ANNEX IV – ACTIVITIES AND ACHIEVEMENTS BY THE SPONSORING ORGANIZATIONS OF GESAMP DURING THE INTERSESSIONAL PERIOD

This document provides a summary of the Sponsoring Organizations' achievements since GESAMP 45 (17 to 21 September 2018) from IMO, IAEA, UNESCO-IOC, UNDP, FAO, DOALOS, WMO, and UN Environment.

International Maritime Organization (IMO)

Implementation of the Ballast Water Management Convention

6 The Ballast Water Management (BWM) Convention was adopted in February 2004 and aims to prevent, minimize and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments. The BWM Convention entered into force on 8 September 2017. The number of Contracting Governments is currently [81, representing 80.76% of the world's merchant fleet tonnage as at 26 July 2019.

Matters directly related to the GESAMP-BWWG

7 In total there are over 70 type-approved ballast water management systems (BWMS) available.

8 At its 73rd and 74th sessions, the Marine Environment Protection Committee (MEPC) granted a total of three Basic Approvals and three Final Approvals to BWMS that make use of Active Substances, and extended the original Final Approval for one BWMS for use in fresh water, based on the recommendations of the 36th, 37th and 38th meetings of the GESAMP Ballast Water Working Group (WG 34).

9 Regarding the procedure for submission of new data on fresh water testing of BWMS with Final Approval, MEPC 74 agreed that the application of Procedure (G9), including the aforementioned procedure on fresh water data, is mandatory and should be followed.

10 In addition, MEPC 74 agreed with the Group's recommendation that the relevant Administration should conduct a readiness evaluation before the applicant prepares an application for evaluation by the Group.

Other matters

11 A summary of the most important outcomes from MEPC 73, MEPC 74, and the 6th sessions of the Sub-Committees on Pollution Prevention and Response (PPR 6) and Implementation of IMO Instruments (III 6) is provided in this section.

New work outputs

12 MEPC 73 approved three new outputs related to the BWM Convention, as follows:

.1 "Development of training provisions for seafarers related to the BWM Convention", in the post-biennial agenda of the Committee, assigning the Sub-Committee on Human Element, Training and Watchkeeping (HTW) as the associated organ, with two sessions needed to complete the work;

.2 "Review of the BWM Convention based on data gathered in the experience-building phase", in the biennial agenda of MEPC, with a target completion year of 2023; and

.3 "Urgent measures emanating from issues identified during the experience-building phase of the BWM Convention", in the biennial agenda of MEPC, with a target completion year of 2023.

Guidance on system design limitations of BWMS

13 Recognizing the need to develop separate guidance on system design limitations for use in conjunction with the 2016 Guidelines (G8), MEPC 73 approved BWM.2/Circ.69 on *Guidance on system design limitations of ballast water management systems and their monitoring*.

Revision of the data gathering and analysis plan for the experience-building phase

14 Following a proposal by the International Council for the Exploration of the Sea (ICES) (PPR 5/5/2), PPR 6 agreed to insert a link to standard operating procedures (SOPs) for the collection of treated ballast water samples in the *Data gathering and analysis plan for the experience-building phase associated with the BWM Convention* (DGAP) (BWM.2/Circ.67). Subsequently, MEPC 74 approved the revised DGAP (BWM.2/Circ.67/Rev.1).

15 In the context of the experience-building phase (EBP), MEPC 74 also noted that a new tab had been developed by the Secretariat to accommodate the EBP in the Ballast Water Management module in the Global Integrated Shipping Information System (GISIS), structured in accordance with the interfaces in the DGAP, and urged Member States to use the GISIS module to provide information at the earliest opportunity.

Amendments to the form of the International Ballast Water Management Certificate

16 MEPC 73 and MEPC 74 considered proposals from China (MEPC 73/4/7 and MEPC 74/4/14) to amend the form of the International Ballast Water Management Certificate to include additional ballast water management methods. MEPC 74 approved amendments to Appendix I of the BWM Convention (Form of International Ballast Water Management Certificate), with a view to adoption by MEPC 75.

Unified interpretations of the form of the International Ballast Water Management Certificate

17 MEPC 72 had approved a unified interpretation (UI) of the term "date installed" in the International Ballast Water Management Certificate (BWM.2/Circ.66), which needed to be updated with appropriate references to the *Code for Approval of Ballast Water Management Systems* (BWMS Code), which enters into force on 13 October 2019. MEPC 74 approved the updated UI (BWM.2/Circ.66/Rev.1).

18 Separately, MEPC 74 considered a proposal by China (MEPC 74/4/16) to develop a UI on calculation methods of ballast water capacity in the International Ballast Water Management Certificate, and invited further proposals at a future session of the PPR Sub-Committee, which has a standing agenda item on "Unified interpretation to provisions of IMO environment-related conventions".

Commissioning testing of ballast water management systems

19 MEPC 73 approved the *Guidance for the commissioning testing of ballast water management systems* (BWM.2/Circ.70), recognizing the need for amendments to appropriate mandatory instruments to require commissioning testing and for interim measures to address this matter before the entry into force of any such amendment.

20 Subsequently, MEPC 74 approved amendments to regulation E-1 of the BWM Convention to make commissioning testing mandatory, with a view to adoption by MEPC 75. In this regard, MEPC 74 invited submissions to PPR 7 concerning proposals on any necessary changes to

BWM.2/Circ.70 in light of the amendments to regulation E-1. Moreover, as an interim measure, MEPC 74 urged Administrations to provide the recognized organizations, which act on their behalf, with written and clear instructions in relation to the conduct of indicative analysis testing of BWMS at the time of their commissioning.

21 In addition, MEPC 74 agreed that commissioning testing should begin as soon as possible in accordance with BWM.2/Circ.70; that the analysis undertaken in the context of commissioning testing would be indicative; and that commissioning testing should not be applicable to ships that had already installed a BWMS and were certified for compliance with regulation D-2.

Review of the Survey Guidelines in relation to the BWM Convention

22 III 4 had incorporated the *Interim Survey Guidelines for the purpose of the International Convention for the Control and Management of Ships' Ballast Water and Sediments under the Harmonized System of Survey and Certification* (BWM.2/Circ.7) in the *2017 Survey Guidelines under the Harmonized System of Survey and Certification* (HSSC Guidelines). In this context, MEPC 72 had recognized that a review of the Survey Guidelines under the HSSC in relation to the BWM Convention would be required in light of the *2016 Guidelines for approval of ballast water management systems (G8)*.

23 In addition, in light of the aforementioned approval of the *Guidance for the commissioning testing of ballast water management systems*, MEPC 73 agreed that the validation of BWMS at their commissioning should be incorporated in the 2019 HSSC Guidelines for all ships.

24 III 6 reviewed the Survey Guidelines accordingly to address these two issues and amended the relevant section of the HSSC Guidelines. This will form part of the 2019 HSSC Guidelines, which are expected to be adopted by the IMO Assembly at its upcoming 31st session.

Development of a standard for verification of ballast water compliance monitoring systems

25 PPR 6 and MEPC 74 considered a proposal by Denmark (PPR 6/4 and MEPC 74/4/11) for the development of a standard for verification of ballast water compliance monitoring systems. In light of overwhelming support for the proposal, MEPC 74 invited concrete proposals for the development of such a standard to PPR 7.

Application of the BWM Convention to specific ship types

26 MEPC 74 considered proposals by the Russian Federation (MEPC 74/4/13) and Turkey (MEPC 74/4/18, MEPC 74/4/19 and MEPC 74/4/20) highlighting issues faced by certain types of ships in complying with the BWM Convention. Some delegations supported the further consideration of the proposals while other delegations expressed the view that the use of the full range of available ballast water management options in the BWM Convention should be encouraged instead of developing new exemption provisions. Due both to the lack of consensus and to time constraints, MEPC 74 deferred the consideration of these proposals to MEPC 75.

Contingency measures in the ballast water management plan

27 MEPC 73 considered the inclusion of elements introduced by the *Guidance on contingency measures under the BWM Convention* (BWM.2/Circ.62) in ballast water management plans. In this regard, MEPC 73 adopted amendments to the *Guidelines for ballast water management and development of ballast water management plans (G4)* through resolution MEPC.306(73), and agreed that each Member State could determine the timing for the incorporation of information on contingency measures in the ballast water management plans of ships flying its flag.

Ballast water sampling and analysis

28 PPR 6 invited MEPC to note that the work on revised guidance on ballast water sampling and analysis had been completed. However, MEPC 74 received submissions from France (MEPC 74/4/10 and MEPC 74/INF.17) providing information on a new analysis method proposed to be added in the *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42/Rev.1). Therefore, MEPC 74 referred both documents to PPR 7 and consequently extended the target completion year for this output to 2021.

Revised guidance on methodologies that may be used for enumerating viable organisms

29 The output on revised guidance on methodologies that may be used for enumerating viable organisms was also scheduled to complete at PPR 6. However, that session received submissions from the Netherlands (PPR 6/5 and PPR 6/INF.22) on analytical methods for enumerating organisms in the 10 to 50 µm size class to be added in the *Guidance on methodologies that may be used for enumerating viable organisms for type approval of ballast water management systems* (BWM.2/Circ.61). As these submissions stated that validation of these methods was ongoing and expected to be submitted to PPR in the future, PPR 6 recommended and MEPC 74 agreed to extend the target completion year for this output as well to 2021.

Future work

30 MEPC 75 (scheduled from 30 March to 3 April 2020) is expected, inter alia, to consider the following matters related to the BWM Convention:

.1 any applications for Basic and/or Final Approval of BWMS that make use of Active Substances, based on the recommendations of the 39th (and, if required, 40th) meeting(s) of the GESAMP Ballast Water Working Group;

.2 the first aggregate data report on the experience-building phase; MEPC 75 is also expected to take stock of the EBP's timeline;

.3 adoption of amendments to regulation E-1 and Appendix I of the BWM Convention;

.4 any revision of the *Guidance for the commissioning testing of ballast water management systems* (BWM.2/Circ.70) that may be recommended by PPR 7 in light of the amendments to regulation E-1; and

.5 proposals on the application of the BWM Convention to specific ship types.

31 PPR 7 (scheduled from 17 to 21 February 2020) is expected, inter alia, to consider the following matters related to the BWM Convention:

.1 any proposals for a unified interpretation of ballast water capacity in the International Ballast Water Management Certificate;

.2 any proposals on necessary changes to BWM.2/Circ.70 in light of the amendments to regulation E-1;

.3 development of a standard for verification of ballast water compliance monitoring systems;

.4 new method(s) for ballast water analysis to be added in the *Guidance on ballast water sampling and analysis for trial use in accordance with the BWM Convention and Guidelines (G2)* (BWM.2/Circ.42/Rev.1); and

.5 new method(s) for enumerating viable organisms to be added in the *Guidance on methodologies that may be used for enumerating viable organisms for type approval of ballast water management systems* (BWM.2/Circ.61).

Amendment of the Anti-fouling Systems Convention

32 The Anti-fouling Systems (AFS) Convention was adopted in October 2001 and aims to prohibit the use of harmful anti-fouling coatings used on ships. The Convention entered into force on 17 September 2008 and the number of Parties is currently [86], representing [96.04%] of the world's merchant fleet tonnage as at 27 July 2019. The Convention has not been amended since its entry into force.

33 Currently, Annex 1 to the AFS Convention prohibits the use of organotin compounds acting as biocides in anti-fouling coatings used on ships, and the Convention has a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems. In this context, the consideration of a proposal to amend Annex 1 to the AFS Convention to include controls on cybutryne was approved by MEPC 71 and has been ongoing since PPR 5. This process entails a two-stage consideration of an initial and a comprehensive proposal.

34 PPR 5 and MEPC 73 considered the initial proposal and noted the scientific evidence for the adverse effects of cybutryne to the marine environment and to human health. MEPC 73 agreed that a more in-depth review was warranted, along with consequential revision of relevant guidelines, and invited the submission of a comprehensive proposal to PPR 6.

35 PPR 6 considered the comprehensive proposal and agreed to draft amendments to Annex 1 (Controls on anti-fouling systems) and Appendix 1 to Annex 4 (Model form of International Anti-fouling System Certificate) of the AFS Convention, for approval by MEPC 74.

36 However, MEPC 74 considered also a proposal by Japan (MEPC 74/10/9) to modify the draft amendments to the AFS Convention; specifically, to delete the requirement for removal or sealing of existing AFS containing cybutryne. In the ensuing discussion, some delegations shared the concerns raised by Japan and supported the further consideration of the matter, while others were of the view that the proposal by Japan should not be considered as it conflicted with article 4(2) of the AFS Convention and the intent of the Convention. Consequently, MEPC 74 referred the draft amendments to Annex 1 of the AFS Convention to PPR 7 for further consideration and finalization, taking into account both the concerns expressed by Japan and the potential conflict between the proposal by Japan and article 4(2) of the AFS Convention, as well as any information on the impact of the removal or sealing of existing AFS containing cybutryne.

37 PPR 7 will consider the draft amendments to Annex 1 of the AFS Convention with a view to finalization for approval by MEPC 75, as well as the revision of relevant guidelines. The relevant outcome of PPR 7 will be reported to MEPC 75 as an urgent matter.

Review of the 2011 Biofouling Guidelines

38 The Biofouling Guidelines were adopted in July 2011 through resolution MEPC.207(62) and are intended to provide a globally consistent approach to the management of biofouling, which is the accumulation of various aquatic organisms on ships' hulls, in order to minimize the transfer of invasive aquatic species. Biofouling management can also be an effective tool in enhancing energy efficiency and reducing air emissions from ships.

39 As scientific and technological advances are made, the Biofouling Guidelines may be refined to enable the risk to be more adequately addressed. In support of this review process, IMO has prepared guidance for evaluating the Guidelines (MEPC.1/Circ.811). In this context, MEPC 72 had agreed to a new output for the PPR Sub-Committee to review the Biofouling Guidelines. The review,

which will be based on the principles of the aforementioned guidance, is expected to be carried out over two PPR sessions and will commence at PPR 7.

40 The IMO Secretariat has also embarked on a new major project titled "Building Partnerships to Assist Developing Countries Minimize the Impacts from Aquatic Biofouling" (GloFouling Partnerships), which is funded by the Global Environment Facility (GEF) through UNDP. Project implementation started in September 2018 and will last for a period of five years. This project aims to build capacity in developing countries to implement the Biofouling Guidelines, and the experience gathered through the project's activities may also inform the review of the Guidelines.

MARPOL Annex VI (Prevention of air pollution from ships)

Consistent implementation of 0.50% sulphur limit under MARPOL Annex VI

41 Following the completion of a review of the availability of compliant fuel oil, MEPC 70 (October 2016) decided that the 0.50% m/m sulphur limit shall become effective on 1 January 2020. Following this decision, and noting concerns of Member States, MEPC 70 initiated a new output on consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI.

42 MEPC 73 adopted amendments to MARPOL Annex VI for a prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship that are expected to enter into force on 1 March 2020. MEPC 73 also adopted *Guidance on the development of a ship implementation plan for consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI*.

43 MEPC 74 considered and approved draft amendments to MARPOL Annex VI concerning procedures for sampling and verification of the sulphur content of fuel oil. MEPC 74 also adopted/approved several instruments to support the consistent implementation of the 0.50% m/m sulphur limit, including:

.1 *2019 Guidelines for consistent implementation of the 0.50% sulphur limit under MARPOL Annex VI*;

.2 *2019 Guidelines for port State control under MARPOL Annex VI Chapter 3*;

.3 *Guidance on indication of ongoing compliance in the case of the failure of a single monitoring instrument, and recommended actions to take if the exhaust gas cleaning system (EGCS) fails to meet the provisions of the 2015 EGCS Guidelines (MEPC.259(68))*;

.4 *Guidance for port State control on contingency measures for addressing non-compliant fuel oil*; and

.5 *2019 Guidelines for on board sampling for the verification of the sulphur content of the fuel oil used on board ships*.

Fuel oil quality

44 The following best practice guidance on fuel oil quality has been approved:

.1 *Guidance on best practice for fuel oil purchasers/users for assuring the quality of fuel oil used on board ships*, approved by MEPC 72;

.2 *Guidance on best practice for fuel oil suppliers for assuring the quality of fuel oil delivered to ships*, approved by MEPC 73; and

.3 *Guidance for best practice for Member State/coastal States*, approved by MEPC 74.

EEDI reviews

45 Amendments to MARPOL Annex VI, regulations for the prevention of air pollution from ships, adding a new chapter 4 to Annex VI on regulations on energy efficiency for ships to make mandatory the Energy Efficiency Design Index (EEDI), for new ships, and the Ship Energy Efficiency Management Plan (SEEMP) for all ships entered into force on 1 January 2013.

46 Regulation 21.6 of MARPOL Annex VI requires, at the beginning of phase 1 (1 January 2015) and at the mid-point of Phase 2, the Organization to "review the status of technological developments and, if proven necessary, amend the time periods, the EEDI reference line parameters for relevant ship types and reduction rates set out in this regulation". MEPC 67 established a correspondence group to review the status of technological developments relevant to implementing phase 2 of the EEDI regulatory framework which begins on 1 January 2020.

47 MEPC 70 considered a final report of the correspondence group and, following consideration, agreed to retain the current reduction rates, time periods and the EEDI reference line parameters of EEDI phase 2 requirements for ship types other than ro-ro cargo ships and ro-ro passenger ships.

48 MEPC 70 further agreed that it would be necessary to start a thorough review of EEDI phase 3 requirements (1 January 2025 and onwards), including discussion on its earlier implementation and the possibility of establishing a phase 4. In this respect, the correspondence group on review of the EEDI beyond phase 2, established at MEPC 71, provided an interim report to MEPC 73 and a final report to MEPC 74 (May 2019). Currently, phase 3 requirements provide that new ships be built to be 30% more energy efficient compared to the baseline.

49 MEPC 72 adopted amendments to regulation 21 of MARPOL Annex VI regarding EEDI requirements for ro-ro cargo and ro-ro passenger ships that will enter into force on 1 September 2019. MEPC 73 agreed to retain the current EEDI phase 3 requirements for Tankers and Bulk carriers.

50 MEPC 74 in May 2019:

.1 adopted draft amendments to MARPOL Annex VI related to Electronic Record Books and EEDI regulations for ice-strengthened ships that are expected to enter into force on 1 October 2020;

.2 approved draft amendments to MARPOL Annex VI so that the entry into effect date for EEDI phase 3 should be amended to 1 January 2022 for gas carriers of 15,000 DWT and above, containerships, general cargo ships, LNG carriers and cruise passenger ships having non-conventional propulsion;

.3 approved draft amendments to table 2 of regulation 21 of MARPOL Annex VI to amend the calculation parameters for the reference line for very large bulk carriers,

.4 agreed that the entry into effect date for EEDI phase 3 of 1 January 2025 should be retained for refrigerated cargo ships and combination carriers;

.5 approved draft amendments to MARPOL Annex VI so that the reduction rates for containerships for EEDI phase 3 should be based on different size categories; and

.6 finalized draft amendments to MARPOL Annex VI to require mandatory reporting of verified attained EEDI values.

Further technical and operational measures to enhance energy efficiency

51 MEPC 68 agreed that the development of a data collection system for ships should follow a three-step approach, consisting of data collection and data analysis, followed by decision making on what further measures, if any, are required. This approach was reaffirmed by MEPC 69 and led to the approval of draft amendments to chapter 4 of MARPOL Annex VI to introduce a mandatory data collection system for fuel oil consumption of ships.

52 MEPC 70 adopted amendments to Chapter 4 of MARPOL Annex VI including a new regulation 22A on a mandatory data collection system for fuel oil consumption. Under the amendments, from 1 January 2019, ships of 5,000 gross tonnage and above are required to collect consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for transport work. The aggregated data will be reported to the flag State after the end of each calendar year and the flag State, having determined that the data has been reported in accordance with the requirements, will issue a Statement of Compliance to the ship. Flag States will be required to subsequently transfer this data to an IMO Ship Fuel Oil Consumption Database. IMO Secretariat will be required to produce an annual report to the MEPC, summarizing the data collected.

53 MEPC 71 agreed on guidelines for verifying, managing and reporting data. Both MEPC 72 and MEPC 73 received from the Secretariat updates on the status of the development of the IMO Ship Fuel Oil Consumption Database, which was launched in March 2018. MEPC 73 agreed, in principle, that a methodology for conducting the data analysis needed to be developed as a priority with a view to its approval by MEPC 75, to be in line with the timeline set out in paragraph 6.2 of the *Initial IMO Strategy on reduction of GHG emissions from ships* (resolution MEPC.304(72)) – see below.

Reduction of GHG emissions from ships

54 MEPC 70 approved a Roadmap for developing a Comprehensive IMO strategy on reduction of GHG emissions from ships, which foresaw an initial GHG reduction strategy to be adopted in 2018.

55 In April 2018, MEPC 72 adopted resolution MEPC.304(72) on *Initial IMO Strategy on reduction of GHG emissions from ships*. The Initial Strategy represents a framework for Member States, setting out the future vision for international shipping, the levels of ambition to reduce GHG emissions and guiding principles; and includes candidate short-, mid- and long-term further measures with possible timelines and their impacts on States. The strategy also identifies barriers and supportive measures including capacity building, technical cooperation and research and development (R&D).

56 The Vision set out in the Initial Strategy confirms that IMO remains committed to reducing GHG emissions from international shipping and, as a matter of urgency, aims to phase them out as soon as possible in this century.

57 More specifically, under the identified "levels of ambition", the Initial Strategy envisages for the first time a reduction in total GHG emissions from international shipping which, it says, should peak as soon as possible and to reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008, while, at the same time, pursuing efforts towards phasing them out as called for in the Vision. The strategy includes a specific reference to "a pathway of CO2 emissions reduction consistent with the Paris Agreement temperature goals".

58 Continuing the momentum of work on this important issue, MEPC 73 (October 2018) approved a programme of follow-up actions to the Initial Strategy and agreed to the holding of the fifth meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships

(ISWG-GHG 5), that was held back to back with MEPC 74; and agreed to the holding of an expert workshop in preparation for the Fourth IMO GHG Study, which was held in March 2019.

59 MEPC 74 in May 2019:

1. adopted resolution MEPC.323(74) on *Invitation to Member States to encourage voluntary cooperation between the port and shipping sectors to contribute to reducing GHG emissions from ships*;

2. approved the terms of reference of the Fourth IMO GHG Study. The final report of the Study is expected to be submitted to MEPC 76 (Autumn 2020). A Steering Committee of Member States has been established to review and monitor progress and confirm that the Study meets its terms of reference;

3. approved the terms of reference for ISWG-GHG 6 and ISWG-GHG 7; and

4. discussed various candidate short-term measures and mid-/long-term measures, including strengthening the energy efficiency requirements for existing ships based on the SEEMP, speed and other technical, operational measures and the effective uptake of alternative low-carbon and zero-carbon fuels. In view of the vast number of proposals, the working group focused on how to consider, organize and streamline proposals on candidate short-term and mid-/long term measures.

Protecting the Arctic from heavy fuel oil

60 MEPC 72 considered the development of measures to reduce risks of use and carriage of heavy fuel oil as fuel (HFO) by ships in Arctic waters and agreed the scope of work for the Sub-committee on Pollution Prevention and Response (PPR), namely to develop a definition of HFO; prepare a set of guidelines on mitigation measures to reduce risks of use and carriage of heavy fuel oil as fuel by ships in Arctic waters; and on the basis of an assessment of the impacts, develop a ban on HFO for use and carriage as fuel by ships in Arctic waters, on an appropriate timescale.

61 MEPC 72 also requested Member Governments and international organizations to submit proposals on an appropriate impact assessment methodology process for consideration at MEPC 73 in October 2018, with a view to facilitating the work to be undertaken by PPR Sub-Committee.

62 MEPC 73, having considered several relevant proposals and comments, instructed the PPR Sub-Committee to finalize the impact assessment methodology using documents MEPC 73/9/1 (United States) and MEPC 73/9/2 (Finland) as a basis, taking into account documents MEPC 73/9 (Canada and Russian Federation), MEPC 73/9/3 (FOEI et al.) and MEPC 73/INF.19

63 Subsequently, PPR 6 (February 2019) developed a working definition for HFO, agreed to the draft methodology to analyse impacts of a ban on the use and carriage of heavy fuel oil as fuel by ships in Arctic waters (PPR 6/20/Add.1, annex 16), and established a correspondence group on Development of Guidelines on Measures to Reduce Risks of Use and Carriage of Heavy Fuel Oil as Fuel by Ships in Arctic Waters. MEPC 74 (May 2019) approved the methodology to analyse impacts of a ban on the use and carriage of heavy fuel oil as fuel by ships in Arctic waters and noted that PPR 6 had:

.1 agreed that the methodology should be a guidance document, instead of a prescriptive one, as not all of the items and particular details mentioned in the methodology would be applicable to every Member State and organization that might conduct an impact assessment; and

.2 invited submissions to PPR 7 on impact assessments guided by, but not limited to, the methodology

64 The use and carriage of heavy fuel oil is banned in Antarctic waters under MARPOL Annex I, and the Polar Code recommends that Member States follow the same practice in the Arctic.

Marine litter and microplastics

65 MEPC 72 agreed to include a new output on its agenda, to address the issue of marine plastic litter from shipping in the context of 2030 Sustainable Development Goal 14 (SDG 14). Specifically, Member Governments and international organizations were invited to submit concrete proposals to MEPC 73 on the development of an action plan. The Food and Agriculture Organization (FAO) and other international organizations were invited to keep the Committee updated on their work related to addressing marine plastic litter.

66 Having taken into account several proposals and comments relating to ways of addressing marine plastic litter, MEPC 73 adopted the *Action Plan to address marine plastic litter from ships* (resolution MEPC.310(73) and agreed that the measures in the Action Plan would be reviewed at MEPC 74 based on follow-up proposals. A correspondence group was also established to, inter alia, identify issues to be considered under an IMO study on marine plastic litter from ships and determine the most appropriate mechanism to undertake the study, in particular whether a literature review and/or a quantitative study should be pursued.

67 Concerning information gathering, the Committee:

.1 instructed the Secretariat, in cooperation with FAO, to request GESAMP to also include shipping-related sources in the scope of work for the GESAMP Working Group on Sea-based Sources of Marine Litter, as a starting point to inform the future study on marine plastic litter from ships;

.2 encouraged interested Member States and international organizations to submit to MEPC 74 information on relevant studies and work undertaken to address marine plastic litter from ships for the purpose of information sharing and informing future work on this issue; and

.3 invited Member States and international organizations to undertake studies to better understand microplastics from ships and submit them to the Committee for information.

68 MEPC 74 noted the information provided in document MEPC 74/8/1 (Secretariat) on the outcomes of the London Convention/Protocol governing bodies meeting (LC 40/LP 13) in relation to marine litter, and the inputs by the LC/LP governing bodies to the Action Plan. In this regard, the Committee agreed that the Action Plan should be updated accordingly at its next revision, but not at this session, and requested the Secretariat to keep the LC/LP governing bodies updated on MEPC developments in relation to marine plastic litter and vice-versa.

