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# **Outline<sup>a</sup> for the First Global Integrated<sup>b</sup> Marine Assessment of the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects<sup>c</sup>**

## **Part I Summary**

*This part would not follow the pattern of the main report, but highlight the most significant conclusions. It would aim to bring out:*

- (a) The way in which the assessment has been carried out;*
- (b) Overall assessment of the scale of human impact on the oceans and the overall value of the oceans to humans;*
- (c) The main threats to the marine environment and human economic and social well-being;*
- (d) The needs for capacity-building and effective approaches to meeting such needs; and*
- (e) The most serious gaps in knowledge and possible ways of filling them.*

## **Part II The context of the assessment**

### **Chapter 1 Planet: oceans and life**

This chapter would be a broad, introductory survey of the role played by the oceans and seas in the life of the planet, the way in which they function, and humans' relationships to them.

### **Chapter 2 Mandate, information sources and method of work**

2.A. Objectives, scope and mandate of the Regular Process, as agreed by the General Assembly.

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<sup>a</sup> This document contains the re-numbered version of Annex II to A/67/87.

<sup>b</sup> In this context, "integrated" means assessing impacts from a number of individual stressors and considering cumulative effects on marine ecosystems, i.e., the overall impact from multiple processes and activities overlapping in time and space.

<sup>c</sup> The First Global Integrated Marine Assessment will not include any analysis of policies.

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2.B. Explanation of the rationale for the Regular Process, and the need to ensure regular assessments of the marine environment, including socioeconomic aspects (including an explanation of what is new in the first global integrated marine assessment).

2.C. General issues relating to the collection of environmental, economic and social data relating to the oceans and seas and human uses of them, including national, regional and global aggregation and analysis of information and data, quality assurance of data and access to information.

2.D. Description of the procedures agreed for carrying out the First Global Integrated Marine Assessment, and the way in which these procedures have been implemented, including the approach to the science/policy interface, the selection of contributors, the choices made on the establishment of baselines, the description and categorizing of uncertainties and the quality assurance of data.

### **Part III**

#### **Assessment of major ecosystem services from the marine environment (other than provisioning services)<sup>d</sup>**

*Several chapters in this part would draw heavily on the work of the Intergovernmental Panel on Climate Change. The aim would be to use the work of the Panel, as well as the framework of the United Nations Framework Convention on Climate Change, not to duplicate it or challenge it.*

#### **Chapter 3**

##### **Scientific understanding of ecosystem services**

Overview of the state of scientific understanding of ecosystem services, including data collection, information management, differences between different parts of the world and research needs.

#### **Chapter 4**

##### **The oceans' role in the hydrological cycle**

4.A. The interactions between the seawater and freshwater segments of the hydrological cycle: the rate of turnover and changes in it — freshwater fluxes into the sea and their interaction with it, including the effects on the marine environment of changes in those fluxes as a result of changes in continental ice sheets and glaciers, and of anthropogenic changes in those fluxes (for example, from dam-building or increased abstraction) — reduction in ice coverage — sea-level changes.

4.B. Environmental, economic and social implications of ocean warming, sea-level change, including the implications of rises in sea level for security and implications for low-lying countries, and anthropogenic and other changes to freshwater fluxes into the sea.

4.C. Chemical composition of seawater: salinity and nutrient content of the different water bodies — changes in salinity and nutrient content.

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<sup>d</sup> The main provisioning service from the oceans is food, which is covered in part IV (Assessment of cross-cutting issue: food security and food safety). Other provisioning services are covered in part V (Assessment of other human activities and the marine environment).

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4.D. Environmental, economic and social implications of changes in salinity and nutrient content.

4.E. The oceans' role in heat transportation: ocean warming — the overall influence of the oceans on surface temperature and circulation patterns — oceanic oscillations — El Niño and similar events.

4.F. Environmental, economic and social impacts of changes in ocean temperature and of major ocean temperature events.

## **Chapter 5**

### **Sea/air interaction**

5.A. The role of the seas in regulating atmospheric fluxes and concentration of oxygen and carbon dioxide (oxygen production, carbon dioxide sequestration): role of the oceans and seas as carbon dioxide sinks — issues about maintaining or enhancing that role.

5.B. Scale and significance of the coal industries.

5.C. Meteorological phenomena related to the oceans: hurricanes and typhoons — monsoon rains — trade winds.

