REGULAR PROCESS FOR GLOBAL REPORTING AND ASSESSMENT OF THE STATE OF THE MARINE ENVIRONMENT, INCLUDING SOCIOECONOMIC ASPECTS

OUTLINE OF THE SECOND WORLD OCEAN ASSESSMENT

At its meeting on 15 – 19 January 2018, the Group of Experts of the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects (the "Regular Process) developed a draft outline of the second world ocean assessment, which was considered by the Bureau of the Ad Hoc Working Group of the Whole at its meeting on 14 February 2018. The draft outline was subsequently considered by the tenth meeting of the Ad Hoc Working Group of the Whole on the Regular Process which met from 28 February to 1 March 2018. The revised draft incorporates amendments which were proposed by the Ad Hoc Working Group of the Whole and which the Joint Coordinators of the Group of Experts advised could be accepted consistent with the general design of the draft outline and of the Guidance for Contributors, part I approved by the Ad Hoc Working Group of the Whole at its ninth meeting and noted by the General Assembly in its resolution 72/73 of 5 December 2017.

The Ad Hoc Working Group of the Whole approved the revised outline in accordance with paragraph 330 of General Assembly resolution 72/73 of 5 December 2017 on "Oceans and the Law of the Sea", and also requested the Group of Experts to prepare an annotated outline of the second world ocean assessment for the eleventh meeting of the Ad Hoc Working Group of the Whole, scheduled to be held on 23 and 24 August 2018.

ANNEX

BACKGROUND TO THE OUTLINE OF THE SECOND WORLD OCEAN ASSESSMENT

1. Each chapter (or each section of each chapter), other than chapters 1- 4, would include:

(a) A one-paragraph abstract of the chapter or section;

(b) A very short summary of the situation recorded in the First Global Integrated Marine Assessment (World Ocean Assessment I);

(c) A description of environmental changes between 2010 and 2020;

(d) A description of the economic and social consequences and/or of the other economic or social changes (including, where appropriate, changes in global distribution of benefits and disbenefits and issues related to concepts of natural capital);

(e) A description of the main information gaps in relation to the subject matter;

(f) A description of the main capacity-building gaps in the field.

2. The proposed title of each chapter and each section of a chapter is shown in bold type. It is proposed that these would be taken into the structure of the second world ocean assessment. Further subdivisions will be chosen by the writing teams. Separate writing teams may be designated for each section of some chapters. Other material under a chapter title is included as an indication of topics to be covered in that chapter or section.

3. Where appropriate, each chapter or section would review separately the situation in the various ocean regions (Arctic, North Atlantic, South Atlantic, Indian Ocean, North Pacific, South Pacific and Southern Ocean).

4. Where appropriate, each chapter will contain an explicit evaluation of how the developments described in the chapter are contributing to the achievement of relevant Sustainable Development Goals (SDGs). The Technical Abstract of World Ocean Assessment I on the ocean and the Sustainable Development Goals under the 2030 Agenda for Sustainable Development contains a first evaluation of the SDGs relevant to the various aspects of the marine environment. The writing team for each chapter will be asked to consider the SDGs thus identified that are relevant to their chapter, and whether any further SDGs need to be considered in that chapter. Chapter 1 (Overall Summary) will include an overview of these evaluations for all relevant SDGs.

OUTLINE

Part 1: Summary

Chapter 1: Overall Summary

Part 2: Introduction

Chapter 2: Approach to the assessment

(a) Purpose of assessment

1. The General Assembly of the United Nations, having set up in 2002 the Regular Process for the Global Monitoring and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, endorsed the overall objective of the Regular Process in the following terms[1]:

> "The regular process under the United Nations would be recognized as the global mechanism for reviewing the state of the marine environment, including socio-economic aspects, on a continual and systematic basis by providing regular assessments at the global and supraregional levels and an integrated view of environmental, economic and social aspects. Such assessments would support informed decision-making and thus contribute to managing in a sustainable manner human activity that affect the oceans and seas, in accordance with international law, including the United Nations Convention on the Law of the Sea and other applicable international instruments and initiatives."