69 The Committee also noted the following developments:

.1 the adoption of resolution UNEP/EA.4/L.7 on marine plastic litter and microplastics, in which the adoption of the IMO Action Plan and the work of MEPC and LC/LP had been noted;

.2 the publication of two reports under the framework of the Global Partnership on Marine Litter, one on the issue of disposal of fibreglass vessels, and one on the review of hull scrapings and marine coatings as a source of microplastics;

.3 the recent publication of the GESAMP Reports and Studies 99 on "Guidelines for the monitoring and assessment of plastic litter in the ocean";

.4 the cooperation by the Secretariat with FAO on these matters, including agreeing to contribute to four regional FAO workshops on best practices to prevent and reduce Abandoned, Lost or otherwise Discarded Fishing Gear, which would be held throughout 2019; and

.5 the establishment of a new GESAMP Working Group on Sea-based sources of marine litter (Working Group 43), co-sponsored by FAO and IMO, which would, inter alia, review and analyse the existing body of knowledge on marine plastic litter from all sea-based sources and provide an assessment of data gaps.

70 Having taken the above developments into account, MEPC 74 approved the terms of reference for an IMO Study on marine plastic litter from ships (MEPC 74/18, annex 20), which covered the following two broad elements:

.1 information on the contribution of all ships to marine plastic litter; and

.2 information of storage, delivery and reception of plastic waste from and collected by ships.

71 In this regard, the Committee agreed that:

.1 subject to sufficient funds being available, procuring the services of contractor/s to undertake the IMO Study on marine plastic litter from ships was the preferred way for carrying out the Study;

.2 terms of reference 1 and 2 (MEPC 74/WP.10, annex 1), relating to understanding shipping's contribution to marine plastic litter, should be undertaken as a priority, subject to sufficient financial contributions being made; and

.3 subject to additional financial contributions being made, term of reference 3, relating to storage, delivery and reception of plastic waste from ships, should also be undertaken.

72 Consequently, the Committee invited Member States and other stakeholders to support the IMO Study on marine plastic litter from ships by providing financial contributions to ensure the completion of the study terms of reference, and to provide information on relevant studies undertaken to support this work.

73 Having noted that, pending sufficient funding for procuring the services of contractor/s, the work of GESAMP WG 43 would begin to address terms of reference 1 and 2 of the IMO Study on marine plastic litter from ships, in terms of a review and analysis of the existing body of knowledge on marine plastic litter from all sea based sources, and an assessment of data gaps, the Committee recognized the importance of the work of GESAMP in progressing the IMO Study.

74 In this connection, the Committee requested GESAMP to provide a report to MEPC 75 on the work of GESAMP WG 43, together with an accompanying presentation.

75 The Committee agreed that, as soon as sufficient funding had been provided by Member States and other stakeholders, it would consider requesting the Secretariat to issue an invitation to tender for terms of reference 1 and 2 of the IMO Study on marine plastic litter from ships, noting that the work of the selected contractor/s should not duplicate the work of GESAMP.

76 Accordingly, the Committee further requested GESAMP to review term of reference 3 of the IMO Study on marine plastic litter from ships, with a view to determining if there was any additional work that GESAMP could undertake to progress the work.

Ship recycling

77 Following the adoption of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, in May 2009, the MEPC has finalized and adopted all six guidelines required under the terms of the Convention to facilitate the global implementation of its requirements in a uniform and effective manner. Thus the whole package for Member Governments to ratify the Convention is in place. To date, twelve States, i.e. Belgium, the Congo, Denmark, Estonia, France, Japan, Malta, the Netherlands, Norway, Panama, Serbia and Turkey have ratified or acceded to the Convention, whose combined merchant fleets constitute 28.82% of the gross tonnage of the world's merchant fleet, and whose combined ship recycling volumes constitute 1,727,944 gross tonnage.

Electronic record books

78 MEPC 74 adopted amendments to MARPOL Annexes I, II, V and VI to allow for electronic record books to be used on board ships (resolutions MEPC.314(74) and (resolution MEPC.317(74)) as well as related *Guidelines for the use of electronic record books under MARPOL* (resolution MEPC.312(74)). The amendments on electronic record books are expected to enter into force on 1 October 2020.

Issues related to MARPOL Annex II and IBC Code

Revision of the IBC Code – Chapters 17, 18, 19 and 21

79 Following the finalization by PPR 5 of draft amendments to the IBC Code, comprising of the full text of draft revised chapters 17 (Summary of minimum requirements), 18 (List of products to which the Code does not apply), 19 (Index of Products Carried in Bulk) and 21 (Criteria for assigning carriage requirements for products subject to the IBC Code), as well as draft new paragraph 15.15 (Hydrogen sulphide (H2S) detection equipment for bulk liquids), MEPC 74 and MSC 101 adopted them by means of resolutions MEPC.318(74) and MSC.460(101), respectively, with an entry into force date of 1 January 2021.

Review of MARPOL Annex II requirements that have an impact on cargo residues and tank washings of persistent floating products with a high-viscosity and/or a high melting point

80 MEPC 74 also adopted resolution MEPC.315(74) on amendments to MARPOL Annex II to address issues related to the discharge of persistent floating substances with a high viscosity (equal to or greater than 50 mPa•s at 20^{o}C) and/or a high melting point (equal to or greater than 0^{o}C).

Oil pollution preparedness and response

81 The 74th Session of the Marine environment Protection Committee (MEPC) approved, in May 2019, the "Guide on practical methods for the implementation of the OPRC Convention and OPRC-HNS Protocol", developed under the lead of Norway.

82 The Guide's main purpose is to assist countries with the ratification and implementation of the OPRC Convention and the OPRC-HNS Protocol, but can also be used by all countries regardless of their level of preparedness and response. In addition, the Guide can be used not only by maritime authorities, but by all possible national and local authorities and industry with roles and responsibilities related to pollution preparedness and response.

London Convention and Protocol (LC/LP)

83 Since its 45th session, the following developments may be of interest to the Group. The Scientific Groups of the LC/LP met for their joint annual session (LC 42/LP 13) from 18 to 22 March 2019 at the Simon Fraser University, Morris J. Wosk Centre for Dialogue in Vancouver, British Columbia, Canada.

Specific guidelines for assessment of platforms or other man-made structures at sea

84 The Scientific Groups finalized the *Revised Specific Guidelines for assessment of platforms or other man-made structures at sea* and agreed to forward to the next LC/LP governing bodies meeting in 2019 for approval.

Disposal of fibreglass vessels

85 The Groups made progress with the development of recommendations on the disposal of fiberglass vessels following the publication of the report entitled *End-of-life management of fibre-reinforced plastic vessels: alternatives to at sea disposal*, and agreed to continue to gather more information from Contracting Parties and other relevant bodies (e.g. UN Environment and FAO) on current operating procedures and best practices.

Marine litter and microplastics

86 The Scientific Groups had extensive discussions on its continued work on marine litter and microplastics and agreed on a number of actions including to re-establish the Correspondence Group on marine litter and microplastics, to finalize the inventory of the work carried out by the LC/LP bodies on of marine litter and microplastics and to further address the issue. The Groups also instructed the Secretariat to engage a consultant to extensively review the information provided by Contracting Parties on their source control options to reduce the presence of marine litter in LC/LP waste streams, and update as much as possible and provide further information on source control options that have not been captured in the information provided by the Contracting Parties, including an outline of regulatory bodies that are specifically addressing upstream sources, as well as their source control options.

Marine geoengineering

87 The Groups noted the report of WG 41 on marine geoengineering, entitled *High level review of a wide range of proposed marine geoengineering techniques* and recognized the strong and timely contribution that the report provided, not least considering the recent discussions on geoengineering at the fourth session of the United Nations Environment Assembly. It was further noted that the report was comprehensive and objective, and addressed a wide range of aspects.

88 The Groups agreed that phase 2 of the work of WG 41 should proceed, with a particular focus on recommendations 1 and 3 contained in the report, then recommendation 2, and that in carrying out the work, the potential for impacts from the activity should be the primary concern, irrespective of the purpose of the activity (e.g. ocean fertilization activities will have effects that are similar and of concern to the LC/LP, regardless of their stated purpose). The Groups also agreed to recommend that the governing bodies consider the report of WG 41 and begin work to start identifying the pertinent elements that may need further consideration in phase 2.

Science Day 2019

89 As part of the joint session, Science Day 2019 was held as one-day symposium devoted to the topic of on "Practical and achievable monitoring techniques". The Science Day programme

included high level presentations from a range of speakers from academia, scientific and government agencies and port authorities. Those speakers shared experiences, research activities, and assessments being undertaken in relation to practical and achievable monitoring techniques as they related to the disposal of waste or other matter listed in Annex 1 of the London Protocol (e.g. dredged material, fish waste, organic material, vessels and platforms, etc.), underwater noise and the application of low cost, low technology field and compliance monitoring guidance.

Deposition of materials jettisoned during the launch of space vehicles

90 The Groups continued work on the proliferation of space vehicle launch facilities around the world, with a view to identifying those with the potential for deposition of jettisoned components at sea during routine launches. Following discussion, the Groups noted that there was a need to continue collecting information, and that this work was currently in its early stages, and therefore re-established the Correspondence Group on this issue and instructed the Secretariat to continue its outreach efforts, in particular with the UN Office for Outer Space Affairs (UNOOSA).

Joint session of the Scientific Groups

91 The next meeting of the governing bodies of the LC/LP will be held from 7 to 11 October, at IMO Headquarters. The next joint session of the LC/LP Scientific Groups is tentatively scheduled for March 2020, also at IMO Headquarters.

International Atomic Energy Agency (IAEA) IAEA Environment Laboratories (NAEL): Marine Environmental Studies Laboratory (MESL), Radioecology Laboratory (REL) and Radiometrics Laboratory (RML).

Marine Environmental Studies Laboratory (MESL) Activities

Production of Certified Reference Materials and Interlaboratory Comparison exercises

92 IAEA's CRMs are produced to assist Member States improving the quality of measurement results in the analysis of trace elements, Methyl Mercury and persistent organic pollutants in marine environmental samples, in view of assessing pollution levels and trends and enhancing seafood safety. The certification of three Certified Reference Materials (CRM) for trace elements and methyl mercury in fish (CRM IAEA-476) and sediment (IAEA-475); and for polycyclic aromatic hydrocarbons in sediment (IAEA-477) were finalized.

93 The IAEA participated in the proficiency tests for trace elements and organic pollutants in marine samples organised by Quasimeme.

94 One worldwide interlaboratory comparison on the determination of trace elements and methyl mercury, IAEA-MESL-ILC-TE-SEDIMENT-2018 was finalised. In total 81 laboratories from 49 countries reported results back to the organizers.

Strengthening data quality assurance of Regional Seas laboratories participating in marine monitoring programmes

95 The IAEA provided technical support for strengthening the capability of Mediterranean laboratories to accurately analyse contaminants in marine samples in the framework of the MEDPOL Programme for the Assessment and Control of Pollution in the Mediterranean Region of the UNEP/Mediterranean Action Plan. Designated national monitoring laboratories in Mediterranean countries benefit by being able to use the analytical support of NAEL in the

development in their quality assurance programs for the determination of trace elements and organic contaminants in the marine environment.

96 The IAEA organised two Proficiency Tests to assist Member States strengthen data quality assurance in laboratories participating in marine pollution monitoring programmes. In total 74 laboratories from 17 Member States participated in these exercises:

1. Analytical Performance Study for MEDPOL: Determination of trace elements in marine biota sample: 39 laboratories from 17 Mediterranean Member States (Albania, Algeria, Bosnia & Herzegovina, Croatia, Cyprus, France, Greece, Israel, Italy, Lebanon, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia, Turkey); and

2. Analytical Performance Study for MEDPOL: Determination of chlorinated pesticides, PCBs and petroleum hydrocarbon in marine biota sample: 35 laboratories from 14 Mediterranean Member States (Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Italy, Lebanon, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia, Turkey).

97 The IAEA organised two training courses on the analysis of contaminants in marine samples:

1. Training workshop on the analysis of Trace Elements in marine samples for laboratory practitioners in MEDPOL countries, 29 October to 09 November (6 trainees from 5 Mediterranean Member States: Albania, Cyprus, Israel, Montenegro [2] and Turkey); and

2. Training workshop on the analysis of Organic Contaminants in marine samples for laboratory practitioners in MEDPOL countries, 29 October to 09 November (5 trainees from 5 Mediterranean Member States: Algeria, Bosnia & Herzegovina, Cyprus, Morocco, Tunisia, Turkey).

98 Four fellows were trained in the laboratories of MESL, three on trace element analysis and one on the analysis of PAHs, chlorinated pesticides, PCBs and PBDEs in marine samples. The fellows were from Japan, Jamaica, The Cote d'Ivoire and Djibouti.

99 The IAEA hosted an Expert Consultations Meeting on Mercury Monitoring on Soil and Biota for UN Environment in the framework of the Minamata Convention. 14 experts from 10 different countries including staff from UN Environment, GEF, and the Minamata secretariat were present. This is in line with the efforts of MESL to assist Member States in the Quality Assurance/Quality Control of mercury monitoring in the marine environment and the development, validation and dissemination of recommended analytical. Several methods dealing with the determination of mercury and methylmercury in seawater by application of different analytical methodologies. Several analytical procedures dealing with the determination of mercury and methylmercury in seawater, marine biota and sediment samples have been recently validated and published in peer review journals.

100 A new agreement between IAEA/NAEL and UNEP/MAP to continue the collaboration on strengthening data quality assurance in marine pollution monitoring in the Mediterranean region is under final discussion. Already two Proficiency Tests and two Training Courses are under preparation. The project is on-going and will be completed within 2019.

101 Within the IAEA Technical Cooperation (TC) projects, MESL has assisted in the development and implementation of: a) an emergency TC project for Cuba on a recent oil spill occurred in Cienfuegos Bay in May 2018, b) a TC project (CHD70001) to build capacity to monitor petroleum hydrocarbons in Chad; c) a TC project (BZE7002) to build capacity to monitor pesticides in the environment of Belize; d) a TC project (BRA7011) to provide training and capacity for compound specific stable isotopes to assess the impact of the Brazil' Fundaeo dam collapse in the costal environment; e) TC project SRL7005 to establish a National Centre for Marine Pollution Control including the use of stable isotopes to fingerprint sources of pollution; f) TC project

(DJI7001) in Djibouti for Enhancing and Strengthening the Analytical Capacities of the National Laboratory of Chemistry; TC project (DOM7005) on Issuing a Regulation for the Control of Marine Contamination in the Southern Coast Region of the Dominican Republic; TC project (ELS0008) in El Salvador to Determination of Threats to Health and the Environment from Toxic Pollution in the Reservoir Cerrón Grande Ecosystem; TC project (FIJ7001) for Establishing an Environmental Monitoring Laboratory for the Protection of the Marine Coastal Resources in the Context of Mining in Fiji; TC project (MHL7001) for Developing a National Radioactivity Monitoring Capacity om the Marshall Islands; Regional TC Project (RER7009) for Enhancing Coastal Management in the Adriatic and the Black Sea by Using Nuclear Analytical Techniques; and Regional TC project (RLA7019) For Developing Indicators to Determine the Effect of Pesticides, Heavy Metals and Emerging Contaminants on Continental Aquatic Ecosystems Important to Agriculture and Agroindustry in Asian Pacific.

Developing tools and the monitoring of contaminants and long-lived radionuclides in marine samples to assist Member States

102 The IAEA continued the development and validation of analytical methods for monitoring the marine environment, which were published in peer reviewed journals and presented in International Conferences: i) method for strontium isotope ratios in biota and in seawater samples ii) reference methods for toxic elements in biota and sediment samples, based on direct and species-specific isotope dilution inductively coupled plasma mass spectrometry, iii) multi-residue analytical procedures for historical POPs including emerging halogenated flame retardants, iv) a comprehensive sampling and analytical methodology for measuring petroleum hydrocarbons in seawater using large volume sampling system.

103 Analytical methodologies, research and monitoring studies performed in MESL for emerging and regulated contaminants and for the determination of isotope ratios in the marine environment as a tool for pollution source apportionment and understanding of processes included work on i) lipid biomarkers and compound specific isotopes in corals, ii) the bioavailability of copper to marine organisms, ii) lead and mercury isotope ratios in marine samples; iv) the study of plastic debris as a sources of flame retardants in the marine environment. iii) the use of sponges as passive samplers for biomonitoring

104 The IAEA contributed in the base line monitoring studies of Namibian coast for trace elements and new emergency pollutants as well as in the pollution history investigations in the same region. The use of sponges as passive samplers for biomonitoring of toxic trace elements was investigated.

Radioecology Laboratory (REL) activities

Strengthening capabilities for biotoxin monitoring in seafood through research and development, training and cooperation

105 The receptor binding assay (RBA) for harmful algal blooms (HABs) toxin detection continues in full operation at the IAEA for research and development applications and for technology transfer and capacity building. Laboratory performance is assessed through successful participation to Quasimeme proficiency testing (PT) exercises for paralytic shellfish poisoning. The RBA method is also being used to study biotoxin food web transfer and metabolism. It has been optimized for application to the emerging ciguatera toxins and its verification and validation is underway. The RBA method was put into operation in 2017 in Morocco and tested on a large set of samples. Results imply that the RBA method may be a potential replacement of the mouse bioassay currently in use for regulatory purposes.

106 The IAEA provides technical and scientific support to over 40 Member States (MSs) in Latin America, Asia-Pacific and Africa to build capacity in HABs management through 12 national and

regional Technical Cooperation projects. The IAEA continues to host fellowships and internships to transfer the RBA technology to IAEA MSs (total of 11 individuals). NAEL is joining efforts with other national and international organisations (IOC-UNESCO, FAO, WHO, US-NOAA, Malarde Institute in French Polynesia, IFREMER France, IRTA Spain) to improve knowledge and enhance capabilities in HABs management and to participate actively at the International Panel on HABs.

107 Member State participants from Cuba, Thailand, Brazil, France, and Spain in the IAEA Coordinated Research Project (CRP) on the application of the RBA techniques for improving coastal management met in Monaco in 2019 for the final RCM meeting. A major achievement included i) the sampling and screening of over 60 fish for the preparation of a reference fish matrix material, ii) the establishment of first culture of toxic benthic HABs from Cuba, iii) findings of high diversity of benthic toxic genera of Ostreopsis associated with a mass mortality of sea-urchin and iv) raising risk for ciguatera poisoning with the findings of Gambierdiscus species in North and South-East coast of Brazil. CRP project findings were communicated through five presentations at international conferences.

108 The IAEA led an international workshop on Monitoring and Management Strategies for Benthic HABs. Organized in the framework of joint activity involving Asia-Pacific, Africa and Latin America and the Caribbean, the workshop was attended by 60 participants form 30 countries, 15 international experts and representative of 3 other UN agencies, FAO, WHO, and IOC-UNESCO.

109 The Philippine Nuclear Research Institute, re-designated in 2016 as an IAEA collaborating centre to work on HABs in the context of environmental and global change, continues to collaborate actively with the IAEA to expand use of nuclear techniques for HABs management, in particular PNRI assessed the performance of the CTX-RBA using a brevetoxin as standard and assess performance and uncertainty budget of the PSP-RBA.

110 With the support of a PUI project (funded by the United States) on “Capacity building for the detection and quantification of PSP and CFP toxins in seafood for the management and the mitigation of HABs impacts Phase II”, a field sampling mission was organized in collaboration with the Marshall Islands Marine Resources Authority (MIMRA) at Ailinglaplap coral atoll in the Marshall Islands in view of preparing fish matrix reference material for Pacific Ciguatoxins.

111 The NAEL held a Technical Meeting to advance the Inter-Agency Global Ciguatera Strategy in Monaco which is currently under approval.

112 The IAEA is in an ongoing partnership with the Collaborative Research Centre, SPB 754, at the University of Kiel, Germany. SFB 754 addresses the threat of ocean deoxygenation and its consequences on the global climate biogeochemistry system. Originally, the low oxygen content of oxygen minimum zones (OMZ) is due to a natural process of enhanced oxygen consumption related to the remineralization of sinking organic matter produced in the nutrient rich surface waters. Some of the richest fisheries in the world supported by these nutrient rich surface waters are predicted to by highly impacted by the oxygen decline.

113 The IAEA participated in field campaigns into the upwelling zones off west Africa. NAEL will continue the collaboration with the EAF NANSEN Programme, to advance NAEL marine interests.

Research and development of nuclear applications for studying contaminants and essential elements in marine biota

114 The IAEA continued to use radiotracers to investigate bioaccumulation of contaminants and essential elements in diverse marine organisms and to assess seafood safety concerns of IAEA Member States. The focus for this period was on (1) factors affecting accumulation of trace metals in select marine organisms, (2) effects of multiple stressors (ocean acidification, hypoxia, temperature in parallel with metals, toxins and radionuclides contamination) on fish and marine

invertebrates, (3) the calcification rate of corals under changing environmental conditions (e.g. pH or hypoxia) and (4) effect of microplastics on physiology of marine organisms or their role as vector of contaminants to fish and shellfish. The IAEA has also been investigating for the last 5 years the exposure of different marine species through various exposure pathways to better understand the fate of accidental releases of radiocaesium into the marine environment, and to be able to address the following key questions: How is caesium bioaccumulated? What is the major pathway and what is the transfer mechanism through the food chain? What is the overall environmental risk?

115 Additionally, through a collaboration with the Oceanographic Observatory of Villefranche-sur-Mer (part of the Université Pierre et Marie Curie, Paris VI) and with support from CNRS and the National Commission of the Coastal Fleet, the IAEA collects monthly and seasonal seawater samples from the time-series site DYFAMED in the Mediterranean Sea. Using nuclear techniques, these samples are analysed to investigate aspects of the marine carbon cycle including carbon flux, remineralization, and microbial carbon uptake under changing climate conditions.

Activities of the IAEA's "Ocean Acidification International Coordination Centre (OA-ICC)"

116 Through a vigorous program of support and collaboration, the IAEA OA-ICC continues to advance international activities in ocean acidification science, capacity building and communication. The OA-ICC works with international partners to foster a strong ocean acidification research community across the globe, providing access to data, training, standardized methodology, resources and opportunities for regional and international networking and collaboration. Activities continued to ramp up in 2018/19, in particular in response to a heightened demand from Member States to build capacity to report on Target 3 of the UN Sustainable Development Goal 14, that specifically addresses Ocean Acidification. The coordination work, activities and resources offered by the OA-ICC are directly relevant to helping Member States address this target.

117 The OA-ICC participated in an expert group convened by the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) to develop a methodology for countries to report on SDG target 14.3, specifically addressing ocean acidification, Paris, 16-18 January 2018. The methodology provides guidance in terms of what measurements are needed and how often, as well as how to report the collected information so it is transparent and traceable. Following the work of this expert group, the SDG 14.3.1 Indicator methodology was upgraded to Tier II by the IAEG-SDG of the United Nations Statistical Commission, meaning that the methodology is now ready to the used by countries.

118 The OA-ICC co-leads the UN SDG 14 Community of Ocean Action on Ocean Acidification. A series of webinars has been initiated, and the group has provided input to several conferences (co-focal point meeting in Nairobi, Nov 2018, Asia Pacific Day of the Ocean, Bangkok, Nov 2018), COA meeting in Incheon, May 2019).

119 A key effort of the OA-ICC is to ensure the sustained archival and quality control of data on the biological response to ocean acidification, and to promote easy access to the data for all users. To this end, a portal to improve the search experience of data sets included in the OA-ICC Data Compilation, maintained in cooperation with Xiamen University and hosted at the Germany-based data centre Pangaea, was launched in December 2018.

120 New tools for estimating uncertainties for ocean acidification variables were developed (consultancy). Uncertainty propagation add-ons are now available for four of the software packages commonly to calculate carbonate chemistry parameters used in ocean acidification research.

121 The OA-ICC collaborated with the Ocean Acidification international Reference User Group (OA-iRUG) to organize the group's first regional meeting in Santa Marta, Colombia, 19-21 March 2018. The meeting brought together scientists, policy makers and the aquaculture industry to develop a Latin American action plan to better understand and address ocean acidification.

122 The OA-ICC continued to work closely with partners throughout the year to provide state-of-the-art ocean acidification training to several Member States and to support the development and needs of emerging regional ocean acidification networks in Latin America and Africa. For example, the OA-ICC organized an advanced 3-week long training on ocean acidification in Kristineberg, Sweden, 4-22 June 2018, in the framework of the inter-regional Technical Cooperation Project on ocean acidification (INT7019). This was the first time an ocean acidification training course was centred around a joint experiment. Participants are currently analysing the results for publication in a scientific journal. The OA-ICC also organized a training on the Management, Analysis, and Quality Control of Ocean Acidification Data, organized from 22-26 October 2018, Monaco. The workshop brought together both chemical oceanographers and biologists from all IAEA regions and took an interdisciplinary approach to discuss ocean acidification data analysis. Participants also provided feedback on the reporting process for the UN Sustainable Development Goal Target 14.3 Indicator, which calls for "average marine acidity measured at an agreed suite of representative sampling stations".

123 The OA-ICC also collaborated in a number of meetings and workshop to support participants from IAEA Member States to present their results and network with peers. For example, the OA-ICC provided support for seven participants from four countries to participate in the symposium: (India, Cameroon, Philippines, Egypt) to participate in the 4th Symposium on the Effects of Climate Change on the World's Oceans, 4-8 June 2018, Washington DC, USA. The OA-ICC also supported the participation of four students to attend the 7th biennial summer school of the Surface Ocean Lower Atmosphere Study (SOLAS), Corsica, France, 23 July - 4 August 2018, and collaborated with the Latin American Ocean Acidification Network LAOCA to organize an advanced ocean acidification summer school in Galapagos, 19-28 August 2018. The OA-ICC also partnered with the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) to organize a training course on ocean acidification for PERSGA Member States, 30 September to 4 October 2018 in Aqaba, Jordan. The course was one of the first organized in the region on the topic and was an opportunity to raise awareness about ocean acidification.

124 Finally, the OA-ICC collaborated and financially supported a training course in Santa Marta, Colombia, February 2019, organized by The Ocean Foundation, the US Department of State, The Swedish International Development Agency, and other partners, and supported six scientists to participate in the Fourth International Workshop of the Global Ocean Acidification Observing Network (GOA-ON) in Hangzhou, China, April 2019.

125 The OA-ICC continued to support the development of regional OA networks. For example, the project supported a side event on the status and future vision of OA research in Africa at the Blue Oceans Conference, Monrovia, Liberia, March 2019.

126 The OA-ICC continued to inform stakeholders about ocean acidification at several high-level international conferences in 2018, such as the Our Ocean conference in Bali, October 2018, and the UNFCCC COP24 in Katowice, December 2018.

127 Finally, work on the OA-ICC news stream and the other online OA-ICC resources (web site, bibliography, and data base) continued on a day-to-day basis, with the Bibliographic database now containing more than 5700 references, and the OA-ICC Data Compilation on the Biological Response to Ocean Acidification offering access to data sets from 920 scientific articles. The Ocean Acidification News Stream welcomed more than 35,000 visitors from 173 countries in 2018.