5.D. Environmental, economic and social implications of trends in meteorological phenomena, including changes in the frequency and intensity of storms, effects on seas covered by ice for much of the year and the communities that depend on them, and the implications for small island developing States.

5.E. Ocean acidification: degree and extent of ocean acidification resulting from human activities (including coral bleaching).

5.F. Environmental, economic and social implications of trends in ocean acidification (with cross-reference to part IV on Assessment of cross-cutting issue: food security and food safety).

## **Chapter 6**

### **Primary production, cycling of nutrients, surface layer and plankton**

6.A. Global distribution of primary production: the reasons for the present distribution — factors affecting cycling of nutrients and the variability and resilience of the base of the food web — changes known and foreseen, including changes in ultraviolet radiation from ozone-layer problems.

6.B. Surface layer and plankton: role of the surface layer — factors influencing it — variations in plankton species.

6.C. Environmental, economic and social implications of trends in primary production and other factors affecting the inherent variability and resilience of the base of the food web (with cross-reference to part IV on Assessment of cross-cutting issue: food security and food safety).

## **Chapter 7**

### **Ocean-sourced carbonate production**

Role of ocean-sourced carbonate production in the formation of atolls and beaches — potential impacts of ocean acidification.

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## **Chapter 8**

### **Aesthetic, cultural, religious and spiritual ecosystem services derived from the marine environment**

Scale of human interactions with the oceans and seas on the aesthetic, cultural, religious and spiritual levels, including burials at sea, and ways in which these interactions may be affected by other changes. There would also be a cross-reference to chapter 27 (Tourism and recreation).

## **Chapter 9**

### **Conclusions on major ecosystems services other than provisioning services**

Summary of the main issues, including capacity-building needs and information gaps, as identified in chapters 3 to 8.

## **Part IV**

### **Assessment of the cross-cutting issues: food security and food safety**

*This part would draw substantially on assessments carried out by the Food and Agriculture Organization of the United Nations (FAO). The aim would be to use the work of FAO, not to duplicate it or challenge it.*

## **Chapter 10**

### **Oceans and seas as sources of food**

Scale of human dependence on the oceans and seas for food and pressures of increased demands, the variations between different parts of the world, and the extent to which some parts of the world depend on other parts for fish and seafood and the contribution of living marine resources to food security.

## **Chapter 11**

### **Capture fisheries**

11.A. Commercial fish and shellfish stocks: present status of fish and shellfish stocks that are commercially exploited and factors affecting them, including fishing practices — scale of economic activity (large-scale commercial, artisanal and recreational<sup>e</sup> fishing).

11.B. Other fish and shellfish stocks: present status of fish and shellfish stocks exploited by artisanal or subsistence fishing — significance for livelihoods — present status of fish stocks not currently exploited.

11.C. Impacts of capture fisheries (large-scale commercial, artisanal and subsistence fishing) on marine ecosystems, through effects on the food web, by-catch (fish, mammals, reptiles and seabirds), and different fishing gear and methods, including the impact of discards on other wildlife, and impacts from lost or abandoned fishing gear.

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<sup>e</sup> See also chapter 27 (Tourism and recreation) on recreational fishing.

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11.D. Effects of pollution on living marine resources: possible effects of chemical and radioactive pollution on stocks of living marine resources used for food — implications of potential threats of such pollution.

11.E. Illegal, unreported and unregulated fishing<sup>f</sup>: scale, location and impacts on fish stocks.

11.F. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to capture fisheries.

11.G. Projections of the status of fish and shellfish stocks over the next decade in the light of all relevant factors.

11.H. Identify gaps in capacity to engage in capture fisheries and to assess the environmental, social and economic aspects of capture fisheries and the status and trends of living marine resources.

## **Chapter 12**

### **Aquaculture**

12.A. Scale and distribution of aquaculture: locations of aquaculture activities — species cultivated — economic significance and contribution to food security.

12.B. Aquaculture inputs and effects: demand for coastal space — demand for fish meal from capture fisheries.

12.C. Pollution and contamination from aquaculture: use of chemicals — interactions of escaped stock with wild stocks.

12.D. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to aquaculture.

12.E. Projections of the role of aquaculture over the next decade in the light of all relevant factors.

