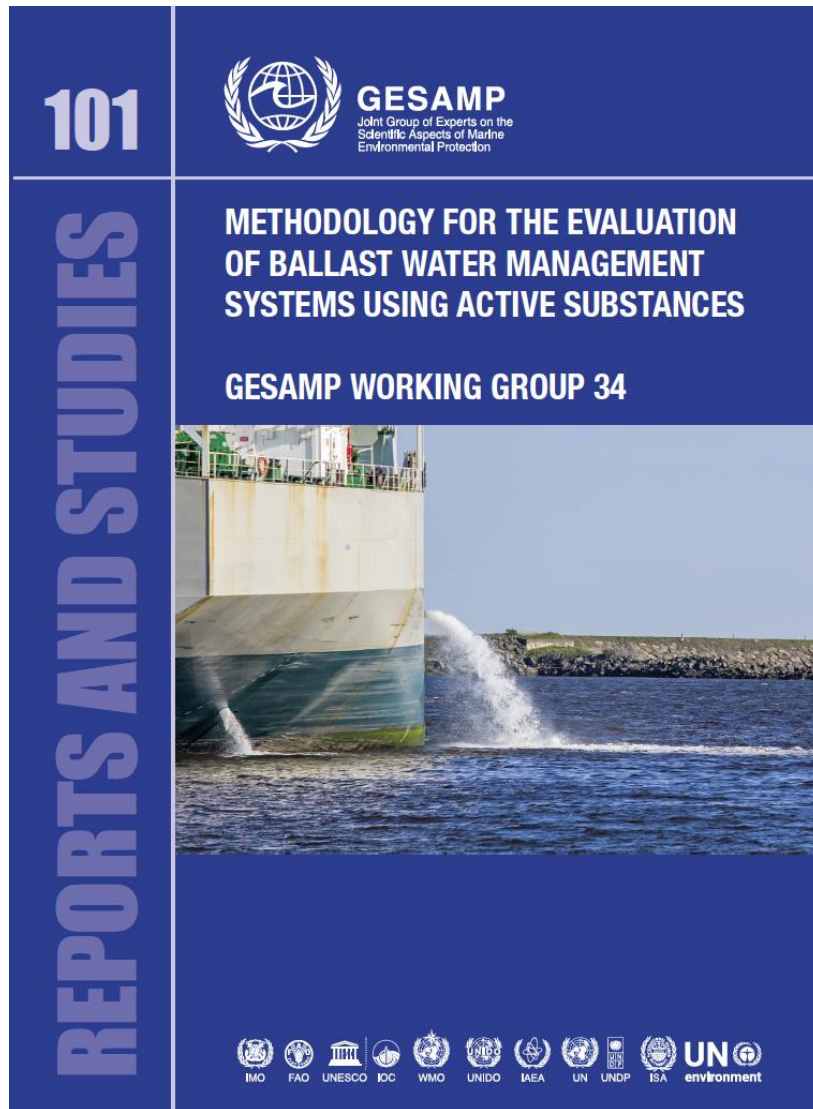
WG 1 – Hazard evaluation of harmful substances carried by ships (IMO)



To support the development and implementation of the International Convention for the Prevention of Pollution from Ships (MARPOL)



Supporting existing governance mechanisms



WG34 – evaluation of ballast water management systems using active substances (IMO)

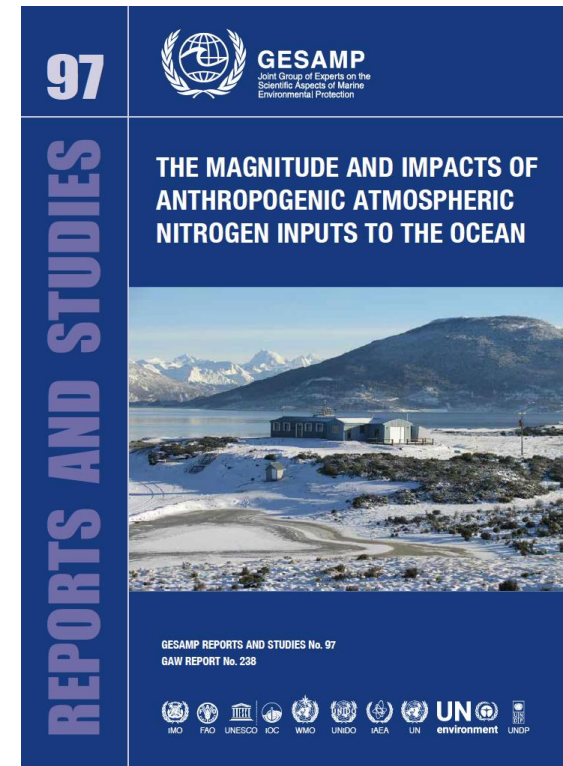
In support of implementing
the Ballast Water
Management Convention