Radiometrics Laboratory (RML) activities

IAEA's project for "Marine Monitoring: Confidence Building and Data Quality Assurance"

128 With a view to assisting the Government of Japan in its objective of making the Sea Area Monitoring Plan comprehensive, credible and transparent, the IAEA, through its Environment Laboratories, is helping to ensure the high quality of the marine radioactivity monitoring data and to prove the comparability of the results. A 3-year project 'Marine Monitoring: Confidence Building and Data Quality Assurance' (2014–2016) was initiated as a follow-up activity to recommendations made on marine radioactivity monitoring in a report issued by the IAEA in 2013 which reviewed Japan's efforts to plan and implement the decommissioning of the Fukushima Daiichi Nuclear Power Station. Six sampling missions and interlaboratory comparisons (ILCs) and three proficiency tests (PTs) were organized during this project. The project was concluded with a report published in 2017 showing that Japan's sample collection procedures follow the appropriate methodological standards required to obtain representative samples. The results obtained in ILCs demonstrate a high level of accuracy and competence on the part of the Japanese laboratories involved in the analyses of radionuclides in marine samples for the Sea Area Monitoring programme, corroborating the conclusions of the PTs. The project was extended for a period of 4 years. Three sampling missions and ILCs and three PTs were organized since 2017. As before, these exercises demonstrated a high level of accuracy and competence on the part of the Japanese laboratories and the importance of regular participation in PTs and ILCs of monitoring laboratories.

Technical Cooperation:

IAEA Regional Technical Cooperation project RCA RAS7028 (Asia-Pacific)

129 The IAEA Regional Technical Cooperation Project "Enhancing Regional Capabilities for Marine Radioactivity Monitoring and Assessment of the Potential Impact of Radioactive Releases from Nuclear Facilities in Asia-Pacific Marine Ecosystems" is running in the Asia-Pacific region under the "Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific" (RCA) aims to improve the integrated regional quality-assured capabilities for marine radioactivity monitoring and for impact assessment of routine and accidental releases of radioactivity into the marine environment. The project, extending between 2017-2020, is training scientists and laboratory staff from the region in analytical and assessment techniques for radioactivity in seawater, sediment and biota. Training includes collection and preparation of marine samples, routine and rapid analytical methods, quality management in the analytical laboratory, experimental radioecology, dose assessment and risk analysis modelling.

IAEA Regional Technical Cooperation project RAF7015 (Africa)

130 Due to the transboundary nature of marine pollution the project "Strengthening Regional Capacities for Marine Risk Assessment Using Nuclear and Related Techniques" aims at assisting Member States to determine the sources of contaminants on a national and regional scale and to strengthen their capacities to analyse radionuclides, organic and inorganic pollutants in marine samples for assessing marine pollution and risk for humans. The objectives of the project are to complement and strengthen the regional capacities for monitoring marine pollution and for risk assessment using nuclear and related techniques; to address trans-boundary pollution for a sustainable use of marine ecosystem services and enhanced socio-economic benefits; and to generate national and regional databases available to decision makers. Twenty-one Member States are strongly cooperating in employing an integrated regional approach for effective marine monitoring. The IAEA provides expertise in radionuclides measurement, QA/ QC aspects, trace elements contamination in marine organisms and seafood safety issues. (Project supported jointly by Radioecology and Radiometrics Laboratories)

IAEA Regional Technical Cooperation project RAF7017 (Africa)

131 The project "Promoting Technical Cooperation among Radio-Analytical Laboratories for the Measurement of Environmental Radioactivity" aims to enhance the competence of the participating

African Member States in the monitoring and assessment of the environmental impact of nuclear and NORM industries. Specific objectives of the project are to establish an integrated regional quality-assured capability for radionuclide analysis of environmental samples; and to improve the competence of laboratories for the analysis of environmental samples via increased collaboration between the members of the ALMERA-Africa regional group of the world-wide network of Analytical Laboratories for the Measurement of Environmental Radioactivity (ALMERA) and mentorship by advanced laboratories in the ALMERA network. Thirty-two Member States are involved in a wide range of project activities related to radioanalytical techniques and quality management.

IAEA Technical Cooperation project MHL7001

132 The project “Developing a National Radioactivity Monitoring Capacity in the Marshall Islands” has been designed to build capacity in the Marshall Islands to enable local scientists to undertake environmental radioactivity monitoring and to provide advice to authorities on radiation exposure and subsequent health consequences. The radioactive source of most concern in the Marshall Islands is the residual contamination resulting from the use of some of the islands in the 1940s and 1950s by the USA as atmospheric nuclear weapons test sites. An important objective of the project is to assist the Marshall Islands’ technical personnel in addressing concerns and a current lack of understanding by the public regarding the nuclear weapons testing-related legacy issues. Therefore, there will be a strong emphasis on public communication. The IAEA Environment Laboratories conducted two expert missions to the atoll in 2016 to review existing sampling and laboratory capabilities and protocols and to help define the requirements for establishing a national radioactivity monitoring capability. Fellowship training of key Marshallese scientists and an expert mission focussing on sampling and pre-treatment techniques and basic gamma-ray spectrometry were undertaken in 2017 and early 2108. A national training course in radiation protection and environmental radioactivity has also been provided. Provision of required radiometric equipment continues. The initial project was completed in December 2017 and a follow-up project, running from 2018 to 2021 and aiming to continue to develop this capacity, is currently being implemented.

Analytical quality services

133 One new IAEA reference material is in the initial phases of production and is expected to be available in 2020-2021: Radionuclides in shrimp tissue.

134 Proficiency Testing: Seven world-wide PTs for radionuclides in seawater were organised between 2012 and 2018. The IAEA is organising in 2019 a eight PT exercise with seawater samples spiked with H-3, Sr-89/90, Cs-134, Cs-137 and Eu-155. Approximately 110 participants will take part in the 2019 proficiency test.

MARIS database

135 The IAEA’s MARine information System (MARiS) is an open-access global database for marine radioactivity measurements that is accessible online at maris.iaea.org. Development and update of the database and website are on-going. MARiS is forming a central part of the data collection effort of IAEA’s Coordinated Research Project (CRP) K41017 “Behaviour and Effects of Natural and Anthropogenic Radionuclides in the Marine Environment and their Use as Tracers for Oceanography Studies”. To meet the requirements of CRP K41017, the templates, tools, and workflow for capturing and parsing data into the MARiS database have been reviewed and updated. Developments include new data submission templates, the use of new software for data handling and an upgrade by the Agency’s IT department of the underlying computing infrastructure. In response to the increasing need to educate the wider general audience on the topic of marine radioactivity and the issues surrounding marine radioactivity, a new FAQ page has been prepared for publication on the MARiS website. The volume of data in MARiS has been substantially increased, in May 2019 MARiS containing over 500,000 individual measurement results of radionuclides in seawater, suspended matter, bottom sediment and biota.

Coordinated Research

IAEA CRP K41015

136 The CRP “Radioanalytical and isotopic studies of climate trends and variability in marine paleo-records” was initiated in 2017, following the recommendations of an experts’ meeting held in 2016 at the IAEA. The project aims to use paleo proxy records to study trends and variability in past climate. It builds upon the previous CRP “Nuclear and isotopic studies of the El Niño phenomenon in the ocean”, which used nuclear and isotopic tools to study the El Niño effect in the Pacific Ocean. This new CRP expands and takes a broader temporal and spatial scope to include the study of other lower-frequency climate phenomena found in different ocean regions. The CRP focuses on the second part of the Holocene (0–5000 yBP) with emphasis on the more recent time period (0-1500 yBP), and there is scope to link this time period to more recent samples that overlap the instrumental record for the purposes of calibration, comparison and application to present day climate issues (1950 is the established reference date for 0 yBP (years before present)). The project is expected to be finalised in 2021.

IAEA CRP K41016 project

137 GESAMP suggested that the IAEA supports the development and implementation of nuclear applications to coastal pollution studies. The CRP “Study of temporal trends of pollution in selected coastal areas by the application of isotopic and nuclear tools” was initiated in 2016. The main aim of the CRP is to develop new insights on the application of isotopic and nuclear tools in the study of temporal trends of pollution in coastal areas. The overall objective of the CRP is to provide Member States with improved and harmonised environmental archive dating tools to evaluate sources and temporal trends of pollutants, which will enable them to sustainably manage their coastal marine environment. Specific research objectives are to establish a scientific platform to improve the radiometric dating methods for defining time-trends of pollution, to verify the improved and harmonized common approach on a broad range of case studies in selected coastal areas with high sedimentation rates and to appraise pollution sources using stable- and radio- isotopes. After a 4 years period it is expected to achieve a streamlined, harmonised and validated methodology for sediment dating which will assure reliable, high quality, comparable data on temporal trends of pollutants from coastal areas in different geographical regions. A mid-term research coordination meeting was organised back to back with technical meeting and hosted 35 participants from 27 Member States. The main objective of the technical meeting was to complement and expand on the work currently being performed within the framework of the CRP. The project has spurred a very active collaboration, producing many scientific publications and will be finalised in 2020.

IAEA CRP K41017:

138 The CRP “Behaviour and Effects of Natural and Anthropogenic Radionuclides in the Marine Environment and their Use as Tracers for Oceanography Studies” aims to develop and apply methods combining advanced and rigorous data treatment and modelling approaches for determination of spatial and temporal patterns, behaviour and effects of radionuclides in the marine environment in order to provide Member States with methodological guidance, data and information on levels, trends, effects of radionuclides and their applications to oceanographic process studies. The expected outcomes of this CRP include improved guidance for IAEA Member States for assessing marine radioactivity according to harmonized, best practice methodologies; an updated, comprehensive understanding of the behaviour and effects of natural and anthropogenic radionuclides in the global marine environment and of processes affecting their distributions and increased capacity for the application of radiotracer techniques to oceanographic research. The CRP started in 2017 and is due for completion in 2022. A comprehensive data compilation of global marine radioactivity measurements covering approximately the last decade is currently being developed as part of the CRP. This is due for completion in early 2019 and will provide the data

required for the assessment phase of the CRP. The dataset will also be made publicly available through MARiS and will constitute a comprehensive and reliable baseline against which any future changes can be compared.

Collaboration with regional conventions

139 The IAEA collaborates with HELCOM (Helsinki Commission), being part of the HELCOM MORS EG, the Group of Experts for Monitoring Radioactive Substances in the Baltic Sea, on database development and analytical quality support. In the same area of expertise, the IAEA also collaborates with OSPAR (Oslo Paris Convention), through RSC, its Radioactive Substances Committee.

DIVISION FOR OCEAN AFFAIRS AND THE LAW OF THE SEA (DOALOS)
OFFICE OF LEGAL AFFAIRS

Introduction

140 Among its core functions, the Division for Ocean Affairs and the Law of the Sea (DOALOS), Office of Legal Affairs, United Nations, carries out the responsibilities entrusted to the Secretary-General under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (United Nations Fish Stocks Agreement), and as provided by the General Assembly through its annual resolutions on oceans and the law of the sea and on sustainable fisheries. This section is intended to highlight information on the work of the Division since September 2018 that may be relevant to GESAMP.

Informal Consultative Process

141 The United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (the Informal Consultative Process) held its twentieth meeting from 10 to 14 June 2019 and, pursuant to General Assembly resolution 73/124, focused its discussions on the topic entitled "Ocean Science and the United Nations Decade of Ocean Science for Sustainable Development". As in the past, the meeting was organized around panel presentations by experts representing developed and developing countries and reflecting various perspectives and disciplines, followed by interactive discussions. The Chairperson of GESAMP, Mr. Peter Kershaw, was invited as a panelist to give a presentation on "Use of science for advising the UN system". In his statement under the agenda item "Inter-agency cooperation and coordination", the United Nations Legal Counsel called attention to the celebration of the 50th anniversary of GESAMP.

142 Prior to the twentieth meeting of the Informal Consultative Process, the report of the Secretary-General on oceans and the law of the sea was prepared, with a view to facilitating discussions on the topics of focus at that meeting (A/74/70). The report of the Secretary-General, as well as panel presentations and other documents relevant to the twentieth meeting, are available on the website of DOALOS at http://www.un.org/depts/los/consultative_process/consultative_process.htm.

Conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction

143 Building on the recommendations of the Preparatory Committee established by General Assembly resolution 69/292, in its resolution 72/249 of 24 December 2017, the General Assembly decided to convene an Intergovernmental Conference, under the auspices of the United Nations, to consider the recommendations of the Preparatory Committee on the elements and to elaborate the text of an international legally binding instrument under the United Nations Convention on the

Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with a view to developing the instrument as soon as possible.

144 In accordance with resolution 72/249, the Conference will address the topics identified in the package agreed in 2011, namely the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, in particular, together and as a whole, marine genetic resources, including questions on the sharing of benefits, measures such as area-based management tools, including marine protected areas, environmental impact assessments and capacity-building and the transfer of marine technology.

145 The Conference held a three-day organizational meeting in New York, from 16 to 18 April 2018. The first and second sessions of the Conference were convened, respectively, from 4 to 17 September 2018 and from 25 March to 5 April 2019 in New York. The third session will take place in New York from 19 to 30 August 2019. Negotiations will be assisted by a "Draft text of an agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction", prepared by the President of the Conference, with the assistance of the Division for Ocean Affairs and the Law of the Sea of the Office of Legal Affairs of the United Nations. A fourth session is scheduled to be held in the first half of 2020.

146 Documents relevant to the work of the Conference are available online at https://www.un.org/bbnj/.

The Regular Process for Global Reporting and Assessment of the State of Marine Environment, including Socioeconomic Aspects

147 The Ad Hoc Working Group of the Whole on the Regular Process held its eleventh meeting from 23 to 24 August 2018, pursuant to paragraph 330 of General Assembly resolution 72/73. The Working Group had before it: a) a note by the Joint Coordinators on the preliminary time table and implementation plan for the second cycle of the Regular Process; b) a note by the Joint Coordinators on the annotated outline of the second world ocean assessment; and c) a draft agenda and draft concept note for the multi-stakeholder dialogue and capacity-building partnership event to be held in January 2019. The Working Group adopted by consensus draft recommendations for the consideration of the General Assembly at its seventy-third session. It also adopted guidance to the Bureau, the Group of Experts and the secretariat.

148 A number of States offered to host regional workshops for the second round of regional workshops in 2018 in support of the second cycle of the Regular Process. The aim of these workshops was to, inter alia, inform the collection of regional-level information and data for the preparation of the second world ocean assessment. The workshops were held in Koror, Palau, from 8 to 9 August 2018; Valletta, Malta, from 27 to 28 August 2018; Odessa, Ukraine, from 17 to 18 October 2018; Bali, Indonesia, from 8 to 9 November 2018; Doha, State of Qatar, from 28 to 29 November 2018; Accra, Ghana, from 3 to 4 December 2018; and Guayaquil, Ecuador, from 17 to 18 December 2018.

149 A Multi-stakeholder Dialogue and Capacity-building Partnership Event took place on 24 and 25 January 2019 at United Nations Headquarters in New York. The event provided an opportunity to build awareness and collaboration with respect to capacity-building in support of the Regular Process, including with respect to building capacity to participate in, and make use of, integrated assessments. During the event, experts from around the world gathered to discuss the importance of integrated assessments for decision-making, the capacity gaps and needs related to the conduct of integrated assessments, and opportunities, best practices and lessons-learned for enhancing the science-policy interface. The event generated several recommendations on how to enhance capacity-building (see https://www.un.org/regularprocess/content/multi-stakeholders), which will be

considered at the forthcoming meeting of the Ad Hoc Working Group of the Whole on the Regular Process.

150 Pursuant to paragraph 334 of General Assembly resolution 73/124, the twelfth meeting of the Ad Hoc Working Group of the Whole on the Regular Process will be held from 29 to 30 July 2019 and will receive the report of the Bureau of the Working Group and information from the Group of Experts. It will also consider the outcome of the Multi-stakeholder dialogue and capacity-building partnership event, as well as the possible outcomes and building blocks of the third cycle of the Regular Process. The Working Group will further be invited to consider and adopt recommendations to the seventy-fourth session of the General Assembly, for consideration in the context of the informal consultations of the General Assembly on the draft resolution on oceans and the law of the sea.

151 Documents relevant to the Regular Process can be found on the website of the Division at https://www.un.org/regularprocess/.

Sustainable fisheries

152 In 2016, the resumed Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the "Agreement") recommended that the Informal Consultations of States Parties to the Agreement be dedicated, on an annual basis, to the consideration of specific issues arising from the implementation of the Agreement, with a view to improving understanding, sharing experiences and identifying best practices for the consideration of States parties, as well as the General Assembly and the Review Conference (A/CONF.210/2016/5, annex, para. 15).

153 The fourteenth round of Informal Consultations of States Parties to the Agreement, held in New York from 2 to 3 May 2019, focused on the topic "Performance reviews of regional fisheries management organizations and arrangements". The report of the fourteenth round, prepared by the Chairperson, as well as the presentations made during the discussion panel and other relevant information, will be made available on the website of the Informal Consultations at www.un.org/depts/los/convention_agreements/fish_stocks_agreement_states_parties.htm.

UN-Oceans

154 The United Nations Legal Counsel/Division for Ocean Affairs and the Law of the Sea serve as the focal point of UN-Oceans. At its nineteenth meeting, hosted by the World Meteorological Organization (WMO) in Geneva from 7 to 8 February 2019, UN-Oceans established an internal Contact Group to facilitate the provision of inputs and guidance to the preparatory phase of the United Nations Decade of Ocean Science for Sustainable Development. The Contact Group is coordinated by the Intergovernmental Oceanographic Commission (IOC) of UNESCO and will operate until the end of the planning phase (end of 2020).

155 UN-Oceans members also agreed, as part of the UN-Oceans Work Programme for 2019-2020, to contribute to the 2020 United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development. The Conference, which will be co-hosted by Kenya and Portugal, will take place from 2 to 6 June 2020 in Portugal, Lisbon, under the theme "Scaling up ocean action based on science and innovation for the implementation of Goal 14: stocktaking, partnerships and solutions".

156 Furthermore, the 2019-2020 Work Programme calls for UN-Oceans members to collaborate with and contribute to the celebration of the 50th anniversary of GESAMP in September 2019.

World Oceans Day

157 Pursuant to General Assembly resolutions 63/111 and 73/124, the United Nations celebrated World Oceans Day 2019 focussed on the theme “Gender and the ocean” at United Nations Headquarters on 7 June 2019. An interactive event featured storytellers and speakers from around the world, who shared their perspectives on building greater ocean and gender literacy and discovering possible ways to promote gender equality in ocean-related activities, such as marine scientific research, fisheries, labour at sea, policy-making and management. The event was opened by the Under-Secretary-General for Legal Affairs and United Nations Legal Counsel, together with the Deputy Executive Director, UN-Women. Information on World Oceans Day can be found on the United Nations World Oceans Day website at www.unworldoceansday.org.

UN ENVIRONMENT (United Nations Environment Programme-UNEP)

158 UNEP is the leading authority that sets the global environmental agenda, having an impartial convening role in fostering policy dialogue and implementing numerous global environmental conventions and commitments, which include the sustainable management of marine and coastal resources. Its work is built around enabling Governments, business and civil society across all levels to better integrate the foundational principles of ecosystem-based management into social and economic development through an extensive partnership network, in association with Governments and multiple institutions.

159 In addition to the central role that UNEP has in assisting the international community in making decisions to address global/transboundary environmental issues and in assisting countries in implementing environmentally sound policies and practices, UNEP undertakes global normative work and services that include the synthesis and application of ocean-related research, integrated environmental assessments, risk assessments and vulnerability analyses, and operationalizes ecosystem-based management principles and solutions, including nature-based solutions to climate change, with capacity-building as a cross-cutting focus. Other core areas of expertise relevant to oceans include the green economy, sustainable trade, the circular economy and sustainable consumption and production principles and approaches, and sustainable green financing.

160 UNEP established the Regional Seas Programme which consists of 18[1] Regional Seas Conventions and Action Plans across the world. UNEP hosts seven[2] of the Regional Seas Programme secretariats, thereby creating a direct means through which the agency promotes and enhances regional integration and cooperation in many areas, ranging from science-to-policy translation, to facilitating coordination in the governance of shared coastal and marine ecosystems in the multilateral partnership arena. UNEP also hosts the autonomous secretariats for multilateral environmental agreements that are relevant to marine environment protection, such as the joint Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants Conventions and the Secretariat for the Convention on Biological Diversity.

Marine and Coastal Strategy

[1] They are, namely, Antarctic, Arctic, Baltic, Black Sea, Caspian, Eastern Africa, East Asian Seas, Mediterranean, North-East Pacific, Northwest Pacific, Pacific, Red Sea and Gulf of Aden, ROPME Sea Area, South Asian Seas, South-East Pacific, Pacific, Western Africa and Wider Caribbean.
[2] Abidjan Convention, Barcelona Convention, Cartagena Convention, East Asian Seas Action Plan, Nairobi Convention, Northwest Pacific Action Plan, and Tehran Convention.

161 The fourth session of the United Nations Environmental Assembly (UNEA-4) held in March 2019 in Nairobi, took note of the proposal of a new marine and coastal strategy (*UNEP/EA.4/INF/7: Proposal for a new marine and coastal Strategy of United Nations Environment Programme for the period 2020–2030*)[3]. The strategy outlines the overall strategic direction, operational objectives, approach and priority actions of UNEP to support national, regional and global efforts to ensure healthy and sustainable oceans and coasts by 2030.

162 The new strategy also supports global innovation and delivery of normative services and contribute to an enhanced coordination of actions in collaborative frameworks addressing marine and coastal issues. This includes contributing to important global processes, such as the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, the Regular Process for Global Reporting and Assessment on the State of the Marine Environment, including Socioeconomic Aspects, the High-Level Political Forum on Sustainable Development, the implementation of the Paris Agreement under the United Nations Framework Convention on Climate Change, the post-2020 biodiversity agenda and the United Nations decade of ocean science for sustainable development.

163 The strategy is intended to operationalize and communicate the convening role and contributions of UNEP in its support to countries in achieving healthy and resilient marine and coastal ecosystems globally. This ranges from identifying strategies and actions to assist transitions at the national and regional levels towards sustainable blue economies, to strengthening concerted multilateral efforts in support of healthy oceans and coasts, to grounded-in-truth, effective, nature-based solutions that ensure long-term, ocean-based sustainable development.

Regional Seas Programme[4]

164 The UNEP Regional Seas Programme has been UNEP's most important regional mechanism for the conservation of the marine and coastal environment since its establishment in 1974. The Programme aims to address the accelerating degradation of the world's oceans and coastal areas through a "shared seas" approach – namely, by engaging neighbouring countries in comprehensive and specific actions to protect their common marine environment. Currently, more than 143 countries have joined 18 Regional Seas Conventions and Action Plans for the sustainable management and use of the marine and coastal environment. In most cases, the Action Plan is underpinned by a strong legal framework in the form of a regional Convention and associated Protocols on specific problems.

165 A major role of the Programme is to support regions to fulfill their responsibilities towards the priorities identified in relevant UN Environment Governing Council Decisions and resolutions of the United Nations Environment Assembly, to contribute to reaching global targets such as the Sustainable Development Goals.

166 UN Environment administers regional UN Environment administers regional programmes in West Africa, Caribbean, Mediterranean, Northwest Pacific, East Asian Seas, Caspian Sea, and East Africa. The programme also covers several other regions of the world, making it one of the most globally comprehensive initiatives for the protection of marine and coastal environments: Antarctic, Arctic, Baltic, Black Sea, North-East Atlantic, North-East Pacific, Pacific, Red Sea and Gulf of Aden, ROPME Sea Area, South Asian Seas and South-East Pacific. Fourteen of the Regional Seas Programmes have also adopted legally binding conventions that express the commitment and political will of governments to tackle their common environmental issues through joint coordinated activities. Most conventions have added protocols , legal agreements addressing specific issues such as protected areas, integrated coastal zone management (ICZM) and land-based sources of pollution (LBS), including oil spills and movement of hazardous waste.

[3] https://papersmart.unon.org/resolution/uploads/k1900315.pdf#overlay-context=pre-session-unea-4
[4] http://www.unep.org/regionalseas/

Activities in the regions

Coordinating Body on the Seas of East Asia (COBSEA)[5]

167 The Coordinating Body on the Seas of East Asia (COBSEA) is a regional intergovernmental policy forum and the sole decision-making body for the East Asian Seas Action Plan, supporting participating countries (Cambodia, People's Republic of China, Indonesia, Republic of Korea, Malaysia, the Philippines, Thailand, Singapore and Vietnam) in the development and protection of the marine environment and coastal areas of East Asian Seas. The COBSEA Secretariat is hosted by Thailand and administered by UN Environment, located at the UN Environment Asia and the Pacific Office in Bangkok, Thailand.

168 COBSEA supports participating countries to address priority issues in line with the COBESA Strategic Directions 2018-2022 adopted in 2018 focusing on regional governance; addressing land-based marine pollution with a focus on nutrients, sediment, wastewater and marine litter; and marine and coastal planning and management, with a focus on ecosystem-based management approaches, including Marine Protected Areas (MPAs) and Marine Spatial Planning (MSP), towards achievement of relevant SDGs and Aichi Targets. A regional outlook document on COBSEA's contribution to the follow up and review of the 2030 Agenda for Sustainable Development is being prepared, identifying how COBSEA will support participating countries with the implementation and monitoring of ocean-related Sustainable Development Goals and associated targets. A Voluntary Commitment made at the UN Ocean Conference in 2017 (#OceanAction15986) is on track.

169 COBSEA adopted a Regional Action Plan on Marine Litter (RAP MALI) in 2018. A revision of the COBSEA RAP MALI will be considered for adoption at the 24th Intergovernmental Meeting of COBSEA in June 2019, following consultations through the COBSEA Working Group on Marine Litter in Bangkok, Thailand in December 2018 and in Bali, Indonesia in June 2019. The 24th Intergovernmental meeting will also consider establishment of a Regional Node of the Global Partnership of Marine Litter to support knowledge management and information exchange on marine litter; and establishment of a Regional Capacity Centre for Clean Seas proposed by Indonesia (following the Bali Declaration arising from the 4th Intergovernmental Review of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities in 2018, and as noted in UNEP/EA.4/L.12).

170 COBSEA and UN Environment have launched a regional project (USD 6.4M supported by Sida) on 'Reducing marine litter by addressing the management of the plastic value chain in South East Asia'. The project engages national and local governments, plastic producers and retailers, and civil society to develop inclusive and equitable market-based solutions and policy pathways, as well as to strengthen assessment, monitoring and knowledge management for decision support, thereby supporting countries to implement key regional and global frameworks and action plans including the COBSEA RAP MALI, the global Clean Seas campaign, and voluntary commitments related to Sustainable Development Goal 14, Target 14.1.

171 With support from the Global Partnership on Marine Litter (GPML), a Training of Trainers on the 'Guidelines for the monitoring and assessment of plastic litter and microplastics in the ocean' prepared by GESAMP WG 40 will be held in September 2019. An annual regional constituency engagement and partnership forum on marine litter and plastic pollution entitled "SEA of Solutions" is being developed with UN Environment and other partners. The inaugural event is planned for 11-15 November 2019 in Bangkok, Thailand.