12.F. Identify gaps in capacity to engage in aquaculture and to assess the environmental, social and economic aspects of aquaculture.

## **Chapter 13**

### **Fish stock propagation**

13.A. Rebuilding depleted stocks through marine ranching and release of fish from hatcheries.

13.B. Transplantation of living marine resources to different ecosystems.

13.C. Effects of artificial propagation on natural ecosystems.

13.D. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to fish stock propagation.

13.E. Identify gaps in capacity to engage in fish stock propagation and to assess the environmental, social and economic aspects of fish stock propagation.

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<sup>f</sup> As defined in the FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.

<sup>g</sup> The First Global Integrated Marine Assessment will not include any analysis of policies.

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## **Chapter 14**

### **Seaweeds and other sea-based food**

- 14.A. Scale, location of collection and significance of food derived from the oceans and seas other than fish and shellfish — projected developments over the next decade.
- 14.B. Potential impacts of collection of seaweed and other sea-based food.
- 14.C. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to the collection of seaweeds and other sea-based food.
- 14.D. Identify gaps in capacity to assess the environmental, social and economic aspects of seaweed and other sea-based food.

## **Chapter 15**

### **Social and economic aspects of fisheries and sea-based food**

- 15.A. Relationship with human health: health benefits and problems from sea-based food, including the potential to supplement protein-poor diets — chemical, toxic and bacterial contamination.
- 15.B. Scale and significance of employment in fisheries and aquaculture: numbers employed — relationship of earnings to local median earnings — scale of injuries to fishers compared to other industries.
- 15.C. Role of fisheries in social structure: role of fishers in local societies — extent to which fishing is the sole source of livelihood — extent to which local societies are dependent on fisheries and aquaculture.
- 15.D. Relationship between catch areas, ownership and operation of fishing vessels, landing ports and consumption distribution: the benefits which States (and economic operators based in them) obtain from fisheries and aquaculture.
- 15.E. Implementation of international fisheries agreements.
- 15.F. Effects of changes in markets: growth of long-distance transport of landed fish and shellfish.
- 15.G. Links to other industries: scale of economic activity dependent on fisheries and aquaculture, both in providing equipment (especially ships) and in processing output in value chains.
- 15.H. Identify gaps in capacity to engage in fisheries and to assess the environmental, social and economic aspects of fisheries.

## **Chapter 16**

### **Conclusions on food security**

- 16.A. Summary of the main issues, including capacity-building needs and information gaps, identified in chapters 10 to 15.
- 16.B. Longer-term development of food from marine resources — impacts of climate change in the context of the United Nations Framework Convention on Climate Change and based on the conclusions of the Intergovernmental Panel on Climate Change — impacts of population changes — relation with changes in terrestrial food production.

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## **Part V**

### **Assessment of other human activities and the marine environment**

#### **Chapter 17**

##### **Shipping**

17.A. Significance of shipping in world trade: major shipping routes — amount of world trade carried by sea — economic benefits to States from shipping activities, including as flag States — projections of changes over the next decade, including changes in shipping possibilities at high latitudes as a result of changes in ice cover.

17.B. Threats from shipping: locations, scale and trends — pollution from shipping (covering all forms of pollution regulated by annexes I to VI to the International Convention for the Prevention of Pollution from Ships, anti-fouling treatments and noise) — the acoustic impact of shipping on marine organisms — shipping disasters, including their longer-term effects — invasive species through ballast water and other biosecurity risks — transport of ships for ship-breaking — risks to coastal States from shipping compared to their trade.

17.C. Threats to the marine environment posed by the transport by sea of hazardous and noxious substances and of radioactive substances.

17.D. Links to other industries and commerce: ship-building — ship-breaking — bunkers — insurance, chartering and navigation services.

17.E. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to shipping.

17.F. Identify gaps in capacity to engage in shipping and to assess the environmental, social and economic aspects of shipping, including implementation of international conventions and other instruments.

#### **Chapter 18**

##### **Ports**

18.A. Scale and significance of port activities: locations and traffic — projected growth, including the implications of changes in shipping routes considered under issue 17.A — economic benefits to port States.

18.B. Impacts of the creation and maintenance of ports: scale of port development — dredging for navigational purposes — management of ships' waste, including effects of charging regimes — pollution from ships in port — remobilization of pollutants by dredging.

18.C. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to the construction and management of ports.