Building the evidence base: supporting high quality science

WG38 – Atmospheric input of chemicals to the oceans (WMO)

Examples of applications:

- Regional differences in iron, phosphorous and nitrogen deposition
- Nitrogen cycling in response to changing ocean-atmosphere chemistry
- Influence of nitrogen deposition on primary and secondary productivity (fisheries)
- Contribution to HABs



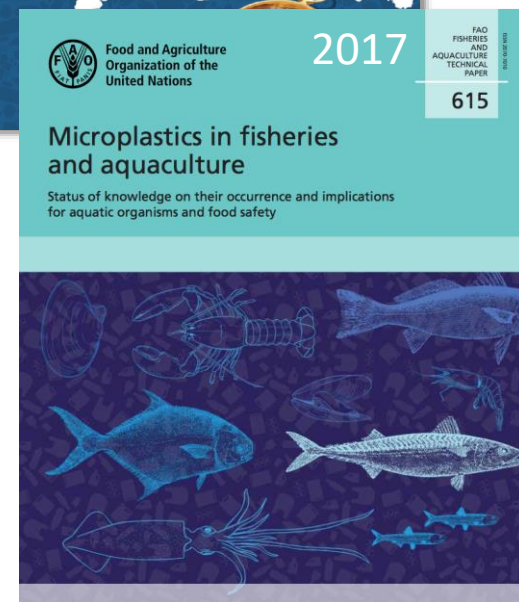
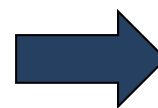
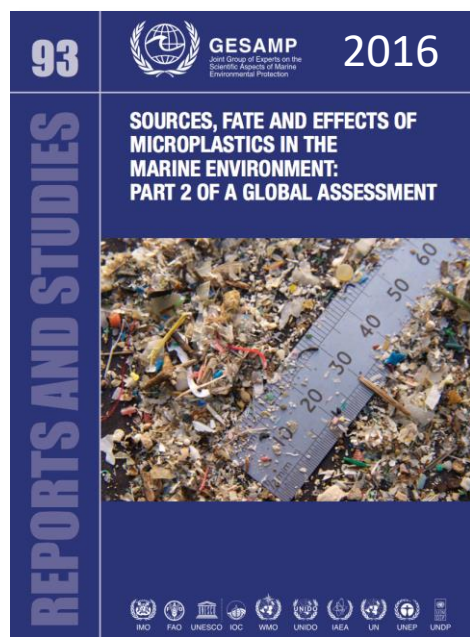
Contains a summary of
publications resulting from
WG38-led research