172 A project on 'Including coral reef resilience and vulnerability to climate change in marine spatial planning in Malaysia' supported by UN Environment and the International Coral Reef Initiative (ICRI) and implemented by SymbioSeas, WWF and COBSEA successfully concluded in 2019. The project developed and demonstrated an approach to improve marine spatial planning for a more climate resilient network of marine protected areas (MPAs), by integrating climate

[5] http://www.cobsea.org/

vulnerability considerations in planning and zoning processes. It provides a model that can be used and replicated more broadly in the region and beyond.

173 UN Environment GEF projects in the context of the East Asian Seas Action Plan include the USD 15M project 'Implementing the Strategic Action Programme for the South China Sea', which addresses the habitat, land-based pollution and regional coordination components of the Strategic Action Programme (starting in 2019); and the USD 3M project 'Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand', which implements the fisheries component of the Strategic Action Programme, executed by SEAFDEC (underway).

174 COBSEA will contribute towards the implementation of the UN Decade of Ocean Science (2021-2030) through ongoing and emerging efforts, in particular in relation to Strategic Objective 2 on evidence base and capacities for ecosystem-based management as well as Cross cutting Objective 4 on networks, data systems, other infrastructure and partnerships, and Cross cutting Objective 6 on knowledge-to-policy cooperation, coordination and communication. The COBSEA Secretariat participated in initial planning for the UN Decade of Ocean Science during the Twelfth Intergovernmental Session of the IOC Sub-Commission for the Western Pacific (IOC-WESTPAC) in Manila, the Philippines, April 2019, and will continue engaging in the planning process at the regional level and, through UN Environment, at the global level.

Northwest Pacific Action Plan (NOWPAP) [6] Northwest Pacific

175 NOWPAP activities are structured around six major thematic areas: regular assessments, integrated coastal and river basin management, pollution prevention and reduction, biodiversity conservation, climate change impacts, and information management. NOWPAP Regional Coordinating Unit and four Regional Activity Centres (RAC) continued to address marine and coastal environmental issues such the development of Ecological Quality Objectives (EQOs), prevention and reduction of pollution from harmful substances and marine litter, and strengthening regional cooperation to prepare and respond to oil and NHS spills among key priorities. NOWPAP experts are also implementing projects focusing on major threats to marine and coastal biodiversity: eutrophication, destruction of coastal habitats and introduction of alien invasive species. Other projects are related to sea grass and seaweed habitat mapping and assessment of the status of threatened and endangered marine and coastal species in the region. "Assessment of major pressures on marine biodiversity in the NOWPAP region" and "Feasibility Study Towards Assessment of Seagrass Distribution in the NOWPAP Region" were published in 2018.

176 In May 2018, representatives of Japan, People's Republic of China, Republic of Korea and the Russian Federation met at the annual Northwest Pacific Action Plan Special Monitoring and Coastal Environmental Assessment Regional Activity Centre meeting in Toyama to discuss and agree on the next steps in the preparation of a Regional Action Plan on Marine and Coastal Biodiversity Conservation scheduled to be launched after 2021. The region is under growing threat from human activities and climate change but does not yet have a regional framework for marine biodiversity protection and sustainable use to advance achievement of Sustainable Development Goals in a regionally harmonized manner.

177 The number of marine species inhabiting the Northwest Pacific areas of China, Japan, the Korean peninsula and the Russian Federation that are at risk of survival is higher than previously estimated, according to an assessment completed by the Northwest Pacific Action Plan Beijing-based Data and Information Regional Activity Centre for its Endangered Species Database. The assessment finds that more endangered species are living in Northwest Pacific Action Plan member countries than those listed in the Red List of the International Union for Conservation of Nature. Up to 143 species living in at least one of the member countries of Northwest Pacific Action Plan were evaluated as endangered in the International Union for Conservation of Nature Red List.

[6] http://www.unenvironment.org/nowpap

178 In June 2018, four Northwest Pacific Action Plan members adopt the Northwest Pacific Action Plan Medium-Term Strategy 2018-2023 on June 25th, 2018. The Strategy envisions "a resilient Northwest Pacific marine and coastal environment, supporting sustainable development for the long-term benefit of present and future generations". This is to be promoted by leveraging the best scientific knowledge to inform policy- and decision-making and promoting intraregional cooperation and higher synergy among various activities. The Strategy ensures that Northwest Pacific Action Plan activities will support national and regional progress towards the Sustainable Development Goals and thus marks a historic step in the Northwest Pacific Action Plan evolution.

179 The January 2018 sinking, 160 nautical miles off Shanghai, of the oil tanker 'Sanchi', loaded with 136,000 tons of condensate, was the world's largest marine pollution incident since the March 1989 Exxon Valdez oil spill off the coast of Alaska, in the United States of America. The world's biggest oil spill at sea in decades was met with a speedy response thanks to timely information exchange, according to the maritime authorities of the countries exposed to the environmental disaster. An online marine Pollution Reporting System – set up by a joint United Nations Environment Programme and International Maritime Organization: Northwest Pacific Action Plan Marine Environmental Emergency Preparedness and Response Regional Activity Centre enabled China, Japan, the Republic of Korea and the Russian Federation to speedily share information on the spreading spill and measures being taken to contain it. More than 250 reports were exchanged during the Sanchi incident exhibiting the importance of an effective information sharing platform such as the one set up by the Northwest Pacific Action Plan.

180 In July 2018, experts at the annual meeting of the Northwest Pacific Action Plan Pollution Monitoring Regional Activity Centre made important progress in defining "good environmental status" of the NW Pacific coastal seas by agreeing on six common Northwest Pacific Action Plan Ecological Quality Objective indicators for all four countries. The agreed-on indicators include nutrient concentration in the water column; nutrient ratios (silica, nitrogen and phosphorus); chlorophyll concentration in the water column; harmful algal blooms; concentration of contaminants in sediments, water and organisms; and trends in the amount and composition of litter washed ashore. All selected indicators are closely related to several Sustainable Development Goals indicators. Equipped with data for these indicators, Northwest Pacific Action Plan countries would be able to assess the state of their costal marine environment and report on the progress of their management responses in a regionally coherent way. All the above parameters are transboundary in nature. In March 2019, NOWPAP experts met in Vladivostok, Russia, discussed six most applicable indicators related to monitoring marine ecological quality in the region and agreed on the targets for the four of them, aligned with environmental Sustainable Development Goals.

181 In October 2018, representatives of the four Member States of NOWPAP attending the 23rd Northwest Pacific Region Intergovernmental Meeting from 9 – 11 October 2018 called for enhanced regional cooperation in support of SDG 14: Life Below Water in the Northwest Pacific. The annual Northwest Pacific Region Intergovernmental Meeting was convened to review implementation of the 24-year-old Northwest Pacific Action Plan. The meeting launched an innovative project to produce up-to-date information on key species and habitats of transboundary concern in the Northwest Pacific Region that could be used as important indicators of biodiversity change caused by natural and human factors. The project will generate key information for a Regional Action Plan on Marine and Coastal Biodiversity Conservation to be formulated as part of the medium-term strategy.

182 In March 2019, marine scientists from China, Japan, Republic of Korea and the Russian Federation meeting in Vladivostok, Russia in March 2019, endorsed the effectiveness of the Northwest Pacific Action Plan Eutrophication Assessment Tool (NEAT) in protecting the region from eutrophication that threatens marine and human health and can severely harm fisheries and tourism. The Regional Seas Programme's Northwest Pacific Action Plan intends to collaborate with global online search giant Google and the Japan Aerospace Exploration Agency to test NEAT to monitor eutrophication in oceans around the world, using cloud computing. A significant reduction

in marine pollution by 2025, from land-based activities, is part of the commitment made by world leaders in the 2030 Agenda for Sustainable Development. Use of the NOWPAP Eutrophication Assessment Tool will help countries in the region to report their progress to achieve Sustainable Development Goals.

183 The NOWPAP Regional Action Plan on Marine Litter is also being implemented in cooperation with central and local governments in the NOWPAP member states as well as non-governmental organizations (NGOs) including the organization of highly successful International Coastal Clean-up campaigns in all participating countries. The “Review and analysis of existing prediction models for floating marine litter” and “Oiled wildlife response in the NOWPAP region” have been published in 2018. The Expert Meeting of the NOWPAP special project: “Monitoring and Assessment Methods for Microplastics pollution” was organized in Busan, Korea on 3 June 2018. Participants agreed that the Special Project would use existing microplastics monitoring criteria in NOWPAP countries. NOWPAP is a member of the Global Partnership on Waste Management (GPWM) and has been hosting the NW Pacific regional node of the Global Partnership on Marine Litter (GPML) since 2014.

184 In June 2018, on World Environment Day under the theme #BeatPlasticPollution, Northwest Pacific Action Plan and Tripartite Environmental Ministers Meeting organized an annual marine litter management workshop focused on abandoned, lost and discarded fishing gear, sharing progress in policy and management. Joint efforts were made with the Asia Pacific Civil Forum on Marine Litter to share experiences with South East Asian countries. A beach clean-up campaign with local communities concluded 4 days of inspiring information and knowledge exchange.

185 NOWPAP continues developing and strengthening partnerships with the relevant organizations and programmes in the region, including North-East Asian Sub regional Programme for Environmental Corporation (NEASPEC), North Pacific Marine Science Organization (PICES), Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), and UNESCO/IOC Sub-Commission for the Western Pacific (WESTPAC), Yellow Sea Large Marine Ecosystem (YSLME) Phase II Project to name a few. NOWPAP contributes to the implementation of the Sustainable Development Strategy for the Seas of East Asia and provides technical expertise to the Convention on Biological Diversity on relevant issues such as description of ecologically or biologically significant marine areas (EBSAs) in the region.

Abidjan Convention (West Africa)

186 The Abidjan Convention has finalized its revitalization process which led to the implementation of several activities that have increased its visibility and expertise on issues related to the management of marine and coastal zones, climate change and coastal resilience.

Development of Protocols

187 The Convention has embarked on formulation of additional protocols on the Sustainable Management of Mangroves, Integrated Coastal Zone Management and the environmental norms and standards for offshore oil and gas activities.

188 To ensure protection and a better management of mangrove ecosystems, the Abidjan Convention Secretariat initiated the process of developing the **protocol on sustainable management of mangroves** following its COP10 and COP11 decisions (CP 11/1. COP. 10/7). The final version of the protocol will be submitted for the plenipotentiaries’ signature to be held early July in Abidjan (Côte d’Ivoire). Despite their importance (spawning and nursery for fish, protection of islands and coastal habitats, carbon sequestration…), mangroves areas are under pressure (particularly anthropogenic) which has considerably reduced their surface areas in West and Central Africa.

189 Marine and coastal areas serve as homes to many human activities such as shipping, fishing and aquaculture, production of renewable energy, extraction of raw materials and nautical tourism. Experts raised the alarm years ago on the threats that these activities have on the marine and coastal environment. Strengthening their framework has become a major objective for the Contracting parties to the Abidjan Convention. In this respect, management based on an ecosystem approach was recalled at COP10 and 11. The Parties evaluated the importance of drafting **a protocol on Integrated Coastal Zone Management (ICZM)** which would contribute to a more effective management of the marine and coastal zones. This process of drafting has been completed and the protocol will be submitted with the other protocols in July 2019 during the plenipotentiaries' meeting in Abidjan.

190 During the COP 10, the contracting parties adopted the decision CP.10/8 "**Environmental standards for the offshore exploration and exploitation activities of mining and mineral resources off the coasts of the States Parties"**. The implementation of a regulatory framework for the surveillance and monitoring of offshore oil and gas activities follow the COP 9during which the Contracting Parties to the Abidjan Convention adopted important decisions aiming at preventing and combating pollution from offshore activities. This refers to the third protocol that will be submitted to the plenipotentiaries with the previous protocols.

Projects framework and partnerships and implementation of activities.

191 The Abidjan Convention is today recognized as a key actor and partner in terms of marine and coastal biodiversity management all over Africa's Atlantic coast. While there is ongoing implementation of activities and partnerships, other projects being prepared and in their final stages.

192 Recognizing the significant role the Abidjan Convention plays in the region, the **West Africa Biodiversity and Climate Change Programme (WABICC)** conducted an assessment in October 2015 on integrated technical and organizational capacity (ITOCA), which resulted in the formulation of an institutional capacity building plan leading to the elaboration of a joint communication strategy. With the support of WABICC, the Abidjan Convention will be equipped with a resource centre that will host most relevant publications on marine and coastal biodiversity and other ocean related data.

193 To support a **strong protection of the high seas, German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMUB)** has funded a project to facilitate the development and implementation of comprehensive approaches, that span many sectors, for conservation and sustainable use of biodiversity in Areas Beyond National Jurisdiction (ABNJ) of the Southern East Atlantic and Pacific. Based on the interest of both regions, the project will identify best practices and provide regional institutions and national authorities, knowledge, tools and necessary capabilities to support the implementation of existing approaches and the development of new ones in terms of regional ocean governance.

194 Funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMUB), through its International Climate Initiative (IKI), the **Mami Wata Project** « Enhancing Marine Management in West Africa through Training and Application » works in collaboration with African countries to develop their capabilities in Integrated Ocean Management (IOM). This experience sharing will be done through (i) Marine Spatial Planning (MSP), (ii) identification of EBSAs, (iii) elaboration of reports on the State of Marine Environment (SoME).

195 Funded by the Mava Foundation for Nature, the **project ResilienSea** focusses on seagrass, one of the most important ocean habitats. Serving as nurseries and feeding grounds, protecting our shores and storing carbon among other benefits, the issue of seagrasses is unknown to the public. This project will aim at strengthening knowledge on seagrass all over West Africa and carrying out pilot actions on selected sites which are intended to implement management tools and improve the status of their protection and services they provide.

196 As a fruit of collaboration between FAO and UNEP, the **Coastal Fisheries Initiative in West Africa (CFI)** project is being implemented in Cape Verde, Côte d'Ivoire and Senegal. It aims at strengthening fisheries governance, management of fisheries chain of values through the implementation of fisheries ecosystem approach, relevant international instruments and innovative governance partnerships. The Abidjan Convention is responsible for the implementation of the component on governance and fisheries management. Through a participatory approach involving different actors (States, civil society, private sector and researchers) at national and local levels, the Abidjan Convention Secretariat ensures the sustainable conservation and use of mangroves resources as dictated by its protocol on the sustainable management of mangroves and its implementation action plan. The Abidjan Convention Secretariat is expected, over the next three years, to conserve up to 700 hectares of mangroves in Senegal and Côte d'Ivoire.

197 Support the implementation of the **Strategic Action Plan (SAP) of the Guinea Current Large Marine Ecosystem (GCLME).** Funded by the GEF, the overall goal of this project is to strengthen the regional governance and ecosystem-based management of the GCLME by assisting the countries in capacity building for the implementation of the SAP measures related to transboundary fisheries, conservation of biodiversity and combatting pollution. The overall environmental expected benefits will be the protection of habitats and fish stocks with a global importance in the GCLME. The project will contribute to the improvement of governance and resource management and to enhance the capabilities of stakeholders to consider the value of sustainable fisheries. Improved resource management and reduction of poverty in the sixteen participating countries will further enhance sustainability under the GCLME.

198 Funded by the World Bank, the **West Africa Coastal Areas programme (WACA)** aims to (i) provide expertise and funding to the countries of the region for the sustainable management of their coastal areas considering the risks of erosion, floods and pollution and (ii) strengthen regional integration of countries by working with related regional institutions and agreements, thereby enhancing the resiliency of communities and the economic assets of the West African coastline. The program is to be done in six countries through a regional investment for **West African coastline resiliency (resiliency Investment Project (ResIP)** with a total cost of USD 221,70 million and funded up to USD 190 million (grants) by the World Bank. The project consists of a combination of activities at political and institutional levels and addressing the demands for physical and social investment at both regional and national levels. The Abidjan Convention is responsible for assisting the six participating countries in all technical matters related to the ratification and implementation of regional and international coastal and marine protocols.

199 Supported by the Adaptation Fund, the **UN HABITAT Project on improving the resiliency of coastal communities** has an overall objective to strengthen Ghana and Côte d'Ivoire coastal communities' resiliency to climate change. It is expected to later cover the rest of West Africa, while being consistent with the national priorities of the government in their implementation. The full proposal and lessons learned will benefit not only the most vulnerable communities but also governments at national and community levels, supporting Ghana and Côte d'Ivoire as well as their neighbors.

200 The Project **on MULTILATERAL AGREEMENTS ON THE ENVIRONMENT** is funded by the European Union and in partnership with FAO. The overall objective of this project is to strengthen and improve the capability of ACP countries to implement selected multilateral environmental agreements. The goal is to increase environmental sustainability of the agricultural sector. The project will focus on combatting depletion and degradation of natural resources (water, soil and biodiversity) by developing synergies and collaboration between the environment and agricultural sectors from global governance to policy. The specific objective is to integrate biodiversity into all the sectors of the three ACP regions to support sustainable agriculture and conservation of natural resources, giving a focus to specific regional priorities. These will include land degradation and desertification – issues related to food security and migration- which are the

results of damages caused by land clearing, invasive species, overuse of agrochemicals and other inadequate farm management practices.

201 The Abidjan Convention is now recognized as a key actor and a privileged partner in the management of marine and coastal biodiversity throughout the Atlantic coast of Africa. In addition to the activities implemented and developed partnerships, other activities are being undertaken and are being finalized. The variety of partnerships developed helps the Convention's Secretariat achieve its mandate and objectives of its programme.

Mediterranean Action Plan (MAP) Barcelona Convention Secretariat

202 UN Environment/Mediterranean Action Plan (MAP) Barcelona Convention Secretariat with support from its relevant Components, has continued supporting the Contracting Parties for the implementation of its legal and policy framework, touching upon most of the key issues addressed by the GESAMP, including reduction/prevention of land and sea-based pollution and marine litter, atmospheric inputs of chemicals, ballast water management, regulation of offshore activities, establishment of pollution trends and emerging issues.

203 **Hazards of harmful substances carried by ships.** In the framework of the Prevention and Emergency Protocol to the Barcelona Convention, UN Environment/MAP is actively supporting the Contracting Parties to develop and implement Contingency Plans including at sub-regional level (i.e. Adriatic/Ionian Sub regional Oil Spill Contingency Plan (ASOSCoP), Sub-Regional Contingency Plan between Algeria, Morocco and Tunisia, Sub-regional Marine Oil Pollution Contingency Plan between Cyprus, Greece and Israel, Sub-regional Marine Oil Pollution Contingency Plan between Greece, Cyprus and Egypt etc. At national level, Albania, Morocco, Tunisia and Turkey have been supported in the preparation of National Action Plans (NAP) for the implementation of the Regional Strategy for Prevention of and Response to Marine Pollution from Ships (2016-2021), including national assessments, a national International Maritime Organization (IMO) training course on response to Hazardous and Noxious Substance (HNS) in the marine environment, based on the newly developed IMO model course (Istanbul, Turkey, 13-16 November 2018) etc.

204 **Active substances' in ballast water management systems.** Interested Parties for the implementation of a pilot on mutually granted exemptions under the International Convention for the Control and Management of Ships' Ballast Water and Sediments, making use of the same risk area concept for short sea shipping trade between two neighboring countries, have been contacted to specify the type of assistance and timeframe to support the process. The organization of the Regional Workshop on the Anti Fouling Systems (AFS) Convention and the Biofouling, to be held in Valletta, Malta, on 12-14 November 2019, has been initiated by REMPEC, in coordination with IMO.

205 **Atmospheric input of chemicals to the ocean.** Work has been launched towards the possible designation of the Mediterranean Sea or parts thereof as an Emission Control Area (ECA) under Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL). In this respect, a technical and feasibility study to examine such a possibility was prepared by REMPEC and submitted to the SOx ECA(s) Technical Committee of Experts. A proposal and draft roadmap will be submitted for review by the MAP Focal Point meeting in September 2019. A relevant news item was published to the MAP website on the occasion of World Environment Day[7].

206 **Plastics / microplastics (sources, fate, effects) including Sea-based sources of marine litter.** UN Environment/MAP efforts have continued and further increased towards prevention and reduction of marine litter from land and sea-based sources, in accordance with the

[7] http://web.unep.org/unepmap/world-environment-day-2019-%E2%80%9Cbeat-air-pollution%E2%80%9D

provisions of the Regional Plan on Marine Litter Management in the Mediterranean, adopted in 2013, as the first ever regional legally-binding instrument to combat marine litter including concrete measures and timetables. Targeted support has been provided to several Contracting Parties, through pilot activities focusing on the implementation of selected measures, including Adopt-a-Beach, Fishing-for-Litter, development and implementation of the regulatory framework for the reduction of single-use plastic bags, promotion of Extended Producer Responsibility (EPR), better management of sea-based litter in ports and marinas etc.

207 A set of **marine litter guidelines** have been/ are being developed to support the Parties in the implementation of the Regional Plan on Marine Litter Management including: (a) Implementation of the "Adopt-a-Beach" measures in the Mediterranean; (b) Phase out Single-Use Plastic Bags in the Mediterranean; (c) Operational Guidelines on the Provisions of Reception Facilities in Ports and the Delivery of Ship-Generated Wastes in the Mediterranean; (d) Guidance Document to Determine the Application of Charges at Reasonable Costs for the Use of Port Reception Facilities or, when Applicable, Application of No-Special-Fee System in the Mediterranean. The guidelines have been submitted to the respective MAP Components' Focal Points Meetings for technical approval and submission to higher MAP decision-making bodies. A socioeconomic analysis of key measures to prevent/reduce single use of plastic bags and bottles is also under development.

208 Two Regional Meetings on **Marine Litter Best Practices** were organised (Izmir, Turkey, 9-10 October 2018; Seville, Spain, 8-10 April 2019) which reviewed the progress on the implementation of the Regional Plan on Marine Litter Management in the Mediterranean and introduced the main elements for its evaluation. Best practices and lessons leant from the implementation of the Regional Plan and the marine litter pilots were shared among the Parties.

209 The Secretariat has initiated an activity to test and possibly refine the baseline values and thresholds for marine litter-related Indicators of the Integrated Monitoring and Assessment Programme (IMAP). Work has advanced with regards to the development of the IMAP Candidate Indicator 24 "trends in the amount of litter ingested by or entangling marine organisms focusing on selected mammals, marine birds and marine turtles" with a focus on the common marine turtle caretta caretta.

210 UN Environment/MAP and the French G7 Presidency organised, with support from the Italian Government, the **Workshop on the G7 Action Plan to Combat Marine Litter** in synergy with the Regional Seas Convention (Metz, France, 5-6 May 2019), which brought together representatives of G7 Countries, Regional Seas Conventions and Programmes to which G7 Countries are party, and a number of stakeholders from intergovernmental mechanisms, civil society, and industry. The workshop built upon the outcomes of the similar 2017 workshop organized in the framework of the Italian 2017 G7 Presidency and advanced the discussions on the contribution of the work at regional level to the implementation of the G7 Action Plan to Combat Marine Litter, and potential benefits from a stronger collaboration between the Regional Sea Conventions and Regional Fisheries Bodies. Key messages from the workshop were presented to the Meeting of the G7 Ministers of Environment by the MAP Coordinator, upon invitation by the Presidency.

211 Global pollution trends establishment. UN Environment/MAP continues working on pollution monitoring and assessment and the establishment of trends in the Mediterranean. Following the adoption of the Integrated Monitoring and Assessment Programme (IMAP) in 2016, providing for a coherent programme based on region-wide commonly agreed indicators, Contracting Parties are working, with support from the Secretariat, to develop, update and implement their national IMAPs, which are expected to generate real time data to assess the status of the marine and coastal environment. The last Quality Status Report (QSR) for the Mediterranean dates in 2017. The next one will be prepared in 2023 (2023 Med QSR). During the meetings of the Correspondence Group on Pollution and Marine Litter Monitoring (CORMON Pollution and Marine Litter) the Parties approved the methodologies proposed for GES-integrated assessment based on DPSIR approach, the steps towards further refinement of the scales of assessment in

Mediterranean by applying nested approach, the IMAP Common Indicators Data Standards and Data Dictionaries, the implementation of new Quality Assurance Scheme; and the proposed monitoring protocols.

212 Currently, UN Environment/MAP is preparing a State of Environment and Development report (SoED) which addresses the environmental status and main sustainability issues related to the environment and development in the Mediterranean region, including the state, evolution and trends of the environment and development, driving forces and root causes, as well as existing and required policy and societal responses.

213 Reporting of pollutant loads discharged directly or indirectly to the Mediterranean is mandatory. Work is ongoing to ensure an update of the last 2015 reporting of pollutant budgets by all CPs through the National Baseline Budget and Pollutant Release and Transfer Register (NBB/PRTR) reporting. To this aim, UN Environment/MAP is cooperating with the European Environment Agency (EEA) to deliver a joint regional report in 2019. The Secretariat is providing support to ten Contracting Parties to submit quality assured data to the NBB/PRTR infosystem. The Regional Meeting on Reporting of Releases to the Marine and Coastal Environment from Land-Based Sources and Activities and related Indicators (Tirana, Albania, on 19-20 March 2019) reviewed several documents including lessons learnt from the ongoing 4th Cycle of the NBB of Pollutants. As part of the ENI SEIS II South Support Mechanism, co-implemented by UN Environment/MAP and EEA, methodological factsheets and data dictionaries have been developed for the Waste, Marine Litter and Industrial Emissions Horizon 2020 Indicators.

214 The evaluation of the status of implementation of the existing pollution reduction and prevention Regional Plans adopted by COP decisions between 2009 and 2013 (i.e. for the reduction of BOD5 from urban wastewater and in the food sector; the reduction of inputs of mercury; the elimination/phasing out of POPs and marine litter management) has been carried out, providing information on trends and quantitative data. A synthesis of past evolution, current state, and future trends of marine litter in the Mediterranean - with a focus on main sources and drivers as well as on responses to prevent – was also prepared by MED POL. Through a highly consultative process, the main elements of six new/ updated Pollution Reduction Regional Plans (Municipal Waste Water Treatment Plants, Sewage Sludge Management, Agriculture Nutrients Management, Aquaculture Nutrients Management, Urban Storm Water Management, Marine Litter (upgrade)), have been defined for the development of the Plans within the two next biennia.

215 **Impacts from mining operations.** UN Environment/MAP, with support from REMPEC, is organizing the Second Meeting of the Barcelona Convention Offshore Oil and Gas Group (OFOG) Sub-Group on Environmental Impact in Athens, Greece, on 27-28 June 2019. The meeting is expected to review and approve at a technical level a set of Mediterranean Offshore Guidelines and Standards, addressing key aspects of offshore activities, namely the (i) Guidelines for the Conduct of Environmental Impact Assessment (EIA); (ii) Common Standards and Guidance on the Disposal of Oil and Oily Mixtures and the Use and Disposal of Drilling Fluids and Cuttings; (iii) Common Standards and Guidelines for Special Restrictions or Conditions for Specially Protected Areas (SPA) within the Framework of the Mediterranean Offshore Action Plan. In addition, the Secretariat has prepared and submitted for review by the Offshore Oil and Gas Group (OFOG) meeting an analysis of the status of implementation of the Mediterranean Offshore Action Plan including general recommendations for further streamlining of the ecosystem approach and other regional and global developments and a review regarding possible amendments to the Annexes of the Offshore Protocol.