The General Assembly further agreed[2]:

> "19. In the first cycle, the scope of the regular process would focus on establishing a baseline. In subsequent cycles, the scope of the regular process would extend to evaluating trends."

In 2016, the General Assembly endorsed[3] the programme of work for the period 2017-2020 for the second cycle of the Regular Process, which provided for:

> "**Output I: second world ocean assessment(s)**
>
> Building on the baselines established by the first global integrated marine assessment, the Group of Experts will prepare assessment(s). The process will begin with a scoping exercise in January 2017. The assessment(s) would be finalized by late 2020. The scoping exercise and the preparation of the assessment(s) would be supported through regional workshops that will, among other things, help to identify regional priorities."

Subsequently, the General Assembly endorsed[4] the recommendation of the Ad Hoc Working Group of the Whole, that there should be a single comprehensive assessment during the second cycle of the Regular Process. This is that single, comprehensive assessment. The method of work adopted to deliver will be described in an Annex.

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1 Resolution A/RES/64/71, paragraph 177, endorsing A 64/347, Annex, paragraph 7.

2 Resolution A/RES/64/74, paragraph 177, endorsing A/64/347, Annex, paragraph 19. See also A/RES/72/73, paragraph 302.

3 Resolution A/RES/71/257, paragraph 299, endorsing A/71/362, Attachment, paragraph 5.

4 Resolution A/Res/72/73, paragraph 304, endorsing A/72/494, paragraph 16(t).

(b) Approach of the assessment

The second world ocean assessment therefore aims to give a picture of the state of the world's marine environment, including socioeconomic aspects, based on the developments since the base-line set out in World Ocean Assessment I, and using the elements of the Drivers – Pressures – State – Impacts – Response (DPSIR) model. It:

- Sets out the relevant ***drivers***, and
- Describes the trends in the current ***states*** of the main components of the marine environment,
- Resulting from the developments in the effects of the many ***pressures*** and their ***impacts,***
- And the developments in the effects of the management measures adopted in ***response***.

It then reviews developments in means of responding in a multi-faceted way to multiple pressures affecting simultaneously components of the marine environment, and finally considers emerging issues".

(c) Further detail on the DPSIR approach and ecosystem services (including definitions of provisioning services, regulating services, cultural services and supporting services).

Chapter 3: Scientific understanding of the ocean

- The importance of marine scientific research;
- Recent step-change improvements in understanding the ocean including:
  - Physical and chemical properties of the ocean;
  - Ocean bathymetry;
  - Ocean circulation;
  - Effects on biota of anthropogenic noise;
  - Sources of marine debris.

<u>Part 3: Drivers of changes in the marine environment</u>

Chapter 4: Drivers

- Developments in human population (especially populations in coastal areas);
- Development aspirations:
  - Food security and food safety;
  - Resource use (including demand for metals and hydrocarbons and the use of marine genetic resources);
  - Energy;
  - Transport;
  - Leisure and recreation;

- Drive to sustainability (including the Sustainable Development Goals (SDGs));
- Cultural needs and aspirations;
- Contributions from improved technologies.

Part 4: Current state of the marine environment and its trends

Chapter 5: Trends in the physical and chemical state of the ocean

(a) **Sea temperature**, both at the surface and at depth;

(b) **Sea levels**;

(c) **Salinity**, both at the surface and at depth**;**

(d) **Ocean circulation**, including stratification, mixing, upwelling, boundary currents and gyres and oscillation patterns (such as *El Niño*, *La Niña* and the North Atlantic Oscillation);

(e) **Sea ice**;

(f) **Ocean chemistry,** including ocean acidity;

(g) **Dissolved oxygen**.

Chapter 6: Trends in the biodiversity of main taxa of marine biota

(Biodiversity of taxa will be described in terms of abundance, distribution, productivity and diversity within the taxon)

(a) **Plankton**, including:

- Phytoplankton;
- Zooplankton;
- Microbes and viruses;

(b) **Marine invertebrates**;

(c) **Fish**;

(d) **Marine mammals;**

(e) **Marine reptiles**;

(f) **Seabirds;**

(g) **Marine plants**;

(h) **Macroalgae**.