Informing policy development – marine litter

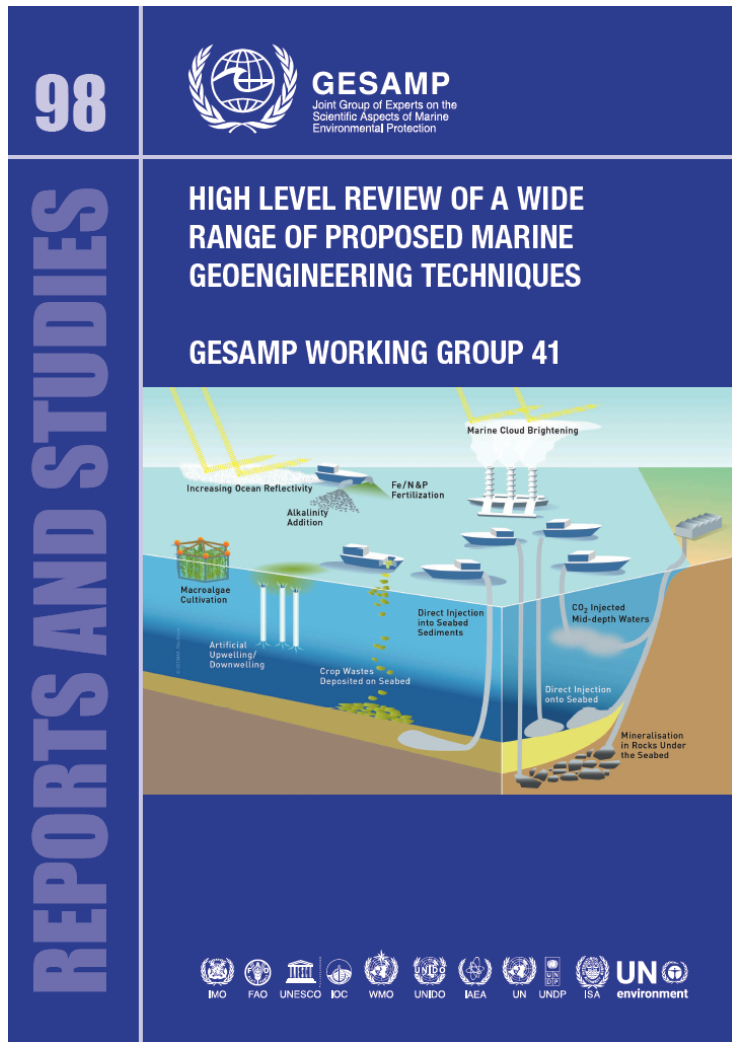
WG40 – Sources, fate and effects of marine litter and microplastics in the marine environment
(IOC-UNESCO, UNEP, 2012 - present)

UNEA Resolution 1/6 [2014]
'14. Requests the Executive Director, in consultation with other relevant institutions and stakeholders, to undertake a study on marine plastic debris and marine microplastics'

Co-sponsors: ACC,
Plastics Europe, NOAA,
Japan, Korea, China,
Norway, NOWPAP



Informing policy development – marine geoengineering



In support of the London
Convention and Protocol (IMO)

WG41 - Marine geoengineering (IMO)

*“The deliberate large-scale manipulation of
the planetary environment to counteract
anthropogenic climate change”*