216 **New emerging issues.** The preparation of the draft scientific assessment report on environmental and climate change in the Mediterranean is progressing. Work has started to enhance the use of harmonized climate change vulnerability and impacts indicators for biodiversity in Specially Protected Areas of Mediterranean Importance (SPAMIs), also addressing socio-economic trends. A cost analysis for the implementation of the indicators in a sample of SPAMIs is

under preparation. Work is also ongoing on "*Nature-Based Solution*" as a means to adapt to climate change in the Mediterranean, through capitalization on the best practices workshop organized by Plan Bleu/RAC, IUCN Med, IUCN France, Tour du Valat, Consersatoire du Littoral, MedWet, Wetlands International (Marseille, France, 22-24 January 2019). A Policy Paper on integrating natural areas in the methods of adapting to climate change has been prepared and submitted to the Plan Bleu Focal Points meeting (Marseille, France, 28-29 May 2019).

217 **Global presence.** In the last year, UN Environment/MAP had an active presence in key regional and global event and fora, contributing to the discussions, presenting the work in the Mediterranean region and organizing side events, including in the UNEA-4 (Nairobi, Kenya, 11-15 March 2019), the G7 Environment Ministers Meeting (Metz, France, 5-6 May 2019), the Sustainable Blue Economy Conference (Nairobi, Kenya, 26-28 November 2018), the COP 14 of the CBD (Sharm el Sheikh, Egypt, 17-29 November 2018) and its side event on the Sustainable Ocean Initiative (SOI) Global Dialogue, the GFCM Fish Forum 2018 (Rome, Italy, 10-14 December 2018), the UNFCCC COP 24 (Katowice, Poland, 2-14 December 2018), the Conference "Before the Blue COP" organized by the Ministry for the Ecological Transition of Spain in preparation for the UNFCCC COP 25, the Closing Conference of the SWIM and Horizon 2020 Support Mechanism (SM) (Brussels, Belgium, 8 April 2019), the 73rd Meeting of the Marine Environment Protection Committee (MEPC) of IMO (London, UK, 22-26 October 2018), the 2019 Regional Forum on Sustainable Development for the UNECE Region, (Geneva, Switzerland, 21-22 March 2019), the Annual Conference of the Arab Forum on the Environment and Development (AFED) (Beirut, Lebanon, 8-9 November 2018), the 2nd Sustainability Summit for the South-East Europe and the Mediterranean (Athens, Greece, 1-2 October 2018), and the 2018-Eco City Forum "Circular Economy in Smart Cities" (Thessaloniki, Greece, 3-5 October 2018). UN Environment MAP was also represented through one of its Contracting Parties to the side event on "Application of area-based management tools under the regional seas programmes" organised in the framework of the 2nd session of the "Intergovernmental Conference on an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction" (New York, USA, 25 March-5 April 2019) and others.

218 **Cooperation/partnerships:** UN Environment/MAP has continued and further strengthened cooperation with key regional and global organizations and actors. Among others, the memorandum of Understanding (MoU) with the Basel, Rotterdam and Stockholm Conventions Secretariat (BRSC) was amended; formal cooperation with the Benguela Current Convention (BCC) was launched in the framework of a GEF-funded Inter-project Collaboration Opportunity (ICO); a direct assignment between SCP/RAC and the European Bank for Reconstruction and Development was signed (EBRD); the MoU between REMPEC and the Centre of Documentation, Research and Experimentation on Accidental Water Pollution (Cedre) was renewed and MoUs with Sea Alarm, Federazione Nazionale dell'Industria Chimica (FEDERCHIMICA), and with the Mediterranean Operational Network for the Global Ocean Observing System (MONGOOS) are in force.

219 Cooperation with other organizations including the European Environment Agency (EEA), the General Fisheries Commission for the Mediterranean (GFCM), the Black Sea Commission, the ACCOBAMS, the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), the Union for the Mediterranean (UfM) etc. has continued.

Nairobi Convention (East Africa)

220 The Nairobi Convention held the Ninth Conference of Parties to Nairobi Convention on 30 – 31 August 2018 in Mombasa, Kenya. The ten Contracting Parties adopted fifteen decisions, including on priority areas such as the management of marine protected areas; marine and coastal biodiversity conservation and connectivity in exclusive economic zones and adjacent areas; ocean governance; pollution from land-based sources and activities; climate change; ocean acidification; environmental management for the oil and gas industry; growth of the blue economy; scientific research; fisheries management; marine spatial planning; integrated coastal management and the sustainable development of ports and harbours.

221 On 27 March 2019, Contracting Parties to the Nairobi Convention agreed on the final language for the Integrated Coastal Zone Management (ICZM) Protocol. States had started discussing the protocol in 2012, and the meeting in Dar es Salaam marked the fourth round of negotiations on the text. Some objectives of ICZM include promoting the sustainable use of resources; conserving the integrity and value of ecosystems and preventing and mitigating the effects of natural and human threats to coastal and marine environments. The protocol provides a framework to promote regional and national ICZM and enhance cooperation for sustainable development in the Western Indian Ocean (WIO) region. The [8]protocol will now move to the Convention's Conference of Plenipotentiaries for formal adoption.

222 Project Steering Committee (PSC) Meetings: The Nairobi Convention held PSC meetings for its two GEF-funded projects: 'Implementing the Strategic Action Programme for the protection of the Western Indian Ocean from land-based sources – (WIOSAP) and Western Indian Ocean Large Marine Ecosystems Strategic Action Programme Policy Harmonisation and Institutional Reforms' (WIO LME SAPPHIRE) in June 2019. The meetings approved progress reports and Terms of References; proposals and concepts for demo projects; Guidelines and Toolkits; and annual workplans and budgets.

223 Nairobi Convention has developed a Partnership project on 'Marine and Coastal Governance and Fisheries Management for Sustainable Blue Growth' with the South West Indian Ocean Fisheries Commission (SWIOFC) of the UN Food and Agriculture Organisation and signed a Memorandum of Understanding. Contracting Parties have committed to cooperating on fisheries management (through the SWIOFC) and on environmental protection (through the Nairobi Convention). Such cooperation will lead to a more integrated management of the fisheries and other uses of the coastal environment. The project will allow the Contracting Parties to benefit from a coordinated and mutually reinforcing intervention on both fisheries and environment conservation beyond what could be obtained by uncoordinated interventions in a singular field. The project aims to improve food security, increase resilience, and reduce poverty of fisheries-dependent coastal communities.

224 Nairobi Convention, in collaboration with the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC-UNESCO) and the Western Indian Ocean Marine Science Association (WIOMSA) organized regional training courses on marine spatial planning (MSP) between October - September 2018 in Kenya and in Mauritius. The training course on MSP supported the implementation of the project on 'Implementation of the Strategic Action Programme for the protection of the Western Indian Ocean from land-based sources and activities'; and presented the concepts on Ecosystem-based management including application to data, information and national needs on decision support tools, which are essential for integrated management of coastal zones. The Nairobi Convention held another training on MSP in Tanzania in March 2019, which allowed participants to examine MSP practices and tailor the implementation of MSP to their own maritime domains.

225 The Nairobi Convention has developed the Western Indian Ocean Regional Outlook on Marine Protected Areas. The Marine Protected Areas Outlook will provide regional baselines on protected areas for sustainable development goal 14.5 (which states that by 2020, states should conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on best available scientific information). The Outlook is expected to be launched by the end of 2019. Nairobi Convention organised a Regional Training for Eastern Africa Countries on Oil Pollution Shoreline Clean-up Assessment and Response on 06-09 November, 2018 in Dar es Salaam, in collaboration with UN Environment Post Conflict and Disaster Management, Geneva; Oil for Development programme, Norway; the International Maritime Organisation and the International Tanker Owners Pollution Federation Limited. The training focused on assessment and

[8] https://www.unenvironment.org/nairobiconvention/news/news/states-agree-final-draft-integrated-coastal-zone-management-protocol-and-other-news

response to incidents where oil reaches the shoreline – providing an understanding of how oil affects the local environment, the different vulnerabilities present in the region and how to prioritize response actions.

226 The Nairobi Convention Secretariat organised a regional training workshop on 10 – 11 December 2018 in Maputo, Mozambique, in partnership with the UN Environment Global Programme of Action, on the protection of the marine environment from land-based activities. The workshop demonstrated the use of tools for management of pollution from land-based sources and activities, including the Technology Matrix for Wastewater; the Nutrient management Toolbox; and the Ecosystem health score card. The workshop also validated the regional action plan on Marine Litter developed by Institute of Marine Sciences of Tanzania and the Global Programme of Action for the protection of the marine environment from land-based activities.

227 The Convention's GEF-funded WIOSAP project strives to reduce land-based stresses by protecting critical habitats, improving water quality, and managing river flows. To this end, the project is funding several demonstration projects in the Western Indian Ocean (WIO) countries to address various land-based stresses. The National Implementation Committees (NICs) of the project have reviewed 49 concepts for demonstration projects funded received from all WIO countries. Of these, eight full proposals have been developed and approved by the WIOSAP's Project Steering Committee (PSC), thus paving the way for actual implementation of the demonstration projects.

228 Nairobi Convention has developed tools and guidelines to support the implementation of national demonstration projects including: Mangrove restoration guidelines, seagrass restoration guidelines, climate change vulnerability assessment toolkit, economic valuation guidelines, and E-flows assessment toolkit and assessment of alternative livelihoods. The Guidelines/Toolkits capture respective WIO specific case studies on how the various interventions have worked and lessons learnt and are expected to be released in the coming year.

229 The Nairobi Convention will be receiving funding and implementing the project on the Integrated Management of the Marine and Coastal Resources of the Northern Mozambique Channel, funded by the Global Environment Facility, Swedish International Development Cooperation Agency (SIDA), Members of the Indian Ocean Consortium (WIO-C). The project will address scenarios for development to maximize the opportunities for sustainable development in the NMC, based on preservation of the health of marine ecosystems as a foundation for future prosperity. The project will use the holistic approach for Integrated Ocean Management to assist the countries in achieving the Sustainable Development Goals, especially goal 14.

230 Nairobi Convention organized the [9]Partnership Meeting with Regional Economic Communities and Commissions in the Western Indian Ocean Region in April 2019 in South Africa. The workshop established working relationships with Regional Economic Communities, Commissions, Fisheries bodies and regional scientific bodies in the WIO region to support and facilitate regional economic integration, promote sustainable development and governance in the member states. A recommendation from the meeting was to establish a "core group" as a way for the Nairobi Convention Secretariat, Regional Economic Communities, Commissions and partners to communicate on these initiatives.

231 As part of its SAPPHIRE project (implemented by UNDP), the Nairobi Convention has held four partnership meetings on oceanographic data and scientific research in the WIO region from March -June 2019.The sessions brought together scientists, policy makers, and partners together to discuss the status of national data centres; identify priorities of countries in using, managing and owning data findings; and agree on mechanisms and partnerships to improve data collection, sharing, and archiving, among others. Accordingly, a small-scale funding agreement with

[9] https://www.unenvironment.org/nairobiconvention/news/blogpost/regional-economic-communities-recs-and-commissions-western-indian-ocean-region

KMFRI and IMS—which will support data collection and research in North Kenya and the Pemba channel of Tanzania—is ready to be signed

232 Nairobi Convention showcased the results, related initiatives and key challenges of the project on Areas Beyond National Jurisdiction Deep Seas at the 2019 Deep-Sea Conference held in Rome, Italy in 9 May 2019. Stakeholders representing multiple sectors within the Areas Beyond National Jurisdiction synthesized the opportunities and challenges faced and discussed support to sustainable deep-sea fisheries management and biodiversity conservation in Areas Beyond National Jurisdiction.

233 The Nairobi Convention organized the Western Indian Ocean Regional Science to Policy Workshop on 27 - 29 May 2019 in Port Louis, Mauritius. The goal of the meeting was to establish and operationalize the Science to Policy Platform as a core structure within the Nairobi Convention; establish a Scientific and Policy Advisory Panel for the region; and to facilitate information-sharing between institutions and the Nairobi Convention and other regional processes. The meeting reviewed the Terms of Reference of the Platform, its membership and modus operandi; and discussed the need for a regional ecosystem/indicator monitoring framework and road map on its development.

234 [10]World Oceans Day was 8 June 2019, and the Nairobi Convention celebrated by releasing information on major issues facing the Western Indian Ocean region and how the contracting parties are working to sustainably protect, manage, and use their marine and coastal resources. In addition to sharing stories highlighting actions taken by each of its Contracting Parties, the Convention also received several stories from partner institutions outlining progress, challenges, and recommendations.

Cartagena Convention-Caribbean Environment Programme

235 To date, the Cartagena Convention has been ratified by 26 of 28 United Nations Member States in the Wider Caribbean Region. The Convention was adopted in 1983 and is supported by three Protocols, the Protocol Concerning Co-operation in Combating Oil Spills in the Wider Caribbean Region, the Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region (17 Contracting Parties) and the Protocol Concerning Pollution from Land-Based Sources and Activities (LBS) (14 Contracting Parties). On October 13, 2018, Honduras became the most recent country to ratify the Cartagena Convention and its three Protocols. During 2018, technical support was provided by the Secretariat to the Governments of St. Kitts and Nevis, Suriname, St. Vincent and the Grenadines, Barbados, Haiti and Cuba to assist them with their ratification process for the LBS Protocol while discussions with Mexico and Guatemala are ongoing with respect to possible ratification of the SPAW Protocol.

236 The 15th Conference of the Parties to the Cartagena Convention and the 10th and 4th Meetings of the Contracting Parties to the SPAW and LBS Protocols respectively, were held from June 3-6, 2019 in Roatán, Honduras. Among the key outcomes were the adoption of a new 2020-2030 Strategy for the Secretariat and approval of its Work Plan and Budget for the 2019-2020 biennium.

237 At the 10th SPAW COP Meeting, two new species were added to the Annexes of the SPAW Protocol: *Pristis pristis*, Largetooth sawfish to Annex II and the *Carcharhinus falciformis*, Silky shark to Annex III. The total number of listed species has now increased to 256. The 10th SPAW COP also endorsed two new protected areas: the Mount Scenery National Park of Saba Island proposed by the Kingdom of the Netherlands, and the National Natural Reserve of Kaw-Roura and the National Natural Reserve of Amana, both in French Guiana, and proposed by the Government of France. These new additions bring the total number of SPAW listed sites to 35.

[10] https://www.unenvironment.org/nairobiconvention/world-oceans-day-2019

238 The COP to the Cartagena Convention adopted decisions to build partnerships for improving oceans governance through the Coordinating Mechanism established under the UNDP Global Environment Facility- Caribbean and North Brazil Shelf Large Marine Ecosystems (GEF CLME+) Project, as well as with the Inter-American Sea Turtle Convention, the International Atomic Energy Agency, The Ocean Foundation, and the Caribbean Marine Environment Protection Association (CARIBMEPA).

239 Contracting Parties at the 4th LBS COP Meeting adopted the region's first State of Marine Pollution Report and decided to establish a new Open-Ended Working Group for Monitoring and Assessment to support the work of the LBS Protocol.

240 A report on the Status of Styrofoam and Plastic Bag Bans in the Wider Caribbean Region was finalized and presented as a resource document for Governments of the Wider Caribbean Region. The report summarizes the bans and policies that have been implemented in the region to support ongoing efforts to regulate the use and production of single-used plastics and Styrofoam. The report is complemented by an interactive map of the region depicting the geographical distribution of these bans.

241 Other publications which the Secretariat contributed on marine pollution included: *Marine Pollution in the Caribbean: Not a Minute to Waste* led by the World Bank, the *Guidelines for the Monitoring and Assessment of Plastic Litter in the Ocean* by GESAMP, and the *Harmonized Manual on Marine Litter Monitoring* in partnership with the OSPAR Commission and the Gulf and Caribbean Fisheries Institute (GCFI).

242 The three-year project "*Biodiversity for Sustainable Development in the Caribbean (EBM)*" (extended to four years), funded by the Directorate for the Environment within the Ministry of Foreign Affairs of Italy is ongoing. Its objective is to increase the livelihood of the population in the Wider Caribbean Region by contributing to the conservation and sustainable management of coastal and marine biodiversity, through the application of the EBM approach.

243 The project is now focused on improving functionality and updating the data sets of the CaMPAM database, especially Marine Protected Areas (MPAs) listed under the SPAW Protocol. This will contribute to the SOMEE[11]/ CLME+ and SOCAR[12] processes on the status of the Wider Caribbean marine environment. The process of redesigning the website is ongoing and will be launched via integration with the new server of the Secretariat to the Cartagena Convention. The forum will be redesigned to encourage open and interactive discussions between members and to enhance linkages between managers of MPAs.

244 The Secretariat continues to promote the use of Ecosystem-Based Approaches and Marine Spatial Planning tools for integrating Habitat Restoration and Pollution Reduction projects. In Trinidad and Tobago, the sampling of water quality sites of the Guayamare Cunipia study/ Caroni swamp area was completed to address the impacts of land-based sources of pollutants on the mangrove swamp.

245 There has been continued progress towards the completion of the draft State of Habitat report and the 2020-2030 Regional Strategy and Action Plan and Investment Plan, supported by the UNDP GEF CLME+ Project. The full proposal for the GEF-funded Caribbean Regional Fund for Wastewater Management (CReW+) Project entitled *'Upscaling and enhancing the experience of the Caribbean Regional Fund for Wastewater Management to the wider Caribbean promoting through an integrated approach of innovative technical solutions and financing mechanisms'* was developed and submitted to the GEF Secretariat in May 2019 for review and possible approval.

[11] The State of the Marine Ecosystems and Associated Economies
[12] The State of the Convention Area Report (SOCAR) for the Wider Caribbean Region

246 Marine litter remains a priority for the Wider Caribbean Region. The community- based project launched in Panama and Jamaica under the Trash Free Waters International Partnership involving the Cartagena Convention Secretariat and US Environmental Protection Agency (EPA) has reduced the impacts of marine litter on coastal and marine ecosystems, livelihoods and humans. Sandals Foundation has been coordinating the implementation of pilot project activities in the towns of Bluefields and Whitehouse in Jamaica since 2018. The project will be upscaled and replicated in other countries.

247 New communication products including technical reports, infographics and factsheets on pollution and marine biodiversity were developed to increase awareness of the state of the marine environment and the threats to the sustainable use of coastal and marine resources. The Secretariat and the GCFI as co-hosts for the Caribbean Regional Node on Marine Litter Node expanded their communications and outreach efforts by developing factsheets on Microplastics, Marine Litter and Sargassum.

248 The Secretariat celebrated several environmental commemorative days including International Day for Biological Diversity, World Environment Day and World Oceans Day through outreach activities and/or social media promotion. A mini social media campaign was undertaken in May 2019 to enhance dissemination efforts about Ecosystem-Based Management in the region and its related pilot project in the Dominican Republic (#ecosystembasedmanagement). A one-month social media campaign on marine litter in July 2019 (#PlasticFreeJuly) is being coordinated through the Caribbean Marine Litter Node.

249 The Secretariat and GCFI convened a Marine Litter Expert Workshop in March 2019 to develop a 5-year plan for a Regional Marine Litter Strategy, including priority project proposal concepts for marine litter management in the Wider Caribbean Region. This will support the continued implementation of the Caribbean Regional Action Plan for Marine Litter (RAPMaLI). A two-day Regional Marine Litter Expert Workshop was also held from October 18-19, 2018 to highlight best practices on harmonized monitoring strategies, assess the effectiveness of monitoring and propose arrangements for strengthening monitoring programmes, as well as the management of marine litter data.

250 The Secretariats of the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) and the Cartagena Convention have made a voluntary commitment to collaborate across the Atlantic as part of their contribution to fulfilling Sustainable Development Goal 14 (SDG14). In 2018, funding for their cooperative agreement was provided by the Kingdom of the Netherlands and Sweden, and a proposed full-sized five-year project is being drafted on the management of Marine Protected Areas and capacity building. The proposal will include input from a task group (France, the Netherlands and United Kingdom representatives in Europe and the Caribbean), as well as from the Cartagena Convention and OSPAR Secretariat staff.

251 There has been continued progress in the implementation of the 5-year GEF-funded project for Integrating Water, Land & Ecosystems Management in Caribbean SIDS (GEF-IWEco) which focuses on the preservation of Caribbean ecosystems in small island developing states. Since the last reporting period, Project Cooperation Agreements (PCAs) were prepared for Trinidad and Tobago, Antigua & Barbuda, Saint Lucia, Jamaica and St. Kitts & Nevis. In relation to environmental education, communication and awareness activities for the project under Component 4, a total of 8 webinars were conducted with over 72 participants being trained to date.

252 The GEF IWEco Project Coordinating Unit (PCU) hosted their 3rd Regional Project Steering Committee Meeting (RPSC3) in Santo Domingo, Dominican Republic from 2-4 April 2019 and their Governance Partnership Meeting in March 2019. In November 2018, the IWEco National Projects in Jamaica and Cuba (*"Conservation and Sustainable Use of Biodiversity from the Integrated Management of Watersheds and Coastal Areas in Cuba")* were launched. A regional training

workshop on Ecosystem Services Assessment and Valuation (ESAV) and Carbon Sequestration was also held in May 2019 as part of Component 2 of the IWEco project.

253 After the launch of the Global “Clean Seas Campaign” in 2017, the Secretariat actively promoted participation in the campaign and currently, 10 countries have signed on to the campaign in less than 15 months. Of the countries signed on to Campaign, seven (7) of these member states are also Contracting Parties to the LBS Protocol. These countries include the Governments of Panama, Dominican Republic, Costa Rica, Saint Lucia, Grenada and France.

254 The Regional Activity Centre for the Protocol on Oil Spills, (RAC REMPEITC-Caribe) based in Willemstad, Curacao completed the feasibility study for the possible development of a Regional Reception Facility for Ship Generated Wastes among the Small Island Developing States (SIDS) of the Wider Caribbean Region. The study includes a detailed analysis of shipping data, site visits and assessments of ports in 16 U.N. Member SIDS, and identification of possible measures to address the inadequacy of port reception facilities (PRFs) throughout the Wider Caribbean Region (WCR).

255 Support from the SPAW Protocol’s Regional Activity Centre has been integral in the implementation of two significant projects funded by the EU, namely, the Caribbean Marine Mammals Preservation Network (CARI’MAM Project: 2017-2020) and the Caribbean Coastal Risks related to Climate Change for a Monitoring and Prevention Network (CARIB Coast Project). The CARI’MAM Project was launched in Martinique in October 2018.

South Asian Seas *(SAS) Programme*

256 SACEP is the Secretariat for the South Asian Seas Programme (SASP), which is one of the eighteen Regional Seas Programme of the United Nations Environment Programme (UNEP), signed and formally adopted by the five South Asian maritime countries namely Bangladesh, India, Maldives, Pakistan and Sri Lanka in 1995 to protect and manage the marine environment and related coastal ecosystems of the region in an environmentally sound and sustainable manner.

Ongoing activities

257 **A Scoping Study of Nutrient Pollution on the Coastal and Marine Systems of South Asia:** SACEP with the assistance of INMS organized a regional meeting in Maldives on Nitrogen Management from 12-14 September, 2017. The 14th Governing Council meeting of SACEP held from 26-28 March 2018 at Colombo, Sri Lanka, suggested that the SACEP Secretariat to led member states redraft a Nitrogen Management resolution originally targeted for UNEA-3 according to the theme of the UNEA-4. Led by the Government of India d the Nitrogen Resolution was submitted to UNEA-4 which was held 11-14 March 2019.

258 The South Asia Co-operative Environment Programme (SACEP) has established “the South Asian Nitrogen Hub”, in collaboration with the Centre for Ecology & Hydrology and many other organizations across the UK and South Asia. The Hub is funded by UK Research and Innovation (UKRI) under its Global Challenges Research Fund (GCRF). This will contribute to protection from marine pollution, air pollution and climate change from land-based sources in South Asia, with a view to establish policy recommendations for the nitrogen management in the South Asian Region. Over the next five years, South Asian Nitrogen Hub (SANH) will study the impacts of the different forms of pollution to form a coherent picture of the nitrogen cycle. In particular, it will look at nitrogen in agriculture in eight countries – India, Pakistan, Bangladesh, Nepal, Afghanistan, Sri Lanka, Bhutan and Maldives. The Hub’s recommendations will support cleaner and more profitable farming, as well as industrial recycling of nitrogen, fostering development of a cleaner circular economy for nitrogen.

259 **Significance of Nitrogen in the region:** South Asia, home to a quarter of the world’s population, is critical to the global nitrogen cycle. By 2050, its population of 1.8 billion is expected to rise by 20 per cent, while its use of fertilizers could double. Around 12 million tonnes of nitrogen

are used in fertilizers across South Asia to support food production, but the efficiency is low, with around 80% wasted which contributes to multiple forms of nitrogen pollution. About 10 billion USD worth of nitrogen is lost as pollution in South Asia. In India alone, the total societal cost of nitrogen pollution on human health, ecosystems and climate is estimated at about 75 billion USD annually. Atmospheric nitrogen pollution stimulates growth of certain plants at the expense of more sensitive species with a high conservation value. There is a significant risk to global biodiversity hotspots such as the Himalayan foothills, especially as the Indo-Gangetic Plain (IGP) has the highest ammonia (NH_3) concentrations in the world, arising mainly from livestock excreta and urea fertilizer used in agriculture. Government subsidies of the fertilizer industry in South Asia are around 10 billion US dollars a year (including 7 billion USD in India). In his Mann ki Baat address of 26 November 2017, India Prime Minister *Narendra Modi* asked the country's farmers to cut urea fertilizer consumption by half by 2022.

260 **Development of a Marine and Coastal Biodiversity Strategy for the South Asian Seas Region:** In order to strengthen the updating of the National Biodiversity Strategies and Action Plans (NBSAPs) process, foster collaboration, and help identifying and addressing challenges that require regional solutions, South Asian Seas Programme together with UNEP have initiated an activity to develop a South Asia Regional Marine and Coastal Biodiversity Strategy in partnership with various other stakeholders. The Strategy was prepared, in parallel with the NBSAPs and it will assist the five maritime countries of South Asia to achieve Aichi Biodiversity targets relevant to coastal and marine biodiversity at national as well as regional level. This process will support and guide future revision of the South Asian Seas Action Plan. SACEP in assistance with UNEP organized a regional consultative workshop in September 2018 at Maldives for ensuring the common understanding, agreement on strategy contents as well as pathway to finalization. This report has been circulated among the member countries for their necessary consents prior to its adoption at the 6-IMM/SASP.