18.D. Identify gaps in capacity to assess the environmental, social and economic aspects of ports and monitoring their impact on the marine environment.

#### **Chapter 19**

##### **Submarine cables and pipelines**

19.A. Scale, location and role of cables and cable-laying: role in international communications and the Internet — projected developments over the next decade — employment — links to other industries — economic benefits.

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19.B. Potential pollution and physical harm from cables and pipelines — during construction/installation — during use — after decommissioning.

19.C. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to pipelines and cables and pipeline and cable-laying.

19.D. Identify gaps in capacity to engage in cable-laying and pipeline installation and to assess the environmental, social and economic aspects of cable-laying and pipeline installation.

## **Chapter 20**

### **Coastal, riverine and atmospheric inputs from land**

20.A. Municipal wastewater, including the impact of major cities and of cruise ships in harbours: scale and degree of treatment — nature of impact, both through direct and riverine inputs and including impacts on microbiological quality of coastal waters, as well as economic impacts of adverse effects on water quality, especially on aquaculture and tourism — projected developments over the next decade.

20.B. Industrial discharges, including point sources: hazardous substances, including persistent organic pollutants and heavy metals — hydrocarbons — nutrients — scale of discharges (direct and riverine inputs and atmospheric transport) — degree of treatment — nature of impact, including impacts on human health through food chain — projected developments over the next decade.

20.C. Agricultural run-off and emissions: scale (direct and riverine inputs and atmospheric transport of nutrients) — nature of impact — projected developments over the next decade.

20.D. Eutrophication: combined effects of municipal, industrial and agricultural inputs (including algal blooms), considering also the effects of turbidity in coastal waters and denitrification in estuaries — cross-reference to effects on fish stocks and effects on the food web.

20.E. Inputs of radioactive substances from both nuclear and non-nuclear industries — actual, potential and suspected impacts of inputs of radioactive substances.

20.F. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to managing the impact of land-based inputs.

20.G. Identify gaps in capacity to assess the environmental, social and economic aspects related to coastal, riverine and atmospheric inputs from land.

20.H. Scale of desalinization and its environmental impacts. Identify gaps in capacity to engage in desalinization and to assess the environmental, social and economic aspects of desalinization.



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**Chapter 21**  
**Offshore<sup>h</sup> hydrocarbon industries**

21.A. Scale and significance of the offshore hydrocarbon industries and their social and economic benefits.

21.B. Impacts from exploration, including seismic surveys and exploitation and decommissioning.

21.C. Offshore installation disasters and their impacts, including longer-term effects.

21.D. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to offshore hydrocarbon installations.

21.E. Identify gaps in capacity to engage in offshore hydrocarbon industries and to assess the environmental, social and economic aspects of offshore hydrocarbon industries.

**Chapter 22**  
**Other marine-based energy industries**

22.A. Scale of wind, wave, ocean thermal and tidal power generation — current, planned and forecast.

22.B. Environmental benefits and impacts of wind, wave, ocean thermal and tidal power generation.

22.C. Expected economic performance of wind, wave, ocean thermal and tidal power generation.

22.D. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to offshore wind, wave, ocean thermal and tidal power installations.

22.E. Identify gaps in capacity to engage in offshore wind, wave, ocean thermal and tidal power generation and to assess the environmental, social and economic aspects of offshore wind, wave, ocean thermal and tidal power generation.

**Chapter 23**  
**Offshore mining industries**

23.A. Scale and significance of sand and gravel extraction: environmental impacts of sand and gravel extraction.

23.B. Economic benefits of sand and gravel extraction.

23.C. Developments in other seabed mining: current state and potential scale.

23.D. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to offshore mining industries.

23.E. Identify gaps in capacity to engage in offshore mining and to assess the environmental, social and economic aspects of offshore mining.

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<sup>h</sup> “Offshore” in this chapter and the following two chapters covers all installations that are situated in the marine environment, whether in internal waters or in maritime areas subject to the sovereignty or jurisdiction of States.

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**Chapter 24**  
**Solid waste disposal**

24.A. Types and amounts of waste dumped at sea, including explosives and hazardous liquids and gases, and potential impacts on the marine environment — projected levels of dumping over the next decade.

24.B. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to solid-waste dumping at sea.

24.C. Identify gaps in capacity to engage in solid-waste disposal at sea and to assess the environmental, social and economic aspects of solid-waste disposal at sea.