Chapter 7: Trends in the state of biodiversity in marine habitats:

(a) **Sand and mud substrates (soft bottom);**

(c) **Rocky substrates and reefs;**

(d) **Intertidal zone;**

(e) **Atoll and island lagoons;**

(f) Tropical and sub-tropical coral reefs;

(g) Cold-water corals;

(h) Estuaries and deltas;

(i) Kelp forests and algal beds;

(j) Seagrass meadows;

(k) Mangroves;

(l) Salt marshes;

(m) Submarine canyons;

(n) High-latitude ice (including that over areas of open ocean);

(o) Seamounts and pinnacles;

(p) Abyssal plains;

(q) Open ocean;

(r) Ridges, plateaus and trenches;

(s) Hydrothermal vents and cold seeps;

(t) Sargasso Sea.

Chapter 8: Trends in the state of human society in relation to the ocean

(a) Coastal communities, including the coastal population, the size of coastal communities, their wealth/income, their vulnerability, adaptability, and dependency on the ocean (including dependence on, and engagement, with marine resources);

(b) Human health as affected by the ocean, including the health of coastal communities relative to inland communities, the effects of exposure to contaminated seawater, the scale of beach closures for health reasons, and the extent to which food resources available from the sea create health problems through their content of hazardous substances (including metals, microplastics and nanoparticles) and pathogens;

(c) Maritime industries, including their economic performance, the role of freight transport in international trade, the role of ferries and coastwise shipping in internal transport; recruitment of workers, the proportion of their workers who are women, the rates of death of, and injury to, those working in them, the protection of their working conditions, their levels of pay, maritime security, human trafficking, slavery and smuggling, access to markets and handling facilities for fisheries produce and the proportion of fisheries which are artisanal, culture-related or conducted by indigenous peoples;

(d) Maritime cultural services, including the extent to which marine cultural resources are conserved, support for cultural activities linked to the sea, and the scale of use of objects from the sea valued for cultural reasons.

Part 5: Trends in pressures on the marine environment

(Each chapter/section in this Part should include discussion of (a) the impacts both on marine biota and habitats and on humans, (b) management measures (both adaptive and mitigatory) taken in response and (c) the interplay between all terrestrial ecosystems (including mountain, hill, lowland and coastal ecosystems) and the ocean)

Chapter 9: Pressures from changes in climate and atmosphere

(a) **Physical properties of the ocean**, including effects on the distribution and seasonal cycles of biota and coastal communities (including sea-level rise);

(b) **Ocean chemistry,** including calcium carbonate production and the effects on biota, beaches and atolls;

(c) **Extreme climate events**, including their impacts on biota, beaches, coastal communities, shipping and marine infrastructure (including submarine cables and pipelines).

Chapter 10: Changes in inputs to the marine environment of nutrients

- From land;
- From ships and offshore installations;
- And consequent levels of eutrophication problems in the marine environment, including harmful algal blooms.

Chapter 11: Changes in liquid and atmospheric inputs to the marine environment from land (including through groundwater), ships and offshore installations

(a) **Persistent organic pollutants** (including run-off from the use of agricultural pesticides)

(b) **Metals**;

(c) **Radioactive substances** (including naturally occurring radioactive material (NORM);

(d) **Personal care products, pharmaceuticals and nutraceuticals**;

(e) **Atmospheric pollutants** (NO_x (but not in its role as a nutrient) and SO_x);

(f) **Hydrocarbons** from terrestrial sources, ships and offshore installations (including arrangements for response to spills and discharges);

(g) **Other substances used on, and discharged from, offshore installations;**

(h) **Distribution of, and trends in, contaminant concentrations**.

Chapter 12: Changes in inputs and distribution of solid waste in the marine environment (other than dredged material)

- Dumping at sea (including garbage from ships and sewage sludge);
- Activities resulting in marine debris, including plastics, abandoned fishing gear, microparticles and nanoparticles and estimates of the sources both from land, ships and offshore installations.

Chapter 13: Changes in erosion and sedimentation

- Changes in river management (including dams) affecting the amount of sediment and water delivered to the ocean, and coastal erosion;
- Changes in land use resulting in changes in erosion patterns;
- Beach nourishment.