261 **Reducing the risk of degradation of the Kayankerni and Pasikuda coral reef ecosystems in Sri Lanka by addressing nutrient, wastewater and other land-based sources of marine pollution within the Maduru Oya watershed:** As we know that Globally, coral environments facing many challenges from climate change and ocean acidification. In addition to these, human alter land-based pollution is another major ongoing burning problem especially in South Asian Sea (SAS) region due to intense agriculture practices. The SAS region is rich in marine biodiversity. By taking these advantages, countries in the SAS region benefited huge tourist economic gain. In order to maintain the harmony and *synergic relations* among human activities and coral environment, the meeting was held on 09th March 2018 at Galadhari Hotel, Colombo, Sri Lanka from the expertise from Government, Civil society and academia along the expert from UN Environment to discuss out with best possible management practices to overcome the current prevailing issues. This study will fill the gaps between economic damage due to environmental pollution is the sum of costs needed to prevent environment pollution impact on recipients. The lesson learned from the initial pilot project exercises will be further scale up to other SAS countries to guideline the appropriate measures.

262 **Endorsement for the Formal Adoption of the Ballast Water Management Convention for South Asia Seas Region:** South Asia Co-operative Environment Programme (SACEP) and International Maritime Organization (IMO) jointly organized a regional workshop on International Convention for the Control and Management of Ships Ballast Water and Sediments, 2004 (BWM Convention). The Regional Workshop was hosted by the Government of the Republic of Maldives in Malé, Maldives, from 18 to 20 June 2019. The workshop was aimed at Government administrators responsible for the prevention and control of pollution of the marine environment, in particular the control and management of ships' ballast water and sediments to prevent the introduction of invasive aquatic species. The workshop was also to assist the administrations of South Asia Member countries in preparing for ratification and implementation of the BWM Convention, with a special emphasis on compliance monitoring and enforcement (CME) as well as Port Biological Baseline Surveys (PBBS) and risk assessments. More specifically, the Regional workshop provided guidance for authorities involved in flag and port State control surveys and

inspections carried out under the provisions of the BWM Convention. The International Maritime Organization (IMO) has indicated that the South Asia Region will get much more benefits once all the members of the South Asian Seas Programme (SASP) signs the MOU for collaborative activities. SACEP is further coordinating with IMO for the further implementation of activities in SAS region.

263 **Regional Marine Litter actional Plan:** SACEP had developed a regional marine litter management framework in SAS region in 2017 with the assistance of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. The framework provided recommendations for further implementation. One of the important recommendations was to develop a regional policy on marine litter management in SAS region. The regional Marine Litter Actional Plan report has been prepared when all the national contracting parties have already finalized their National Marine Litter Action Plans to combat marine litter pollution, containing programs and measures for marine litter prevention and reduction, and a timeframe for their implementation. This report, submitted successfully to UN Environment, is an implementation guide and reference tool. It will be used for future policy, planning, research and development of marine litter mitigation tools in areas related to marine environment as well as pollution from the land and sea-based sources.

264 **Endorsement for the Formal Adoption of the London Protocol for South Asia Seas Region:** As a part of implementation of its mandate, South Asia Co-operative Environment Programme (SACEP) has communicated to the maritime countries of the South Asian Seas (SAS) for ratifying the London Protocol (LP). The ratification of LP will help in combating the human generated pollutions discharging to coast and marine environment of SAS region. SACEP will be organizing a Regional Workshop on Promotion of the LP in the South Asian Seas (SAS) Region, with the financial and technical supported of the IMO and hosted by the Ministry of Environment and Forest, Government of Bangladesh from 10 – 11 July 2019 in Dhaka, Bangladesh. The workshop is aimed at Government administrators responsible for the prevention and control of pollution from dumping of wastes at sea. Participants from national authorities should be of a senior level within their administrations, with areas of responsibility involving both technical and policy-making decisions. The workshop will also sensitize relevant authorities to the benefits and implications of ratifying, implementing and enforcing the London Protocol, a special emphasis will be placed on the protection of ports and ocean environment.

Helsinki Convention (HELCOM)

265 HELCOM is a Regional Sea Convention in the Baltic Sea, consisting of 10 members: the nine coastal countries Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden, and the European Union. HELCOM works for a healthy Baltic Sea, and its mandate stems from a regional treaty (the Helsinki Convention adopted in 1974 and amended in 1992) that covers the whole sea area including the seabed and the resident biota, and pollution sources that may influence the sea. The HELCOM Secretariat is located in Helsinki, Finland.

266 **Ministerial Meeting 2018 and update of the Baltic Sea Action Plan:** The HELCOM Ministerial Meeting held in Brussels in May 2018 agreed to update the Baltic Sea Action Plan (BSAP) – the concrete roadmap for restoring the ecological balance of the Baltic Sea – by 2021. The updated BSAP will include new measures that are needed to achieve the existing goals: a Baltic Sea unaffected by eutrophication, a Baltic Sea with life undisturbed by hazardous substances, maritime activities carried out in an environmentally friendly way, and favourable conservation status of the Baltic Sea biodiversity. The objectives of the BSAP haven't yet been reached, but the BSAP has shown promising results towards improving the environmental status of the Baltic Sea. The updated BSAP will consider latest scientific knowledge about the ecosystems and use water and ocean related SDGs as a framework. It will also be based on the analysis of the efficiency of current measures. In addition to existing commitments, the updated plan will address

new issues such as underwater noise, marine litter, microplastics, pharmaceuticals, and seabed damage and disturbance, and take the foreseen climate change impacts into account.

267 **Sixth Pollution Load Compilation (PLC-6):** Finalised in 2018, the Sixth HELCOM Pollution Load Compilation (PLC-6) aggregates data on nutrients, focusing on annual and periodic assessments of inputs of nutrients and selected hazardous substances. According to the assessment, a significant reduction of nutrient inputs has been achieved for the whole Baltic Sea in 2015. The PLC-6 assessment shows that in 2015, the normalized input of nitrogen was reduced by 12% and phosphorus by 25% since the reference period (1997-2003). The Maximum Allowable Inputs (MAI) of nitrogen in this period were fulfilled in the Kattegat, Danish Straits, Bothnian Bay and Bothnian Sea. MAI for phosphorus input is fulfilled in the Kattegat, Danish Straits and Bothnian Sea.

268 **Nutrient recycling:** According to the results of the State of the Baltic Sea report from 2018, 97 % of the Baltic Sea area suffers from eutrophication caused by nutrient loading. Agriculture remains a large source of nitrogen and phosphorus runoff to the sea. In 2018, HELCOM members therefore agreed to elaborate a Baltic Sea Regional Nutrient Recycling Strategy by 2020. The aim is to reduce nutrient loading to and eutrophication of the Baltic Sea by circulating the nutrients in the food chain.

269 **SuMaNu platform on nutrient management:** To address eutrophication and reduce nutrient inputs to the Baltic Sea, a new EU co-funded project platform "Sustainable manure and nutrient management for reduction of nutrient loss in the Baltic Sea Region" (SuMaNu) in which HELCOM participates was launched. The platform will collect information from previous agriculture-related projects and share their best practices. The platform will also support the elaboration of the nutrient recycling strategy and the update of the agriculture part of the Baltic Sea Action Plan.

270 **HELCOM work on fisheries in relation to the implementation of the ecosystem-based approach:** HELCOM's Group on ecosystem-based sustainable fisheries (Fish Group) met in January 2019 to consider inter alia the update of the Baltic Sea Action Plan, development of a Roadmap on collection of fisheries data in order to assess incidental bycatches and fisheries impact on benthic biotopes in the Baltic Sea as well as BAT/BEP for sustainable aquaculture. Progress on this work had also been made during the Third meeting of the Correspondence Group for fisheries data and the Second Meeting of the HELCOM Intersessional Correspondence Group on Best Available Technology / Best Environmental Practices (BAT/BEP) for sustainable aquaculture in the Baltic Sea region, both of which met in November 2018.

271 In 2018, HELCOM released its "Status of coastal fish communities in the Baltic Sea during 2011-2016 – the third thematic assessment" report which concludes that only about half of the assessed areas are in a good state in regard to coastal fish. As highlighted in the report, fishing regulations including permanent or temporary no-take areas, gear regulations, and habitat protection and restoration are measures that have shown to have a positive effect on fish populations. The three-year (2017-2020) HELCOM-led and EU co-financed RETROUT project focuses on establishing healthy fish populations for recreational fishing, such as sea trout. As recreational fishing in the Baltic Sea has unused potential, the overall scope of RETROUT is to develop and promote the Baltic Sea Region as a coastal fishing tourism destination.

272 **HOLAS II/State of the Baltic Sea report:** HELCOM published the final version of the State of the Baltic Sea report in 2018, providing a complete insight about the ecological state of the Baltic Sea and the pressures affecting it. The report shows that, despite improvements, the sea is not yet in a good state, with eutrophication causing the major stress. Approved by all HELCOM member countries, the report is based on verified scientific evidence stemming from a recently concluded HELCOM assessment – the HELCOM Second Holistic Assessment of the Ecosystem Health of the Baltic Sea, or HOLAS II. It is the most comprehensive baseline currently available on the Baltic Sea.

273 **HECOM work on response to oil and HNS spills:** The HELCOM Response Working Group has met twice since the 45th Annual Meeting of GESAMP, making progress on a number of matters such as updating the BSAP, assessing and revising HELCOM Recommendations related to Response, revising the HELCOM Response Manual and improving the HELCOM Response exercise framework. The EU co-founded and HELCOM-led OpenRisk project completed its work at the end of 2018 after two years working on methods for maritime risk assessments on accidental spills. One of the main outputs of the project was the "OpenRisk Guideline for Regional Risk Management to Improve European Pollution Preparedness and Response at Sea", which was published in November 2018 and provides guidelines and methods for maritime risk management.

274 **HELCOM Maritime Assessment 2018:** The HELCOM Maritime Assessment 2018 covers a wide range of human activities at sea, from commercial maritime traffic to leisure boating and from fisheries to hazardous submerged objects. It describes distribution of activities at sea, developments over time, related environmental issues as well as future perspectives and scenarios. With regard to shipping, the Assessment highlights that many types of ship-based pollution have been effectively dealt with in the Baltic Sea over the last decades, including 90% reductions in both operational oil spills and sulphur oxide (SOx) emissions from ships exhaust gases. For other types of ship-based pollution, recent decisions will result in more reductions soon. Those decisions include banning of untreated sewage discharges by 2021 and a requirement of 80% reduction of nitrogen oxide (NOx) emissions for new ships built 2021 or later.

275 **The HELCOM MARITIME** Working Group Meeting of September 2018 agreed on the revised HELCOM Recommendations 33/1 on Unified interpretation in relation to access to and use of HELCOM AIS data and 28E/13 on Introducing economic incentives as a complement to existing regulations to reduce emissions from ships. Furthermore, discussions progressed inter alia on the update of the BSAP, marine litter, underwater noise and the development of the Green Team Reporting Mechanism and Method, which was established to find out the main barriers, obstacles and challenges hindering the development on green technologies and alternative fuels in the Baltic Sea shipping.

276 **Climate change:** The challenges presented by climate change are by their nature a regional concern, covering aspects from science to high level policy. This requires a regional and inclusive working structure to allow the challenges to be tackled in an effective manner. In 2018 a proposed process for dedicated climate change work within HELCOM was elaborated. The first steps in this process was the establishment of an Expert Network on Climate Change (EN CLIME), and to start preparing a facts sheet on effects and impacts of climate change in the region.

277 **Sturgeon Action Plan:** The HELCOM Action Plan for the Protection and Recovery of Baltic sturgeon *Acipenser oxyrinchus* aims to prevent the Baltic sturgeon from full extinction, and in the mid-term, to re-establish viable populations of the Baltic sturgeon in the same areas where it was historically found. It suggests effective protection measures and can therefore guide HELCOM and the Baltic Sea States to meet their commitments arising from the BSAP, as well as under other international agreements (e.g. the Bern and Bonn Conventions, CBD targets, and for EU Member States, the Habitats Directive).

278 **New HELCOM Recommendation on conservation of biotopes and habitats:** In 2018 significant progress was made to finalize the new HELCOM Recommendation on threatened biotopes and the Recommendation was finally adopted at 40th meeting of the Helsinki Commission in early 2019. The Recommendation recognizes that the threatened Baltic Sea habitats and biotopes may are not covered by existing regulations and can therefore require protection beyond the scope of existing measures in order to achieve the Aichi Targets, the Baltic Sea Action Plan (BSAP), and ,for EU Member States, the aims of the MSFD and Water Framework Directive (WFD). It also provides guidance on concrete ways that the Baltic Sea countries can use to ensure that threatened biotopes in their area recover and thrive.

279 **Monitoring guidelines for marine litter on beaches and continuous noise:** Monitoring guidelines for marine litter on beaches and continuous noise have been adopted in 2018. Furthermore, the HELCOM countries also agreed on the monitoring sub-programme for continuous noise. Work is on-going on arrangements for hosting of indicator data for continuous noise. Countries keep on annually reporting data to the registry of impulsive licenced events. To ease the process the reporting format to the OSPAR-HELCOM registry of underwater noise was updated in 2018.

280 **Marine litter :** Proving its commitment on marine litter issues at international level, HELCOM joined a collective statement by the Regional Seas Conventions and Programmes to the second meeting of the United Nations Ad Hoc Open-Ended Expert group on marine litter and microplastics. The Regional Action Plan on Marine Litter continues its implementation phase (latest follow up, from May 2018, can be found here). Advances made on abandoned, lost and otherwise discarded fishing gear (ALDFG) are to point out, where information on national activities on ALDFG have been compiled with the contribution of all HELCOM countries.

281 **FanpLESStic-sea project :** Actions on microplastics will greatly benefit from the project FanpLESStic-sea project – "Initiatives to remove microplastics before they enter the sea" where HELCOM is partner. The project was granted funding by the EU INTERREG Baltic Sea Region at the end of 2018 and will be running from January 2019 to June 2021. The project will focus on decreasing and removing microplastics in the Baltic Sea. The project will increase knowledge and understanding about dispersal pathways and sources through measurements in different flows in society, as well as cost-effective methods to reduce microplastics.

282 **Targets for underwater noise:** Effects of noise on the level of population are still very poorly understood, and good status for populations in relation to underwater noise has therefore not yet been defined. To guide further work, after a long and constructive discussion process, HELCOM agreed on the "HELCOM input to the process of establishing environmental targets for underwater noise". The HELCOM input is to serve as regional input to other fora, including other Regional Sea Conventions as well as European processes.

283 **HELCOM involvement in UN processes:** The HELCOM Secretariat and the HELCOM countries are engaged in the **Second World Ocean Assessment (**WOA II) via providing expertise to the writing teams and pool of experts, participation in WOA II workshops and offering synthetized information for the use in the assessment. An initiative of the UN Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects (Regular Process), WOA II aims to support informed decision-making for sustainable management of 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 HELCOM HOLAS II assessment and the resulting HELCOM State of the Baltic Sea report already cover most of the aspects foreseen in WOA II.

284 HELCOM also shared its experience with the **Sustainable Ocean Initiative (SOI)** of the Convention on Biological Diversity (CBD/UN Biodiversity) on developing and implementing policies for ocean governance at the regional level, as well as its knowledge on ecosystem-based maritime spatial planning and harmonized implementation of the IMO MARPOL Convention to limit discharges of sewage and air emissions from ships. Furthermore, HELCOM co-partnered with UN Biodiversity to describe nine Ecologically or Biologically Significant Marine Areas (EBSAs) in the Baltic Sea region. EBSAs are particularly useful in maritime spatial planning, especially for transboundary areas.

285 Since November 2018, the **BANOS CSA (Baltic and North Sea Coordination and Support Action)** project advances cooperation between the Baltic and North Sea sub-basins and is an important step towards a stronger involvement of the Baltic Sea region at a worldwide level,

notably on providing solutions for global ocean management. BANOS CSA is constituted of major research and innovation funds and organizations from 12 countries, as well as of four transnational bodies – HELCOM, ICES, JPI Oceans, and OSPAR. BANOS CSA follows up on the BONUS (Baltic Organisations' Network for Funding Science - EEIG) project.

286 The EU co-funded **Pan Baltic Scope** supports the development of coherent maritime spatial plans across the Baltic Sea region. HELCOM participates in actions related to advancing the use of the ecosystem approach in maritime spatial planning (MSP) It leads two activities within the project, 1) developing harmonized, cross-border approaches for cumulative impact assessments, and 2) developing methods on how to integrate social and economic analysis in MSP. HELCOM also participates in an activity on data sharing (HELCOM participating in the activity). The project that was launched in 2018 and will run through 2019.

The Regular Process for reporting and assessment of the state of the marine environment including socioeconomic aspects

287 UN Environment has focused its support to the second cycle of the Regular Process on awareness raising, resource mobilization, identification of additional experts for the Pool of Experts, technical and scientific support to the Bureau and the Group of Experts, hosting workshops and meetings of the writing teams, capacity-building and the scoping process for the assessment(s) of the second cycle. UN Environment provides scientific and technical support to the process and has nominated over 30 experts with varied background into the pool of experts through the Regional Seas mechanism and other expert mechanisms to support the process.

288 UN Environment through its Abidjan Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region provided support to the Government of Ghana in hosting the Regional Workshop for the South Atlantic (between the African and American coasts) and the wider Caribbean, held 3-4 December in ACCRA, Ghana. The workshop was held as part of implementation of the programme of work for the period 2017-2020 for the second cycle of the Regular Process. The objective was to support the development of the second world ocean assessment by enabling relevant members of writing teams to meet and collect regional-level data for the second World Oceans Assessment (WOA-2). The following chapters were discussed during the Workshop: Chapter 3: Scientific understanding of the ocean; Chapter 10: Changes in nutrient inputs to the marine environment; Chapter 13: Changes in erosion and sedimentation; Chapter 24: Developments in tourism and recreation activities; Chapter 31: Developments in the understanding of overall benefits from the ocean to humans.

289 UN Environment participated in a [13]Regular Process multi-stakeholder capacity building event held 24 - 25 January 2019 in New York. The event provided an opportunity to create awareness, collaboration and capacity in support of the Regular Process, and in the use of integrated assessments. In the panel discussion UNEP and made a presentation on “The importance of integrated assessments for decision making (science and policy perspectives)”. HELCOM, Black Sea Secretariat and other Regional Seas projects also participated in the event. The co-chairs [14]summary of the discussions on the way forward highlighted the need to: i) promote synergies and opportunities for cooperation and coordination with respect to capacity-building initiatives. ii) Enable regional capacity-and capability-building partnerships, including through the UNEP regional seas conventions framework, as an important way forward to foster coordination and cooperation in marine science across geographical regions encompassing States of varying levels of development”.

GESAMP activities in UN Environment

[13] https://www.un.org/regularprocess/content/multi-stakeholders
[14] https://www.un.org/regularprocess/sites/www.un.org.regularprocess/files/summary_of_discussions_multi-stakeholder.pdf

290 The GESAMP WG 40 study report on Guidelines for the monitoring and assessment of plastic litter in the ocean was released during the UNEA-4 meeting. The report is being transformed by the Open University into a training manual which will be used for the Training of Trainers in the Massive Open Online Course (MOOC) to support the implementation of a methodology for data collection for the target SDG 14.1. The report has also used in the Expert Consultation on monitoring marine litter and microplastics globally, regionally and nationally held 25-26 February 2019 and at a national inventory workshop held 27-29 February 2019 back to back in Kenya.

291 With the support of UNEP, the GESAMP International Workshop on assessing the risks associated with plastics and microplastics in the marine environment was held 21-23 May 2019 in Geneva, Switzerland. The overall objective was to address the environmental and human health risks associated with plastic litter and microplastics in the marine environment, from a biological, physical and chemical perspective. It was also to provide guidance to GESAMP on its future work programme with respect to assessing the risks from plastics and microplastics. 35 experts attended the workshop, from UN agencies including the World Health Organization (WHO), the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), Basel, Rotterdam and Stockholm Conventions (BRS), Food and Agriculture Organization (FAO), and the United Nations Industrial Development Organization (UNIDO), some international and regional bodies, independent experts from academia, industry and NGOs. The workshop was hosted by the Secretariat of the BRS Convention administered by UNEP.

292 UN Environment has joined the International Maritime Organisation (IMO) and the Food and Agriculture Organisation (FAO) as sponsors for the new Working Group (43) on Sea-based sources of marine litter including fishing gear and other shipping related litter. The overall objective of the Working Group, will be to build a broader understanding of sea-based sources of marine litter, in particular from the shipping and fishing sectors, including the relative contribution of different sources, analysis of plastic use and management within both industries and the range and extent of impacts. The Working Group will also work to build a more comprehensive understanding of specific types of sea-based sources of marine litter, and to guide interventions on these sources based on identified priorities, drawing upon the expertise of FAO, IMO, UNEP and other relevant organizations and experts.

United Nations decade of ocean science for sustainable development

293 As a member of UN-Oceans, UNEP participated in the first multi-stakeholder [15]Global Planning meeting organized by the Intergovernmental Oceanographic Commission of UNESCO (IOC/UNESCO) as a key event of the Preparation Phase for the Decade. The meeting was aimed at identifying: i) Knowledge gaps and ocean science priorities for the 2030 Agenda; ii) Existing relevant partnerships/networks/initiatives and gaps; iii) Cross-cutting issues and focus areas of the Decade; iv) Priorities in capacity-development/training; v) Priority topics and themes; vi) Potential partners and links to other initiatives such as regional workshops and meetings. Six plenary panel and working group discussions were organized around the principal outcomes of the Decade, along with a Communication task team discussion covered Clean Oceans; Predicted Oceans; Healthy and Resilient Oceans; Safe Oceans; Sustainably harvested and productive oceans and Transparent and Accessible Ocean.

294 The Ocean Decade offers scope for UNEP to engage in new strategic and technical collaborations to address and innovate marine and coastal sustainable development challenges and solutions, utilizing and advancing its science-policy work across several focal areas in new partnerships with many actors and capacities in relevant fields (including governments, public and private actors). The Decade aligns well with UNEP objectives to evolve, share and apply science-based policy and decision-making.

[15] https://en.unesco.org/1st-global-planning-meeting

Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)

295 The GPA continues to focus its efforts mainly on the three pollution source categories of nutrients, wastewater, and marine litter, through establishment and management of global partnerships, in response to the Manila Declaration. The GPA held its 4th Intergovernmental review Meeting in Bali in October 2018. The review meeting was attended by more than 240 delegates, representing over 60 states. The meeting also saw the participation of UN partner agencies, intergovernmental organizations observers, experts, the private sector and the academia. The meeting considered the review of the work of the Programme since the last intergovernmental review held in the Philippines in 2012, the outlook on future work and strategic options for management of the Programme, mandate and alignment to the UN Environment Assembly. The meeting concluded with a "Bali Declaration" where countries affirmed the need for continued focus on the priority marine pollution categories, namely marine litter, nutrients, and wastewater. The countries underscored the value of the work of the global partnerships associated with the three pollution categories with encouragement for strengthening. The meeting mandated the GPA Coordination Office to complete the review of the future options of the Programme for presentation at the next UN Environment Assembly (UNEA4) for consideration by countries.

296 The GPA of UN Environment has developed a new project document titled "Protecting the Marine Environment from Land-Based Pollution through Strengthened Coordination of Global Action." The project, launched in January 2019, will be implemented on a global level and includes partners such as international organizations, the private sector, and NGOs. It aims to strengthen responses to land-based pollution, enhance co-operation and foster action to tackle the issues related to wastewater pollution, nutrient management, and marine litter also through the key role of global partnerships, including the Global Wastewater Initiative (GW²I).

297 The GPA has organized side events during the 4th UN Environment Assembly, which was hosted by UN Environment from 10 to 15 March 2019 at its headquarters in Nairobi, Kenya. The events took place in the Clean Seas Tent, were all well attended and allowed the audience to interact with speakers and experts coming from different sectors directly, and across the entire globe. A cross-cutting event[16], aiming to touch upon the three main source categories of pollution tackled by the GPA, was organized to discuss the nexus between nutrients, wastewater, and plastic pollution.

Wastewater and the Global Wastewater Initiative (GW²I)

298 UN Environment through the GPA/Wastewater and together with the Bremen Overseas Research and Development Association (BORDA), who is also a member of the Global Wastewater Initiative (GW²I) and UN-Habitat has provided support to the Tanzanian government in developing guidelines and standards for decentralized wastewater management systems. The project aimed to support the scaling-up of decentralized sanitation solutions throughout Tanzania. The guidelines were finalized and presented before the local authorities for adoption and use.

299 UN Environment, through the GPA/Wastewater and the Law Division, has continued the implementation of demonstration projects for biodiversity conservation and local community development through tree planting supported by Korea Forest Service (KFS) in Benin, Ethiopia, Ghana, and Morocco. The projects in Ethiopia, Ghana and Morocco are ongoing.

300 UN Environment through the GPA/Wastewater continues to provide support in the implementation of the UNEA3 and UNEA4 resolutions on water pollution, marine litter and microplastics, protection of the marine environment from land-based activities, sustainable nitrogen management and other resolutions.

[16] http://web.unep.org/environmentassembly/session-nasty-nexus-nutrients-wastewater-and-marine-litter

301 A Massive Open Online Course (MOOC) titled “From Source to Sea to Sustainability. Integrated Cycle in Wastewater and Nutrient Management” was developed by UN Environment/GPA, Concordia University and the Loyola Sustainability Research Centre to raise awareness and build capacity on the two pollution streams. The MOOC was launched last year and has been rolled out in April 2019.

302 UN Environment, through the GPA/Wastewater and the Global Wastewater Initiative (GW²I) is organizing a series of webinars to enhance the understanding and recognition of wastewater as a resource as well as to expand knowledge generation, awareness raising and outreach on crucial issues related to sustainable wastewater management. The webinars also serve as an opportunity for the members of the Global Wastewater Initiative to share their expertise and experiences regarding critical issues related to sustainable wastewater management. In November 2018, the GPA/Wastewater organized the webinar[17] “Wastewater Reuse, a Second Life for an Essential Resource: the example of Greywater” in collaboration with The Grey Water Project, a member of the Global Wastewater Initiative (GW²I). The webinar focused on the aspect of wastewater reuse, particularly looking at the case of greywater. The speakers included Mr. Howard Kahan (United States Environmental Protection Agency – US EPA), Ms. Shreya Ramachandran (The Grey Water Project), and Mr. Salfiso Kitabo (Water.org) with fifty-five attendees participating in the event. As financing in wastewater remains a challenge, the webinar provided examples and good practices and aimed to trigger further action and raise awareness on the need for investing in the field of wastewater. In February 2019, the GPA/Wastewater, through the Global Wastewater Initiative (GW²I) has organized the webinar “Financing wastewater infrastructures: tools, mechanisms and best practices for a sustainable future[18],” focusing on wastewater infrastructures and the related aspect of financing. The speakers included Ms. Valerie Issumo (Prana Sustainable Water), Mr. Christopher Corbin (UN Environment Caribbean Programme), and Mr. Thierry De Oliveira (UN Environment). More webinars are scheduled to take place during 2019.