**Chapter 25**  
**Marine debris**

25.A. The multiple causes of marine debris, including lack of controls on land-based disposal of waste, lack of management of beach litter and ship-generated litter, and the scale and distribution of the problem.

25.B. Approaches to combating marine debris — range of application — cases where progress has been made.

25.C. Identify gaps in capacity to control marine debris and to assess the environmental, social and economic aspects of marine debris.

**Chapter 26**  
**Land/sea physical interaction**

26.A. Land reclamation: scale and location of land reclamation and habitat modification and the habitats affected — significant environmental, economic and/or social aspects<sup>g</sup> in relation to land reclamation and habitat modification.

26.B. Erosion of land by the sea: economic and social costs of land erosion — effects on marine and coastal habitats of coastal defences, including beaches and fringing islands — implications for small island developing States — costs of coastal defences — significant environmental, economic and/or social aspects<sup>g</sup> in relation to erosion of land by the sea.

26.C. Sedimentation changes: sedimentation in the marine environment as a result of land erosion by rainfall and rivers — decline in marine sedimentation as a result of water management — effect of both types of change on marine and coastal habitats, including estuaries, deltas, submarine canyons — significant environmental, economic and/or social aspects<sup>g</sup> in relation to control of the causes of sedimentation change.

26.D. Identify gaps in capacity to assess land/sea physical interaction.

**Chapter 27**  
**Tourism and recreation**

27.A. Location and scale of tourism and recreation, including cruise ships: employment — economic benefits of tourism — economic benefits resulting from protecting marine biodiversity.

27.B. Recreational and sport fishing and its impact on marine wildlife.

27.C. Impacts of recreational and tourist vessels on sensitive sea areas.

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27.D. Contribution of tourism to problems of sewage and pollution, including from cruise ships (see also heading 20A (Municipal waste water)).

27.E. Location and scale of other environmental impacts of tourism, including habitat disturbance and destruction.

27.F. Relationship of tourism to protection of marine species and habitats (for example, whale-watching and whale sanctuaries).

27.G. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to managing the environmental impacts of tourism on the marine environment.

27.H. Identify gaps in capacity to assess the interface of tourism and the marine environment and the environmental, social and economic aspects of tourism.

## **Chapter 28**

### **Desalinization**

Scale of desalinization and its social and economic benefits. Identify gaps in capacity to engage in desalinization and to assess the environmental, social and economic aspects of desalinization.

## **Chapter 29**

### **Use of marine genetic resources**

29.A. Current topics, locations and scale of marine scientific research and exploitation, including the uses being made of marine genetic resources and associated issues such as intellectual property rights and impacts.

29.B. Significant environmental, economic and/or social aspects<sup>g</sup> of marine scientific research relating to, and exploitation of, marine genetic resources.

29.C. Identify gaps in capacity to engage in marine scientific research relating to, and exploitation of, marine genetic resources and to assess the environmental, social and economic aspects of them.

## **Chapter 30**

### **Marine scientific research**

30.A. Topics, scale and location of marine scientific research.

30.B. Significant environmental, economic and/or social aspects<sup>g</sup> in relation to marine scientific research.

30.C. Identify gaps in capacity to engage in marine scientific research and to assess the environmental, social and economic aspects of marine scientific research, including transfer of technology.

## **Chapter 31**

### **Conclusions on other human activities**

Summary of the linkages between driving forces related to human activities and the state of the marine environment, having regard to the various types of pressure.

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## **Chapter 32**

### **Capacity-building in relation to human activities affecting the marine environment**

General conclusions on the identification of gaps in capacity to engage in the human activities described above and to assess the environmental, social and economic aspects of human activities affecting the marine environment.

## **Part VI**

### **Assessment of marine biological diversity and habitats**

## **Chapter 33**

### **Introduction**

The aim of this part is (a) to give an overview of marine biological diversity and what is known about it; (b) to review the status and trends of, and threats to, marine ecosystems, species and habitats that have been scientifically identified as threatened, declining or otherwise in need of special attention or protection; (c) to review the significant environmental, economic and/or social aspects<sup>g</sup> in relation to the conservation of marine species and habitats; and (d) to identify gaps in capacity to identify marine species and habitats that are identified as threatened, declining or otherwise in need of special attention or protection and to assess the environmental, social and economic aspects of the conservation of marine species and habitats.