Chapter 14: Changes in coastal and marine infrastructure

- Amounts of land reclaimed from the sea;
- Extent of new land defences against the sea, and extent of sea defences abandoned;
- Extent of coastal development, including development for tourism;
- Other adaptations affecting coastal populations as a result of sea-level rise;
- Changes in port installations and their management, including dredging.
- Changes in submarine cables and submarine pipelines.

Chapter 15: Changes in capture fisheries and harvesting of wild marine invertebrates

- Levels of catches of fish, after allowing for the effects of management measures (including the effects of estimated levels of fisheries subsidies (both capacity-enhancing and beneficial subsidies)):
    - Within national jurisdiction (by commercial fisheries, by artisanal (otherwise called small-scale) and subsistence fisheries);
    - Beyond national jurisdiction (including the effects of fisheries beyond national jurisdiction as a result of the exhaustion of fisheries within national jurisdiction);
- Levels of harvesting of marine invertebrates (including shellfish);
- Levels of by-catch and other impacts on vulnerable marine ecosystems and benthic ecosystems;
- Levels of post-harvest loss;
- Levels of fish-stock propagation;
- Use of marine protein in agriculture and aquaculture;
- Estimated levels of illegal, unregulated and unreported (IUU) fisheries;
- Levels of non-food harvesting.

Chapter 16: Changes in aquaculture

- Changes in the areas of the sea-bed covered with aquaculture installations;
- Changes in the quantities produced by marine aquaculture of:
    - Fish;

- Invertebrates (including shellfish);

- Changes in the management of marine aquaculture, including effects on wild fish populations, in the proportions of fish meal and vegetable feed used, and the quantities of pesticides used.

Chapter 17: Changes in seaweed harvesting and use

- Changes in the level of wild seaweed harvesting;
- Changes in the level of seaweed cultivation;
- Developments in uses of seaweed.

Chapter 18: Changes in desalinization and in the production of sea salt

Chapter 19: Changes in seabed mining

- Effects of technological improvements;
- Mining within national jurisdiction:
  - For metals;
  - For sand and aggregates;
  - For other substances (for example, diamonds);
- Mining beyond national jurisdiction.

Chapter 20: Changes in hydrocarbon exploration and extraction

- Including coverage of new exploration zones and new fields,
- But not including noise effects (see chapter 21) and,
- Not including discharges and emissions (see chapter 11);
- Decommissioning of offshore installations.

Chapter 21: Trends in inputs of anthropogenic noise to the marine environment

(including improved understanding of its effects across all species – see chapter 3)

Chapter 22: Developments in renewable energy sources, including

- Geothermal energy;
- Solar energy;
- Tidal energy;
- Wave energy;
- Wind energy.

Chapter 23: Developments in marine transportation

- Ferries;
- Other coastwise shipping;
- International freight transport, including effects of containerization;
- Cruising;
- Ship-breaking;
- Bunkers;
- (But discharges and emissions from ships, garbage, sewage and transport of invasive species are covered in the chapters dealing with those subjects).

Chapter 24: Developments in tourism and recreation activities

Chapter 25: Invasive species, including transport in ballast water and on ships' hulls

Chapter 26: Developments in exploration and use of marine genetic resources

Chapter 27: Marine hydrates – a potentially emerging issue

Chapter 28: Cumulative impacts

<u>Part 6: Trends in management approaches to the marine environment</u>

Chapter 29: Developments in marine spatial planning

Chapter 30: Developments in management approaches

- Ecosystem-based management approaches;
- Culturally-based management approaches;
- Community-based management approaches;
- Area-based management tools, including marine protected areas and special areas (such as special areas under the International Convention for the

Prevention of Pollution from Ships (MARPOL) and Particularly Sensitive Sea Areas);

- Adaptation to climate change and resilience building.

Chapter 31: Developments in the understanding of overall benefits from the ocean to humans, including the distribution of those benefits, and the role in safeguarding those benefits of improved implementation of international law as reflected in the United Nations Convention on the Law of the Sea.