303 The ongoing African Development Bank (AfDB), UN Environment and GRID Arendal project titled “Wastewater Management and Sanitation Provision in Africa” aims at profiling the trends in wastewater management and sanitation delivery in Africa through a range of communication products. The GPA participated in the review workshop of the “Wastewater and Sanitation Atlas.” The Atlas is among the major outputs of the “Wastewater Management and Sanitation Provision in Africa” project, implemented together with the African Development Bank (AfDB) and GRID Arendal. From 6-8 May 2019 in Gaborone, Botswana, the GPA participated in the review workshop of the “Wastewater and Sanitation Atlas.” The Atlas is among the major outputs of the “Wastewater Management and Sanitation Provision in Africa” project, implemented together with the African Development Bank (AfDB) and GRID Arendal. The workshop gathered the lead authors, reviewers, representatives of the project partners, as well as government representatives, and experts from the academia, to further review the Atlas before finalization. The project partners also used this opportunity to address pending matters, gaps, and agree on the next steps to advance the finalization of the Atlas. The workshop was also a chance to explore possibilities for further collaboration among the participants. The project also envisages to identifying advocates who can bring attention to the issues of sanitation provision and wastewater management in Africa. In line with this, Rocky Dawuni, a famous singer from Ghana, has embraced the role of advocate for wastewater management.

304 On 27 April 2019, the GPA organized the “Joint Global Partnership on Nutrient Management (GPNM) and Global Wastewater Initiative (GW²I)”. The meeting brought together members of both partnerships for the first time. The participants shared their expertise, and discussed relevant topics related to both partnerships, such as reuse of wastewater in agriculture, technology, funding, policy, communication, and education, and highlighted good practices and their ongoing activities in these fields. The meeting paved the way for strengthened collaboration, and the next steps were

[17] https://www.unenvironment.org/events/un-environment-event/wastewater-reuse-second-life-essential-resource-example-greywater
[18] https://www.unenvironment.org/events/un-environment-event/webinar-financing-wastewater-infrastructures-tools-mechanisms-and-best

discussed. The following day, on 28 April 2019, the participants went on a field trip and had the opportunity to see the challenges and opportunities related to wastewater and nutrient management at the main wastewater treatment facility of Nairobi. Overall, the meeting was an excellent opportunity to foster synergies and explore opportunities for future collaboration among the two Partnerships.

305 The GPA/Wastewater through the Global Wastewater Initiative (GW²I) has organized side events during the 4th UN Environment Assembly, which was hosted by UN Environment from 10 to 15 March 2019 at its headquarters in Nairobi, Kenya. The events took place in the Clean Seas Tent, were all well attended and allowed the audience to interact with speakers and experts coming from different sectors directly, and across the entire globe. The events were all aimed at highlighting and discussing some of the current and most pressing challenges of wastewater management. For example, one event discussed the importance of the safe reuse of wastewater, highlighted the need for sustainable business models, and put forward best practices such as the reuse of greywater (http://web.unep.org/environmentassembly/session-innovative-solutions-wastewater-reuse). The event also saw the signature of a Memorandum of Understanding (MoU) between UN Environment and the Counties of Kisumu and Machakos in Kenya for jointly tackling the challenges related to wastewater management. Another event touched upon the emerging issue of plastic and microplastics and the speakers shared and discussed key findings, knowledge, and highlighted the need for methodologies to assess the presence of plastic, microplastics, and microfibers in wastewater and in the sludge (http://web.unep.org/environmentassembly/session-microplastics-wastewater-hidden-threat).

306 A Massive Open Online Course (MOOC) titled “From Source to Sea to Sustainability. Integrated Cycle in Wastewater and Nutrient Management[19]” was developed by UN Environment/GPA, Concordia University and the Loyola Sustainability Research Centre to raise awareness and build capacity on the two pollution streams.

307 UN Environment, through the GPA/Wastewater and the Global Wastewater Initiative (GW²I) is organizing a series of webinars to enhance the understanding and recognition of wastewater as a resource as well as to expand knowledge generation, awareness raising and outreach on crucial issues related to sustainable wastewater management. The webinars also serve as an opportunity for the members of the Global Wastewater Initiative to share their expertise and experiences regarding critical issues related to sustainable wastewater management. The first webinar titled “The need for innovative financial mechanisms for sustainable wastewater management,” hosted by UN Environment was held on 30 April 2018. A second webinar titled “The impact of land-based pollution on coral reefs: focus on nutrients, plastics and wastewater” was hosted by UN Environment on 24 May 2018. Two more webinars on the reuse of greywater and on the need for financing wastewater infrastructures were held in November 2018 and February 2019.

308 The GPA/Wastewater organized a mini workshop on the “polluter pays” principle in March 2018. The mini workshop explored the “polluter pays” principle from different perspectives, which triggered discussions around the benefits and challenges of implementing the principle as well as some possible undertakings for UN Environment.

Nutrient Management and the Global Partnership on Nutrients Management (GPNM)

309 Under the nutrient pollution portfolio, the Secretariat continues to support the Global Partnership on Nutrient Management (GPNM) within UN Environment’s Programme of Work. The GPNM, in collaboration with the GW2I supported through the GPA, delivered a relaunch of Massive Open Online Course (MOOC) on nutrients and wastewater management over the first quarter of 2019 to assist in the outreach and availability of web-based resources. Concordia University of Montreal, Canada developed the MOOC sourcebook and online platform, and administered the MOOC roll-out which had an uptake of just over 1,080 registrants from 170 countries.

[19] https://forum.susana.org/140-courses-including-online-courses-and-trainings/23084-massive-open-online-course-from-source-to-sea-to-sustainability-integrated-cycle-in-wastewater-and-nutrient-management-registrations-open-until-1-march-2019

310 Under the GEF-funded Global Nutrient Cycling (GEF-GNC) Project that is completed, a significant body of knowledge related to quantitative modelling approaches (based on tools such as Global NEWS model), on coastal nutrient enrichment has been generated with several published scientific journal articles available on the topic. Key collaborators to this work included IOC-UNESCO along with University of Utrecht, Washington State University and University of the Philippines. The nutrient load data is fully integrated in a Global Nutrient Management Toolbox that has also been developed under the project, along with a comprehensive suite of best field and policy management practices which is accessible through the Nutrientchallenge.org website. The watershed-based nutrient flux modelling for the Manila Bay watershed led by the Marine Science institute of the University of the Philippines is complete. The work supported the design of watershed BMPs and strategies for addressing nutrient loading into the receiving environment. Specific deliverables included the Environmental Atlas of Manila Bay, the Laguna de Bay ecosystem health report card (Philippines), the Management plan for the Manila Bay and State of Coast reports for provinces surrounding Manila Bay. Under the project Chilika Lake ecosystem health report card (India) was also developed.

311 A collaboration established with the World Resource Institute to prepare experience notes on the implementation highlights of the project and market the nutrient management toolbox to global users. GRID-Arendal was engaged to translate the key scientific outputs from the project to a suite of information products for wider audiences and decision makers in the formats that include information graphics, a map atlas and a story-map that focuses on Manila Bay. The work under the GEF-GNC Project is now being extended to support the development of the SDG 14.1 target indicator on nutrient pollution of the marine environment in collaboration with IOC-UNESCO and other partners under the guide of UN Environment's Science Division.

312 Completion of a project in Sri Lanka on reducing the risk of degradation of coral reef ecosystems by addressing nutrient, wastewater and other land-based sources of marine pollution. The project contributed to strengthening local and regional enabling environments to foster the uptake and adoption of innovative approaches in reducing threats to coral reefs from land-based pollution. This initiative was a contributor to the UNEA2 resolution on the protection of coral reefs and fed into activities under the 2018 International Year of the Coral Reef. Further, South Asian countries have agreed to develop a transboundary International Waters GEF funded project towards the protection of Coral reefs, Mangroves and Seagrass in Bay of Bengal Large Marine Ecosystem (BOBLME), Arabian Sea and then also partly in the Indian Ocean.

313 At the 4th Plenary of ***International Nitrogen Management System (INMS-4) Project***, the Committee of Permanent Representatives, along with representatives of relevant conventions participated in a high-level segment to commence the process of consideration of global policy options for integrated nitrogen management. Science-based community agreed to support counties take actions to address the impacts of reactive nitrogen in the environment.

314 Adoption of the 'Sustainable Nitrogen Management resolution' during UNEA-4 led by the Government of India. Member states recognized that reactive nitrogen has adverse pollution impacts on terrestrial, freshwater and marine environments. Poor nutrients (nitrogen and phosphorus) management contributes to world's food security. In the next two years, the GPNM will take the lead in facilitating better coordination of policies on the nitrogen cycle; explore sustainable options for nitrogen management; coordinate existing relevant platforms for assessment of improved nitrogen management; conduct capacity-building activities for policy-makers and practitioners; and support member states on informed decision-making on nutrients (nitrogen and phosphorus) management.

315 The 2018/19 edition of the UN Environment Frontiers Report highlighted - "The Nitrogen Fix: From Nitrogen Cycle Pollution to Nitrogen Circular Economy focusing on the emerging issues of environmental concern" in chapter 4 of the report.

316 The Joint Global Partnership on Nutrient Management (GPNM) and Global Wastewater Initiative (GW2I) meeting discussed how to strengthen the synergies between the two partnerships through; restructuring the composition of the steering committees so they are fit for purpose to deliver the expected progress; building on the momentum of already existing projects and initiatives (including existing good practices and experiences, for example, the Global Soil Partnership, or the Global Challenge Research Fund); ensuring effective science communication by the partnerships on the development of products and; creating a joint database by the two partnerships which will, in turn, be used by the International Nitrogen Management System for policy actions.

317 The Western Indian Ocean from land-based sources and activities' (WIOSAP) Project, in collaboration with the Global Programme of Action hosted a workshop on application of tools and approaches for the management of land-based pollution. Three specific tools were featured in the training; (1) the nutrient runoff calculator derived from the Global NEWS (Global Nutrient Export from WaterSheds) model that is contained in the GPNM nutrient management toolbox; (2) a wastewater technology matrix (screening assessment) tool developed by the Global Wastewater Initiative in association with the International Water Association (IWA), and (3) the ecosystem health report card that has been applied in GPNM-supported projects in India and the Philippines.

318 The 'Soil in the nexus' event during the 14th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD), discussion considered the unbalanced and geographically uneven access to and use of fertilizers (e.g. in the Africa region), and the need for fine-tuning best practices in nutrient use efficiency in accordance with the agro-ecological conditions. There is recognized need for better synergies between agriculture and environment ministries in designing mutually benefiting policies to effect for better results on the ground from both the perspective of food production and maintenance of ecosystem services.

319 UN Environment organized a technical exchange between experts from Laguna Lake Development Authority (LLDA) of the Philippines, Chilika Lake Development Authority (CDA) of India and national stakeholders concerned with preserving the environmental and water quality of Lake Naivasha in Kenya. This exchange was to facilitate the development of an Ecosystem Health Report Card (EHRC) in a replication effort for Lake Naivasha, based on work undertaken in India and the Philippines as part of the Project, that is executed by the Global Programme of Action with oversight by the Steering Committee of the GPNM.

320 UN Environment, under the Global Programme of Action (GPA) in association with IOC-UNESCO, brought together some 23 scientific experts, Regional Seas Programmes (HELCOM, NOWPAP, MAP) and earth observation specialists from NASA Ames Research Center and the European Space Agency working on the science of marine pollution indicators, data capture and dissemination, to advance the global methodology development on eutrophication and plastic debris assessment under SDG Target 14.1. target indicators, specifically, the index of coastal eutrophication potential (ICEP) and floating plastic debris, along with other relevant metrics. The meeting also explored the application of 'big data' through earth observation systems and how these can be applied in monitoring freshwater and coastal pollution. Participants considered the process to facilitate country adoption of a 'harmonized approach' to report on the SDG14.1 target.

321 The concern over the impact of climate change related to ocean temperatures and influences on the proliferation and persistence of harmful algal blooms will continue to be tracked under the nutrient management portfolio of the GPA. Efforts will continue toward improving the understanding of the phenomenon through research, while bolstering national measures to reduce nutrient loading (agricultural discharges, municipal wastewater) to the environment require continued, and in some areas, stepped-up attention. The sargassum proliferation events in the Caribbean and West Africa in recent years have been suggested by researchers to be potentially linked to this phenomenon. In the Caribbean, there is collaboration under the Caribbean Large Marine Ecosystem Project to develop a nutrient management strategy and in the West Africa region

under the Abidjan Convention, an alien invasive species response strategy that includes sargassum management has been developed.

Marine Litter and the Global Partnership on Marine Litter (GPML)

322 One of the main focuses of the GPA during the period under review was continued development of the Global Partnership on Marine Litter (GPML) which is a voluntary open-ended partnership for international agencies, governments, businesses, academia, local authorities, and civil society. As well as supporting the Global Partnership on Waste Management, GPML seeks to protect human health and the global environment through several specific objectives, with reduction and management of marine litter as its main goal. UN ENVIRONMENT provides the Secretariat for the GPML in line with the mandate received in the "*Manila Declaration on Furthering the Implementation of the GPA'* and leads on the focal area on land-based sources of marine litter. FAO and IMO lead the focal area on sea-based sources of marine litter. Much support has been provided to various organizations, including Regional Seas Conventions and Action Plans. Regional nodes for the GPML have been established in the Northwest Pacific, co-hosted by the Northwest Pacific Environmental Cooperation Centre and the NOWPAP Secretariat, and the Wider Caribbean Region, hosted by the Gulf and Caribbean Fisheries Institute and the Cartagena Convention Secretariat.

323 The first meeting of the Ad Hoc Open-Ended Expert Group was held in United Nations, Nairobi, Kenya from 29 to 31 May 2018. The Ad Hoc Open-Ended Expert Group was established in response to UNEP/EA.3/Res.7 Marine Litter and Microplastics. It was attended by 266 participants, representing 72 member States, 9 intergovernmental organizations and 28 observers representing major groups and stakeholders accredited to the United Nations Environment Assembly of the United Nations Environment Programme. The second meeting was held in Geneva, Switzerland from the 3 to 7 December 2018[20].

324 UN Environment and the Open University have created a Massive Open Online Course (MOOC) on Marine Litter. It is part of Clean Seas and contributes to the goals of the Global Partnership on Marine Litter. The MOOC on marine litter strives to teach students through action-oriented learning how they can apply successful and inspiring activities to their own local context, regardless of their profession or location. The course will present different options and tools to combat marine pollution such as the use of effective and legitimate tools like the Honolulu Strategy. The course will provide examples and case studies that will inspire leadership at all levels, thereby increasing awareness of and stimulating creative solutions to marine litter problems. Moreover, this course will benefit policymakers, practitioners, and managers who wish to connect with other professionals in order to enhance their knowledge of marine litter issues. The Course is on-going.

325 The COBSEA IGM-24 took place in Bali from 17 to 21 June 2019. The following were the outcomes of the meeting. A revised COBSEA Regional Action Plan on Marine Litter was adopted together with a Terms of Reference of the COBSEA Working Group on Marine Litter. A request was put to the Secretariat, with the Working Group on Marine Litter, to develop an East Asian Seas Regional Node of the GPML, for consideration by the 25th IGM and to continue developing the project pipeline, including projects to support implementation of RAP MALI. The "Guidance on the Establishment and Operation of COBSEA Regional Activity Centres" was adopted and Indonesia was encouraged to further develop the Regional Capacity Centre for Clean Seas, aiming at making it a COBSEA Regional Activity Centre – this is for consideration at the 25th IGM. Also, the work plan and budget for the 2019-2020 biennium was approved, and Vietnam offered to host the 25th IGM in 2021.

Basel, Rotterdam and Stockholm Conventions

[20] https://papersmart.unon.org/resolution/second-adhoc-oeeg

326 The Basel,[21] Rotterdam[22] and Stockholm[23] (BRS) conventions share the common objective of protecting human health and the environment from hazardous chemicals and wastes. Working in synergies, the conventions promote environmentally sound management of chemicals and wastes throughout their lifecycles. Under the Basel Convention, this is achieved by the strict control of transboundary movements of covered wastes and through obligations pertaining to minimizing waste generation and ensuring their environmentally sound management. The Stockholm Convention requires each Party to prohibit or restrict the production and use of persistent organic pollutants (POPs), reduce and ultimately eliminate the unintentional releases of POPs and ensure that wastes consisting of, containing or contaminated with POPs are managed in an environmentally sound manner.

327 As called for in UNEA resolution 3/7, the Basel and Stockholm conventions have been increasing the actions towards preventing and reducing marine litter and microplastics and their harmful effects in cooperation with relevant organizations. The BRS Secretariat participated in the first and second meetings of the UNEP open-ended ad hoc expert group on marine litter and microplastics held in Nairobi from 29 to 31 May 2018 and in Geneva from 3 to 7 December 2018. The regional centres of the conventions[24] have been undertaking activities to address marine plastic litter and microplastics. The BRS Secretariat hosted the GESAMP International Workshop on assessing the risks associated with plastics and microplastics in the marine environment from 21 to 23 May 2019 in Geneva.

328 At its meetings held from 29 April to 10 May 2019 in Geneva,[25] the Conferences of the Parties to the BRS conventions considered issues on marine plastic litter and microplastics under various agenda items such as international cooperation, financial resources, technical assistance and information exchange. The Conference of the Parties to the Basel Convention adopted decision BC-14/12 by which it amended Annexes II, VIII and IX to the Convention,[26] with the objectives of enhancing the control of the transboundary movements of plastic waste and clarifying the scope of the Convention as it applies to such waste.

329 The amendment to Annex VIII inserting a new entry A3210 clarifies the scope of plastic waste presumed to be hazardous and therefore subject to the prior informed consent (PIC) procedure. A group of cured resins, non-halogenated and fluorinated polymers, as well as mixtures of plastic wastes consisting of polyethylene (PE), polypropylene (PP) or polyethylene terephthalate (PET) are listed in a new entry B3011 in Annex IX and remain excluded from the PIC procedure, provided that they are destined for recycling in an environmentally sound manner and are almost free from contamination and other types of wastes. The amendment to Annex II inserting a new entry Y48 covers all plastic waste, including mixtures of such wastes unless these are hazardous (as they would fall under A3210) or presumed not to be hazardous (as they would fall under B3011). The new entries will become effective as of 1 January 2021. More information on the amendment can be obtained from the Secretariat.[27]

330 The Basel Convention established a new Partnership on Plastic Waste[28] and invited nomination of members of the working group by 31 August 2019.[29] The goal of the Partnership is to improve and promote the environmentally sound management of plastic waste at the global, regional and national levels and prevent and minimize their generation. The technical guidelines

[21] http://www.basel.int/.

[22] http://www.pic.int/.

[23] http://www.pops.int/.

[24] http://www.brsmeas.org/tabid/2636/Default.aspx.

[25] http://www.brsmeas.org/2019COPs/Overview/tabid/7523/Default.aspx.

[26] "Hazardous wastes" and "other wastes" subject to the PIC procedure under the Basel Convention are defined in Annexes I, II, III and VIII. Wastes listed in Annex IX are presumed not to be hazardous and, as such, not subject to the PIC procedure.

[27] Email: brs@brsmeas.og.

[28] UNEP/CHW.14/INF/16/Rev.1; http://www.basel.int/tabid/7520/Default.aspx.

[29] http://www.basel.int/tabid/8026/Default.aspx.

for the identification and environmentally sound management of plastic wastes and for their disposal[30] will be updated and other guidance documents to address plastic waste under the Basel Convention will be developed. The Secretariat is undertaking technical assistance activities on marine plastic litter and microplastics thanks to generous financial support by the Governments of Norway and Sweden.

UNEP World Conservation Monitoring Centre[31] (UNEP-WCMC)

331 The UN Environment World Conservation Monitoring Centre (UNEP-WCMC) works with scientists and policy makers worldwide to place biodiversity at the heart of environment and development decision-making to enable enlightened choices for people and the planet. During the period under review UNEP-WCMC has among others provided support to Nairobi Convention, COBSEA and MAP.

332 The UNEP-WCMC is supporting UN Environment to generate knowledge and build capacity to undertake area-based planning in **Areas Beyond National Jurisdiction (ABNJ)** in two pilot regions, the Western Indian Ocean and the South East Pacific. At the 10th Conference of Parties to the Nairobi Convention, pursuant to Decision CP.9/10.2, Parties agreed to cooperate with existing regional institutions on ocean governance and the conservation of marine biodiversity in adjacent areas beyond national jurisdiction. Further, Decision CP.9/10.3 Parties agreed to collaborate with partners, to prepare a report on the feasibility, options and scenarios for the establishment of marine protected areas in areas beyond national jurisdiction.

333 The work of UNEP-WCMC, involves developing and testing area-based planning tools in ABNJ High Seas within the Western Indian Ocean. Through the ABNJ project multi-stakeholder workshops have been carried out to develop and test a Marine Spatial Planning Framework that could be applied in ABNJ in the future. To develop this framework, a range of output have been produced that have helped the Nairobi Convention and its Member States engage further in ABNJ-related issues, including marine biological diversity of areas beyond national jurisdiction (BBNJ) discussions.

334 As part of a collaborative partnership, UNEP-WCMC are working with the Association of Southeast Asian Nations (ASEAN) Working Group on Coastal and Marine Environment (AWGCME) Secretariat, COBSEA, the ASEAN Centre for Biodiversity (ACB), Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) and Ramsar Secretariat to develop an open-access online data platform containing high quality, accessible regional marine and coastal data. At present, regional coastal and marine ecosystem data is not synthesised in a coordinated manner, hindering efforts. The application of such a platform would therefore provide cross-cutting benefits for regional coastal and marine resource management, serving ASEAN member states, government agencies, resource managers and the corporate sector - all of whom will continue to be consulted throughout the project. The improved access to regional data and knowledge products will strengthen the resilience of the ASEAN community by enhancing capacity to mitigate climate change and natural disasters, to identify opportunities for sustainable development, and to strengthen conservation and wise use of marine and coastal ecosystems and associated ecosystem services.

335 The UNEP-WCMC is also supporting efforts to build capacity for monitoring of the state of the environment and biodiversity around the Mediterranean Sea. Capacity building efforts are focused on the North African region. Increased monitoring capacity will support the implementation of the Integrated Monitoring and Assessment Programme and related Assessment Criteria (IMAP) of the UN Environment Mediterranean Action Plan (UNEP/MAP).

[30] UNEP/CHW.6/21.

[31] https://www.unep-wcmc.org/

336 The work of UNEP/MAP, under the Barcelona Convention, is guided by the Ecosystem Approach (EcAp), with the objective of achieving Good Environmental Status of the Mediterranean Sea and coast. The implementation of EcAp in the Mediterranean Sea is based on integrated assessment and monitoring of the marine and coastal environment (IMAP), and integration of the resulting information into decision making processes. A key mechanism for supporting the implementation of the EcAp and IMAP is an institutionalised Science-Policy Interface (SPI). Guidance for strengthening, structuring and sustaining the Science-Policy Interface for EcAp and IMAP is being developed by the UNEP/MAP Regional Activity Centre Plan Bleu. UNEP-WCMC is supporting this process as part of an expert SPI Advisory Group.

World Meteorological Organization (WMO)

337 WMO is the authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources. WMO contributes to ocean-related issues through the observation of the oceans, the climate and the composition of the atmosphere; Earth and climate system research ; development and delivery of services for disaster risk reduction, including marine hazards; and provision of science-based information and tools for policy makers and the general public, as well as for the assessment of effects on ecosystems, at regional and global levels.

338 The eighteenth World Meteorological Congress (Cg-18, Geneva, 3–14 June 2019) adopted a historical reform of the WMO constituent bodies to embrace a more comprehensive Earth system approach, with a stronger focus on water resources and the ocean, more coordinated climate activities and a more concerted effort to translate science into services for society. It paved the way for greater engagement with the rapidly growing private sector and more structured collaboration with development agencies.

339 The Congress approved a new WMO strategic plan 2020-2023.The Strategic Plan sets five long term goals and top overarching priorities including:

1. Enhancing preparedness for, and reducing losses of life and property from hydrometeorological extremes,
2. Supporting climate-smart decision making to build resilience and adaptation to climate risk,
3. Enhancing the socioeconomic value of weather, climate, hydrological and related environmental services

340 The new governance structure is aligned to the strategic plan. Under the approved reforms, WMO different technical commissions will be replaced by two more coordinated commissions to streamline work and maximize impact, namely the Commission for Observation, Infrastructure and Information Systems and the Commission for Weather, Climate, Water and Related Environmental Services and Applications. The Research Board on Weather, Climate, Water and the Environment will translate the strategic aims of WMO and decisions of the Council and Congress into overarching research priorities and ensures the implementation and coordination of the research programmes to achieve these priorities. The Scientific Advisory Panel will draw up opinions and recommendations to Congress and to the Executive Council on matters concerning WMO research strategies and the optimal scientific directions to support the evolution of its mandate in weather, climate, water and related environmental and social sciences.

341 The ocean plays an increasingly important role in all WMO activities and needs to be mainstreamed in its technical and scientific work under an Earth system perspective. Considering this, the collaboration between the meteorological and oceanographic communities is expanding and this requires a higher level of coordination and a strategic interface with both the governing bodies and the technical and scientific bodies of WMO and Intergovernmental Oceanographic Commission (IOC). Congress, through Resolution 9 (ex 4(4)/3), and the 30th IOC Assembly, through Resolution XXX-2, decided to:

1. Disband the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) established in 1999;

2. Incorporate JCOMM functions and activities in existing and new WMO technical commissions and existing IOC bodies and co-sponsored entities such as the Global Ocean Observing System (GOOS);

3. Encompass the full spectrum of WMO-IOC collaborative activities in observation, data management, research and services;

4. Establish the Joint WMO-IOC Collaborative Board, as a high-level, strategic coordination mechanism.

342 The Joint WMO-IOC Collaborative Board will coordinate the collaborative development, integration and implementation of the activities related to oceanographic and meteorological observation, data and information management, services, modelling and forecasting systems as well as research and capacity development.

Marine observations and applications

343 WMO continues strengthening observational networks by the implementation of the WMO Integrated Global Observing System (WIGOS) and the WMO Information System (WIS) and observing networks in collaboration with partners. WMO's strategic focus on earth system approaches will demand bolstered efforts in ocean research, observation, modelling. WMO is particularly strengthening its engagements with the IOC-WMO-UN Environment-ICS Global Ocean Observing System (GOOS) and approved the GOOS Strategy 2030. For instance, GOOS continues to improve its capabilities in climate- and ocean-related services, and recognizes the importance of coastal observations and links to products for societal benefits. The physical, biogeochemical and biological components of the GOOS support the ocean component of the Global Climate Observing System (GCOS)[32]. The Cg-18 supported the establishment of a node of a distributed GOOS Office located within WMO through the consolidation of existing ocean observing activities at WMO, and additional effort to facilitate functional connections between WMO Technical Commissions and GOOS and to integrate ocean observations in WIGOS.

344 GCOS is working towards the next update to its status report (in 2021) and Implementation Plan (in 2022). The programme had an all panels meeting in March 2019 in Marrakech, with a focus on the major climate budgets and cycles; Energy, Water, and Carbon; particularly how to integrate observation requirements and approaches across the Atmosphere, Ocean and Terrestrial domains. Additionally, the panels considered how to improve global biosphere observations, and the monitoring of extremes. A list of seven global climate indicators haves been agreed and promoted to be used to communicate to the widest community the scope and rate of changes to the climate: global surface temperature, ocean heat, atmospheric carbon dioxide, sea level, ocean acidification, sea ice extent in the Arctic and Antarctic, and glacier change.