### **Section A — Overview of marine biological diversity**

## **Chapter 34**

### **Scale of marine biological diversity**

Main gradients of diversity for species, communities and habitats (coastal to abyssal, equatorial to polar, substrate type, salinity).

## **Chapter 35**

### **Extent of assessment of marine biological diversity**

Proportion of major groups of species and habitats in the different marine regions that are assessed on a systematic basis for status, trends and threats.

## **Chapter 36**

### **Overall status of major groups of species and habitats**

Summary, by major group and marine region, of the status, trends and threats, including the cumulative effects of pressures, shown by those assessments.

*Chapters 35 and 36 will be structured according to the following scheme:*

- a. *Coastal (intertidal and shallow water (<50m)) rock and biogenic habitats (for example, kelp forests and shallow-water, tropical coral (and other biogenic) reefs)*
- b. *Coastal sediment habitats, including vegetated habitats (for example, mangroves, salt marsh and other macro-vegetation areas and seagrass and eel-grass beds)*
- c. *Shelf rock (~50-200m) and biogenic reef habitats*
- d. *Shelf sediment habitats*

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e. *Deep sea (bathyal and abyssal) habitats (for example, seamounts, deep-sea banks and plateaus, hydrothermal vents and cold-water coral (and other biogenic) reefs)*

f. *Water column habitats*

*Species will be considered in relation to their related habitat (for example, pelagic cephalopods in relation to oceanic water-column habitats).*

**Section B — Marine ecosystems, species and habitats scientifically identified as threatened, declining or otherwise in need of special attention or protection**

*This section will include marine ecosystems, processes, species and habitats requiring special attention and will be structured in the light of the overview in section A. The chapter headings below are indicative only.*

**Chapter 37**

**Coastal rock and biogenic habitats and related species**

**Chapter 38**

**Coastal sediment habitats and related species**

**Chapter 39**

**Shelf rock and biogenic reef habitats and related species**

**Chapter 40**

**Shelf sediment habitats and related species**

**Chapter 41**

**Deep sea habitats and related species**

**Chapter 42**

**Water column habitats and related species**

These chapters will examine distribution, numbers, status and threats, including cumulative pressures.

**Section C — Environmental, economic and/or social aspects of the conservation of marine species and habitats and capacity-building needs**

**Chapter 43**

**Significant environmental, economic and/or social aspects in relation to the conservation of marine species and habitats**

Significant environmental, economic and/or social aspects<sup>g</sup> in relation to the conservation of marine species and habitats.

**Chapter 44**

**Capacity-building needs**

Identification of gaps in capacity to identify marine species and habitats that are identified as threatened, declining or otherwise in need of special attention or protection and to assess the environmental, social and economic aspects of the conservation of marine species and habitats.

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**Section D — Summary on marine biological diversity**

**Chapter 45**

**Summary on marine biological diversity**

Summary of the main issues, including capacity-building needs and information gaps, identified in chapters 33 to 44.

**Part VII**

**Overall assessment**

**Chapter 46**

**Overall assessment of human impact on the oceans**

46.A. Consideration of the implications of cumulative pressures on the overall state of the oceans and seas.

46.B. Evaluations under different methods of assessing overall human impact on the oceans and seas.

**Chapter 47**

**Overall value of the oceans to humans**

Evaluations under different methods of the benefits accruing to humans from the oceans, including assessment of the costs of environmental degradation.

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## Appendix

### Terminology

#### 1. Terminology used to describe the major features of the ocean basins and linked seas

1.A. A short summary of the technical terms used to describe the main geological features: enclosed and semi-enclosed seas — continental shelves and slopes — mid-ocean ridges — seamounts — coral and other biogenic reefs — sedimentation — major estuaries — fjord and ria areas — ocean canyons — coastal geological structures, beaches, marine wetlands, mangroves and tidal flats.

1.B. A short summary of the technical terms used to describe the main features of the water column: bodies of water — thermohaline circulation — the main ocean currents — deep water formation (downwelling) and upwelling — stratification — acidification — ice coverage.

#### 2. Legal concepts relating to the marine environment

*This section would include quotations from the relevant parts of the United Nations Convention on the Law of the Sea so that readers can see what is intended when terms from that instrument are used.*