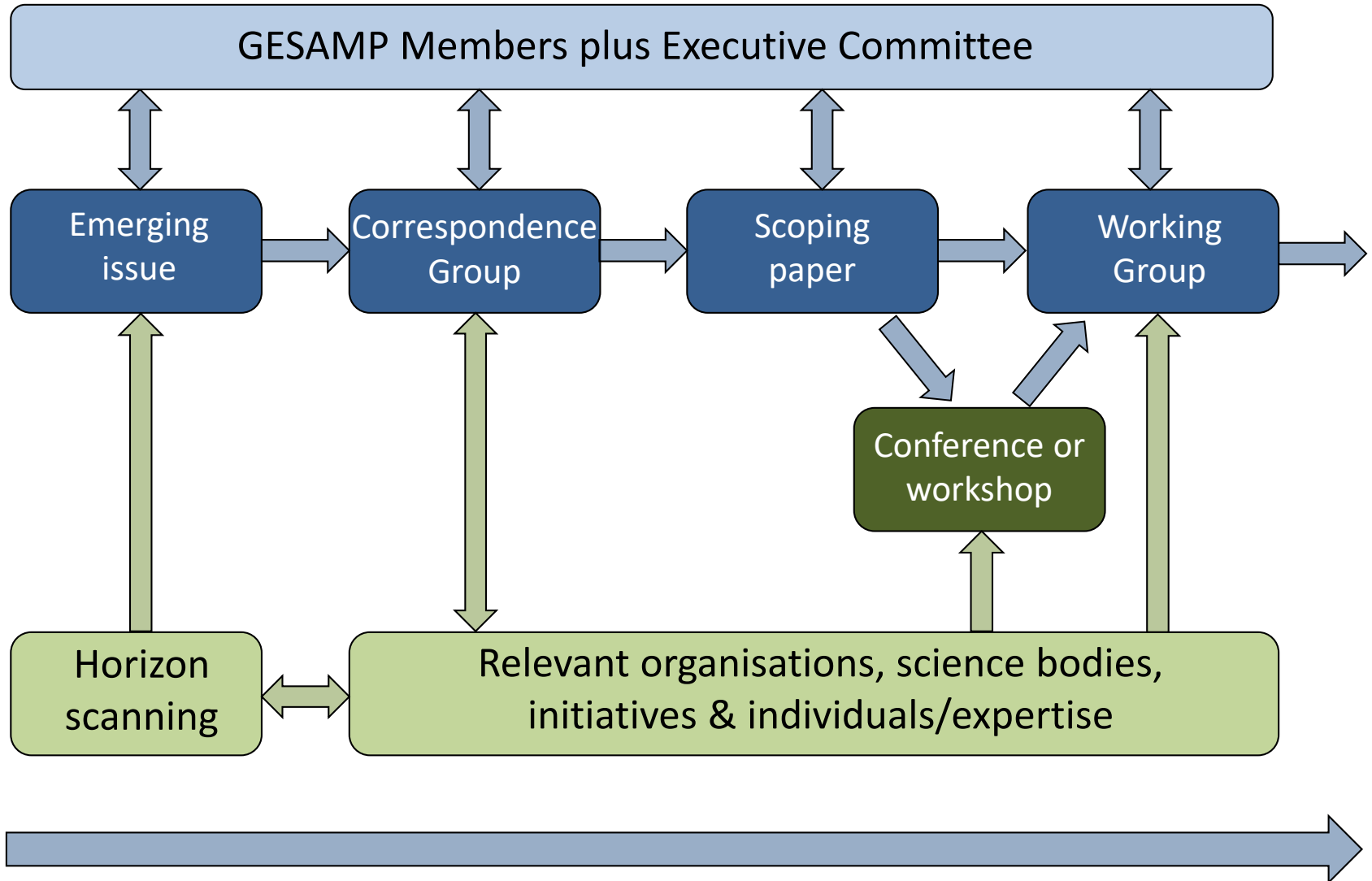
(Royal Society, 2009).

2019 report contents:

- The potential role of marine geo-engineering in climate regulation
- Methodology for assessment/ranking
- Assessment of individual techniques
- Developing an assessment framework
- Wider issues – geopolitics, belief systems, ethics, economics

Co-sponsor: Canada

Capturing emerging issues



GESAMP Correspondence Groups:

CG1. Relevance of inputs of disinfection by-products into the marine environment

CG2. Impacts of residues of chronic oil spills

CG3. The causes and impacts of massive outbreaks of *Sargassum* seaweed in the Caribbean and West Africa

CG4. The issue of emerging pollutants in pharmaceutical waste and other novelty chemicals

CG5. The extent and impacts of onshore and offshore sand mining

CG6. Updating the information on sources and levels of the main pollutants impacting the global marine environment: the '80:20 conundrum'



New Task Team

- Exhaust gas cleaning systems (requested by IMO): to review current guidelines and risk assessment for exhaust gas cleaning and disposal of washings on ships, 2019-2020

Proposals for new Working Groups

- Working Group on Bio-fouling management (proposed by IOC-UNESCO)
- Working Group on Climate change impacts on contaminants in the ocean (proposed by IAEA)

Conclusion – GESAMP's strengths

- Provides a mechanism for UN agencies with common interests to collaborate (encouraging synergies and reducing overlap)
- Represents a source of independent, authoritative scientific advice
- Reactive to UN agency requests
- Proactive in bringing emerging issues to the attention of the UN
- Forum for bringing together other IGOs, regional bodies, industrial sectors and NGOs
- Key component in translating science to policy-relevant advice
- Cost-effective



Thank you!

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