345 GCOS and GOOS are taking a strong role in organizing the 3rd Decadal Ocean Observing Conference, OceanObs'19, to shape priorities for sustained observations for the next decade.[33] They are also running thematic observing system design and review projects on e.g. Heat, Freshwater and Carbon Storage, Oxygen Minimum Zones. In addition, GOOS are considering observation requirements for pollutants.

346 WMO continued providing assistance to Members to improve marine meteorological and coastal area service provision. This is, in part, fulfilling the WMO requirements under the International Convention for the Safety of Life at Sea (SOLAS), including the regular provision of meteorological warnings and forecasts to ships at sea, also for the Polar regions and links to the Polar Code. WMO is also collaborating with partner organizations such as the IOC-UNESCO to

[32] Co-sponsored by WMO, IOC, the International Council for Science (ICSU) and the United Nations Environment Programme (UN Environment).
[33] See www.oceanobs19.net.

further develop, optimize and maintain in situ marine meteorological and oceanographic observing networks. These in situ observations, complemented by satellite and remote sensing technology, are required for applications such as weather forecasting and operational meteorology, monitoring, understanding and prediction of climate variability and climate change on various time scales, ocean forecasting and marine services activities. WMO is also working with partners to facilitate improved data sharing.

347 Noting the IOC of UNESCO Decision EC-XLIX/3.4, Part III, under IOC and WMO guidance, the Data Buoy Cooperation Panel (DBCP) developed a regionally relevant education and outreach strategy (Strategy) that could be jointly implemented by IOC and WMO and their Member States, the Food and Agriculture Organization of the United Nations (FAO), the fisheries sector and other relevant organizations in order to substantially reduce damage through vandalism or interference with ocean data buoys (DBCP Technical Document No. 58).[34]. DBCP through its Task Team on Buoy Vandalism take the lead to integrate the vandalism prevention information in the capacity building workshops and to create a repository of education material available nationally for broader use. The Strategy document is now available in English and Spanish and can make it available in other languages as required. At 34th DBCP session in 2018 (DBCP-34), Task Team on Buoy Vandalism was requested to develop an implementation plan responding to the Strategy. DBCP-34 further requested JCOMM to establish a cross-cutting Task Team to discuss the strategy; provide any existing materials, tools and products of communication on vandalism awareness in order to prepare a guideline for new outreach materials. DBCP will continue annual reporting of vandalism events on data buoys to track progress toward implementation of the vandalism preventative measures.

Climate science and the oceans

348 A significant body of oceanographic research of direct benefit for decision-making in climate related risks is spearheaded and coordinated by the WMO/IOC-UNESCO/International Science Council co-sponsored World Climate Research Programme (WCRP). EC-71 (Geneva, 17–19 June 2019) adopted the new Strategic Plan 2019-2028 of WCRP that includes advanced research on the global carbon cycle and carbon budgets. Through its scientific leadership to consolidate global and regional efforts to understand the dynamics, the interaction and the predictability of the coupled ocean-atmosphere system, significant improvement has been made in understanding climate variability and changes, as well as the benefit for society and the environment in which we live – such as predictive experiments for the future state of the climate system and how it will evolve under different emission scenarios. The implementation of the Coupled Model Intercomparison Project phase 6[35] (CMIP6) is now well underway with a dedicated Carbon Dioxide Removal Model Intercomparison Project (CDRMIP) which could inform ocean fertilization studies in the future.

349 WCRP through its CLIVAR (Climate and Ocean) Core Project, with project offices in China and India, increased focus on improving understanding of regional predictions, and how El Niño will change under a changing climate. WCRP's Regional Sea Level and Coastal Impacts has focused on the co-design of activities with coastal managers and policy makers. In particular during 2019 there will be a number of focused workshops, for example on "sea level science for services" to explore what science can provide in relationship to coastal zone management (to be held in Orleans, France in November 2019) and on the importance of land subsidence on a global scale. It was felt that a Sea Level Conference should be held in 2022/2023, with robust engagement of decision makers.

Monitoring and mitigating climate change

350 WMO released its *Statement on the state of the global climate in 2018* (issued in March 2019).[36] According to the *Statement* the year 2018 was the fourth warmest year on record, with average global temperature reaching approximately 1 °C above pre-industrial levels. 2015–2018

[34] See http://www.jcomm.info/DBCP-TD-58.
[35] See https://www.wcrp-climate.org/wgcm-cmip/wgcm-cmip6
[36] See https://library.wmo.int/doc_num.php?explnum_id=5789

were the four warmest years on record, confirming that the long-term warming trend continues. It also examined other long-term indicators of climate change such as increasing CO_2 concentrations, sea level rise, shrinking sea ice, ocean heat content and ocean acidification

351 Sea-surface waters in a number of ocean areas were unusually warm in 2018, including much of the Pacific with the exception of the eastern tropical Pacific and an area to the north of Hawaii, where temperatures were below average. The western Indian Ocean, tropical Atlantic and an area of the North Atlantic extending from the east coast of the United States were also unusually warm. Unusually cold surface waters were observed in an area to the south of Greenland, which is one area of the world that has seen long-term cooling.

352 Sea level continues to rise at an accelerated rate. Over the period January 1993 to December 2018, the average rate of rise was 3.15±0.3 mm/yr, while the estimated acceleration was 0.1 mm/yr. Accelerated ice mass loss from the ice sheets is the main cause of the global mean sea-level acceleration. In the past decade, the oceans have absorbed around 30% of anthropogenic CO_2 emissions leading to ocean acidification. Ocean heat content is at a record high. Indeed, 2018 set new records for ocean heat content in the upper 700 m (data since 1955) and upper 2 000 m (data since 2005), exceeding previous records set in 2017. Arctic and Antarctic sea-ice extent is well below average. Extreme weather had an impact on lives and sustainable development on every continent.

353 The Global Atmosphere Watch (GAW) continues to assess the latest trends and atmospheric burdens of the most influential long-lived greenhouse gases (LLGHGs). Results are published in WMO/GAW Annual Greenhouse Gas (GHG) Bulletins. WMO released its *Greenhouse Gas Bulletin 2017*[37] in November 2018. The latest analysis of observations from the WMO/GAW network shows that globally averaged concentrations calculated from this in situ network for carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) reached new highs in 2017, with CO_2 at 405.5 ± 0.1parts per million (ppm), CH_4 at 1 859 ± 2 parts per billion (ppb) and N_2O at 329.9 ± 0.1 ppb, which corresponds to respectively 146%, 257% and 122% of pre-industrial (before 1750) levels. The increase in CO_2 from 2016 to 2017 was smaller than that observed from 2015 to 2016 and practically equal to the average growth rate over the last decade. The influence of the El Niño event that peaked in 2015 and 2016 and contributed to the increased growth rate during that period sharply declined in 2017.

354 At the 17th World Meteorological Congress, WMO adopted a resolution on the implementation of the Integrated Global Greenhouse Gas Information System (IG^{3}IS)[38] with the aim to expand the observational capacity for GHGs, extend it to the regional and urban domains, and develop the information systems and modelling frameworks to provide information about GHG emissions to society. The implementation of IG^{3}IS fundamentally relies on the globally harmonized observations of GHGs, including in the oceans, and will require the development of high resolution and complex observing systems, modelling tools and data assimilation techniques. The WMO Executive Council approved IG^{3}IS Science Implementation Plan at its 70th Session in June 2018. IG^{3}IS was mentioned as a framework to improve estimates of GHG concentrations and fluxes by the 50th session of Subsidiary Body for Scientific and Technological Advice[39] (SBSTA,) and in the 2019 Refinement to the 2006 Guidelines[40] for National Greenhouse Gas Inventories adopted and accepted during the 49th Session of the IPCC in May 2019 (Volume I, Chapter 6)

Atmospheric composition information in support of marine ecosystem research and assessment

[37] See https://library.wmo.int/doc_num.php?explnum_id=5455
[38] WMO, 2016. "Integrated Global Greenhouse Gas Information System (IG3IS)". http://www.wmo.int/pages/prog/arep/gaw/ghg/IG3IS-info.html

[39] See https://unfccc.int/documents/196717
[40] See https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html

355 GAW is well advancing with activities outlined in the GAW Implementation Plan for 2016-2023 that places an increased emphasis on the delivery of added-value and cross-cutting products and services that are relevant to society, including for example climate, weather forecasting, ecosystem sustainability, human health, mega-city development, agricultural productivity and many more. The Cg-18 adopted Resolution 60 (ex 7.1(2)/1 on Future WMO research and supporting activities that refers to the recently established project within the GAW Programme on the development of the global maps of the total deposition to address the risks for food security and biodiversity. This project builds on the previous successes of "A global assessment of precipitation chemistry and deposition of sulfur, nitrogen, sea salt, base cations, organic acids, acidity and pH, and phosphorus" delivered in 2014 and the work of the WG38 of GESAMP.

356 WMO/GAW has been a long-time sponsor of GESAMP's Working Group on The Atmospheric Input of Chemicals to the Ocean (WG 38). WG 38 has published numerous studies related to the impact of atmospheric deposition of anthropogenic nitrogen to the ocean. Following the publication of the papers resulting from the 2013 workshop on the impacts of atmospheric nitrogen deposition to the ocean, WG 38 prepared a synthesis of the results from the scientific papers derived from that workshop. That report was reviewed by GESAMP and published by WMO in early 2018 as GESAMP Reports and Studies No. 97, The Magnitude and Impacts of Anthropogenic Atmospheric Nitrogen Inputs to the Ocean. WG 38 is now completing its focus on two activities approved by GESAMP at its 42nd session. This included two simultaneous workshops held at the University of East Anglia, UK, 27 February to 2 March, 2017: 1) The changing atmospheric acidity and the oceanic solubility of nutrients; and 2) The impact of ocean acidification on fluxes of non-CO2 climate-active species. Four papers have been published in the peer-reviewed scientific literature from these workshops, and two more will be submitted shortly. A preliminary planning meeting was held for a possible new WG 38 workshop in 2020 entitled "The Atmospheric Input of Chemicals to the Ocean – Management and Policy Implications". This workshop would bring together appropriate players to discuss the management and policy implications of current knowledge about atmospheric inputs of nutrients and possibly other substances to the ocean and their interactions and impacts within the marine environment. See the report from the co-chairman of Working Group 38 submitted to GESAMP 46 for details.

Decade of Ocean Science for Sustainable Development (2021-2030) and United Nations Ocean Conference 2020

357 As a contribution to the planning phase (2019–2020) of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030), WMO organized a technical workshop on "Enhancing ocean observations and research, and the free exchange of data, to foster services for the safety of life and property" (Geneva, 5-6 February 2019). The key outcomes are as follows:

1. The Workshop highlighted the relevance of WMO activities and applications to address socio-economic benefits, including in support of safeguarding life and property at sea;

2. The workshop agreed on the critical variables and observations gaps in ensuring Adequate Marine Meteorological and Oceanographic Observations and Data Coverage for the Safety of Navigation and the Protection of Life and Property in Coastal and Offshore Areas (including EEZs). The Resolution presented to Cg-18 recognized that there is no regulation in place for the collection of marine meteorological and oceanographic measurements within EEZs in support of operational applications of WMO, while the IOC Guidelines for the Implementation of Resolution XX-6 of the IOC Assembly Regarding the Deployment of Profiling Floats in the High Seas within the Framework of the Argo Programme (IOC Resolution EC-XLI.4) are operated effectively and fully consistently with UNCLOS;

3. For data to have full benefit (e.g. for hazards, cyclones etc.), the Workshop recommended to have broader use and exchange of ocean data;

4. The workshop promoted partnership with the private sector to integrate data from them for delivery of Earth system approaches/climate services, and proposed initiating a pilot project with the World Ocean Council (WOC);

5. The workshop agreed on a way forward for future collaboration between WMO and IOC regarding facilitating the making of oceanographic observations in coastal regions in support of Earth System Prediction and climate services; and

6. The workshop recognized the importance of Observing System Simulation Experiments (OSSEs) and sensitivity analyses to be used to investigate the importance of data collected within EEZs. The workshop proposed conducting a pilot activity in this regard. Such activity will be a perfect candidate for the UN Decade of Ocean Science for Sustainable Development.

358 As a contribution to the preparations for the United Nations Ocean Conference 2020 and the United Nations Decade of Ocean Science for Sustainable Development, WMO, as part of Cg-18 organized an “Ocean Dialogue” on ocean information to deliver weather, marine and climate services for a resilient and sustainable blue economy. The Congress adopted Resolution 66 (ex 7.3(1)/2) – United Nations Ocean Conference 2020 emphasizes the priority of ocean science, based on sustained observation and information sharing, for delivering enhanced services to strengthen the resilience of societies to the socioeconomic consequences of extreme weather, climate, water and other environmental events, and underpin their sustainable development.

359 As a further contribution to the Decade, WMO and the International Maritime Organization (IMO) have started preparations to organize the International Symposium on Extreme Maritime Weather: Towards Safety of Life at Sea and Sustainable Blue Economies, which will be held at IMO Headquarters from 23 to 25 October 2019. The Symposium, through a programme of presentations and discussion sessions aims at finding possible solutions to the risks created by extreme maritime weather events – those which are dangerous to any ship at sea and are a threat to life, property and the marine environment, notwithstanding the economic impacts to the global blue economy. Provisional themes of the Symposium include, among others: extreme maritime weather; SOLAS Convention requirements; end-user requirements; ship observations for met-ocean information; utilization of available and emerging technology for improved navigation; and earth-ocean prediction capability and forecasts at sea;

Intergovernmental Oceanographic Commission (IOC of UNESCO)

Global Ocean Science Report (GOSR)

360 The first Global Ocean Science report (GOSR-I), was launched on 8 June 2017, and assessed for the first time the status and trends in ocean science capacity around the world. The GOSR-I offered a global record of how, where, and by whom ocean science is conducted. The GOSR-I is about generating knowledge, helping to protect ocean health, and empowering society to support sustainable ocean management in the framework of the United Nations 2030 Agenda.

361 The GOSR-I identified and quantified the key elements of ocean science at the national, regional and global scales, including workforce, infrastructure and publications. It represents the first collective attempt to systematically highlight opportunities as well as capacity gaps to advance international collaboration in ocean science and technology. The GOSR-I is a resource for policy-makers, academics and other stakeholders seeking to harness the potential of ocean science to address global challenges.

362 In Decision IOC-XXIX/5.1, the IOC Assembly requested the IOC Executive Secretary to present a proposed implementation plan for conducting the second edition of the GOSR to the

Executive Council at the 51st session (Paris 3–6 July 2018) and to invite Member States through a Circular Letter to convey their views on lessons learnt from the implementation of the first GOSR, including areas where the process could be improved.

363 The GOSR-II will be published in concomitance with the second United Nations Ocean Conference in 2020. The IOC Secretariat aims to expand the national and regional information assessed, analysed and supported by an online questionnaire and data portal. In fact, a more frequent mechanism to collect and deliver the requested information will be needed. This is achieved through the development of a GOSR data portal. Data submission by Member States is expected to take place every two years, on the basis of a dedicated questionnaire. This data portal will feature all types of data presented in the first edition of GOSR; additional data from relevant existing databases and other relevant published reports will be relied upon as appropriate for quality assurance and quality control purposes. This repository is the foundation for a data portal. The fully developed data portal will allow submission and retrieval of 'raw data', metadata, and literature. The collection of new data will be organized at regular time intervals, i.e. every two years. The development of a user-friendly interface and multiple visualization possibilities will allow multiple stakeholders, including scientists, civil society, policy makers and politicians to utilize and communicate the results of the first and subsequent GOSR editions in ways adapted to their specific needs.

364 As acknowledged by the Inter-agency Expert Group on SDG Indicators of the UN Statistical Commission (IAEG-SDG), part of the information provided in the GOSR contains the data needed to report towards SDG Target 14.A (14.A.1 indicator: Proportion of total research budget allocated to research in the field of marine technology), which deals with increasing scientific knowledge, developing research capacity and the transfer of marine technology. The IAEG-SDG at its sixth session in November 2017 further approved that the related indicator 14.A.1 methodology is tested and upgraded it from Tier III[41] to Tier II[42] (see also IOC/EC-LI/2 Annex 6).

UN Decade of Ocean Science for Sustainable Development

365 Building on the efforts of IOC Member States and the IOC Secretariat, the UN General Assembly proclaimed in December 2017 the UN Decade of Ocean Science for Sustainable Development from 2021 to 2030. The period 2018–2020 will focus on the preparation of the Implementation Plan for the Decade, which will encompass a *Science Plan* as well as an *Engagement and Communication Plan, a Business Plan and a resource mobilization Plan*. The IOC was tasked by UNGA at its 72nd session with the preparation of the Implementation Plan in *"consultation with Member States, specialized agencies, funds, programmes and bodies of the United Nations, as well as other intergovernmental organizations, non-governmental organizations and relevant stakeholders."*

366 The strategic approach to the Decade will be transformative. The ocean science community as well as other relevant stakeholders should be willing to think beyond "business as usual" and to aspire for real change, whether in relation to the depth of knowledge related to the ocean, or in the way cooperation and partnerships are leveraged in support of sustainable development and healthy ocean. The IOC Secretariat, supported by the IOC Governing bodies, developed the first draft 'Roadmap' document (IOC-INF-1353 prov.) which provides an initial guide for the steps and processes needed to develop an *Implementation Plan* for the Decade. It also proposed governance and structural arrangements in the form of an *Executive Planning Group* that was established by the IOC Executive Council at its 51st session and will take over the overall responsibility of guiding the preparation of the *Implementation Plan*. The roadmap was circulated to IOC Member States in February 2018 and widely disseminated to institutional partners of the Commission. In this context, IOC also invited relevant UN bodies with a focus on ocean to contribute to the development of the implementation plan. IOC hosted the meeting of UN-Oceans, the UN inter-agency mechanism on

[41] Tier III: No internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested.
[42] Tier II: Indicator is conceptually clear, has an internationally established methodology and standards are available, but data are not regularly produced by countries.

ocean affairs, at UNESCO Headquarters on 26–28 March 2018 to discuss contributions of the UN wide-system to the Decade.

Main activities undertaken or foreseen for the period 2018-2020

Support governance arrangements and specifically the activities and meetings of the Executive Planning Group

367 The Terms of Reference of the Executive Planning Group was adopted by the 51st IOC Executive Council in July 2018. The Secretariat will guide the work of this planning group which is supposed to meet twice in the course of the preparation phase. A Stakeholder Forum consisting of institutional members should also be established following a call for expressions of interest and subsequent invitation from the IOC Executive Secretary. It is expected that UN bodies, non-UN bodies, NGOs, science focused organisations, donors/foundation and representatives from industry will be included. Membership will be open ended.

Support engagement and consultation with the ocean and sustainable development community, including targeted regional and global topical workshops and participation in selected other fora and meetings that are aligned with the Decade strategy;

368 Several regional workshops are foreseen to take place from the second half of 2019. These meetings will be an integral part of the Decade design process. The Executive Planning Group will provide guidance in the organisation and structure of these workshops, and the IOC Secretariat will guide and coordinate the organisation of each workshop. Ideally, as a minimum, five regional workshops would be needed to cover the main ocean basins. Regional seas and Polar Regions will also be invited to contribute to the Decade design process. Two Global Planning Meetings are envisioned to be organised in early 2019 and early 2020. The first meeting which took place in May 2019 was aimed at assessing the status of ocean research vis-a vis the 2030 Agenda requirements and scope the development of an outline of research programme(s) to be conducted under the Decade. The second meeting would aim at consolidating inputs from various consultations, including regional workshops referred to above, into a draft Implementation Plan.

Preparation of the Resource, Science, Capacity Development, Communication/Engagement and over-arching Implementation Plan;

369 The preparation of the implementation plan will be a complex exercise, requiring the integration of several inputs from the regional and global consultation workshops, it will also require the development of specific components, for example on capacity development where a longer-term strategy to facilitate improved scientific knowledge transfer to wider segments of society and regional/national governments, will be required. External assistance and expertise will be required, as well as the possible formation of targeted expert groups.

Engagement and consultation within the UN system and, in particular, reporting to the UNGA;

370 During the Preparatory Phase, IOC will need to actively engage with several UN constituencies that may benefit and contribute to the Decade. These will include, FAO on fisheries aspects, IMO on shipping and related environmental issues, the ISA in relation to seabed exploration, UN Environment with regards to marine policies, and regional governance, amongst others. To do so, a number of information session, events, workshops will be organised in various UN fora (for eg FAO, IMO, Ocean Obs Conference, ‘Our Ocean Conferences, etc..). In addition, information sessions are foreseen to brief UN Member States on the progress with the Decade, on a regular basis and a Task Force dedicated to the Decade was established under UN-Oceans.

Support communication activities such as a brochure, the website, networking with scientists and production of outreach materials.

371 Digital marketing activities will also be initiated to communicate about the Decade using digital supports (Facebook, Twitter); A Dedicated Decade website will be established to inform the different stakeholders about the Decade and its preparatory process.

372 This communication campaign will be organised to inform member states, potential partners and other stakeholders of the preparatory phase underway, with the aim of inviting contributions, as well as to communicate the purpose and expected results of the Decade

373 Finally, the IOC Executive Secretary formally wrote to the Chair of GESAMP to invite GESAMP to join forces with many partners and contribute to the UN Decade planning. GESAMP was invited to/may contribute by:

1. identifying suitable candidates for possible nomination to the **Executive Planning Group** keeping in mind that these will serve in their personal capacity, capitalizing on their professional experience and knowledge;

2. Contributing through the planned **Regional Consultation Workshops** to be organised in all major ocean basins, these will communicate the purpose and expected results of the Decade to all stakeholders but also engage and consult with the ocean community concerning the implementation plan for the Decade, and the design of transformative projects;

3. Contributing to the **Global planning meetings** foreseen in 2019 and 2020; these meetings will assess the status of ocean research *vis-a-vis* the requirements of 2030 Agenda, scope and eventually validate the research plan of the Decade, building on thematic and regional workshops inputs;

4. Participating in the **Stakeholder forum which** is expected to be established as a mechanism to capture institutional inputs from providers and end-beneficiaries of the Decade;

5. Contributing to the Science Plan;

6. Supporting the Task Force established under UN-Oceans; and

7. Link to UN Decade Roadmap http://iocunesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=21944

Ocean acidification

374 In view of the growing urgency and recognition of ocean acidification as one of the major stressors for the marine environment, improved observation and research are needed to help scientists and governments in implementing related mitigation and adaption measures.

375 IOC-UNESCO actively provided technical support to Member States to report towards the Sustainable Development Goal indicator 14.3.1, focusing on ocean acidification in the framework of sustainable Development. The Commission provides the methodology guiding scientists and countries in terms of how to carry out measurements following the best practices established by the ocean acidification community. In this way, IOC and its networks, including the Global Ocean Acidification Observing Network (GOA-ON), directly contribute to the achievement of SDG Target 14.3.

376 During its 51st session the IOC Executive Council welcomed the Methodology for the Sustainable Development Goal (SDG) Target Indicator 14.3.1 and recommended to the IOC

secretary as the custodian agency for this indicator to propose its upgrade from Tier III to Tier II. In November 2018 this application was brought forward and the IAEG-SDG agreed on the upgrade from Tier III to Tier II. During an expert workshop organized by the Commission in October 2018 experts agreed on the outline and timeline for the production of an IOC manual focusing on the 14.3.1 methodology, to be published in the third quarter of 2019.

377 GOA-ON has now more than 632 members, from 96 countries (2015: 150 scientists, 31 countries) and is constantly growing, currently 17 SIDS and 23 African countries are represented. This is also thanks to IOC engagement and involvement in Ocean Acidification projects in the Caribbean, the Middle East and East Africa.

378 Work to develop a 14.3.1 data portal continued. A beta version of this portal is expected to be available in August 2019, facilitating ocean acidification collection and quality control.

379 The IOC was further invited to submit a contribution on ocean acidification to the WMO annual Statement on the State of the Global Climate. This is only the second year that ocean acidification is included in the Statement. A preliminary Statement was published by the WMO in December 2018, just ahead of the opening of the 24th session of the Conference of the Parties (COP 24) to the UNFCCC. The full statement was published in February 2019. The IOC Secretariat also contributed to a Community White paper for the upcoming OceanObs'19 conference, highlighting the 14.3.1 methodology. IOC co-organized the annual GOA-ON Executive Council meetings in 2018 (Sopot, Poland) and 2019 (Hangzhou, China), and further actively participated and supported the 4th international GOA-ON Workshop (14-17 April 2019, Hangzhou, China).

Blue Carbon

380 The Blue Carbon Initiative, established in 2011 by the IOC, the International Union for the Conservation of Nature (IUCN) and Conservation International (CI) works to develop management approaches, financial incentives and policy mechanisms for ensuring the conservation, restoration and sustainable use of coastal blue carbon ecosystems. The IOC is highly involved in the Blue Carbon Scientific Working Group, which provides the scientific foundation for the Blue Carbon Initiative by synthesizing current and emerging science on blue carbon and by providing a robust scientific basis for coastal carbon conservation, management and assessment. Priority research of the Scientific Working Group functions in close partnership with the Initiative's Policy Working Group.

381 IOC is further one coordinating member of the International Blue Carbon Partnership, a unique body that brings together governments, NGOs, IGOs and UN-Agencies.

382 IOC co-organized and co-sponsored the International Blue Carbon Initiative (BCI) annual meeting in China in August 2018. IOC further supported 3 side events during the UNFCCC COP24 highlighting the potential of Blue Carbon Ecosystems as a Nature Based Solution to be applied in the NDCs to mitigate climate change and provided the coordinated input to the WMO Climate Change Bulletin 2018 addressing Blue Carbon. In collaboration with the Blue Carbon Partnership these events gave the opportunity to connect high level representatives and scientists to raise awareness for the central role of these ecosystem for carbon sequestration.

De-oxygenation

383 De-oxygenation is a global problem in coastal and open regions of the ocean and has led to expanding areas of oxygen minimum zones and coastal hypoxia. In the coastal ocean, the number of reported dead zones has increased exponentially since the 1960s with more than 600 systems now. The recent expansion of hypoxia in coastal ecosystems has been primarily attributed to global warming and enhanced nutrient input from land and atmosphere. The global extent and

threat to human health and marine ecosystem services of ocean deoxygenation are just beginning to be appreciated; the social and economic consequences have yet to be determined but are likely to be significant.

384 In order to raise awareness for the impacts of deoxygenation to marine life, the IOC working group the Global Ocean Oxygen Network (GO2NE) published a technical brief 'The ocean is losing its breath' in 2018. IOC organized the annual meeting of the group, 1-2 September 2018 just before the international conference 'Ocean Deoxygenation: Drivers and Consequences – past – present – future, in Kiel, Germany, 3-7 September 2018, The conference in Kiel concluded with the Kiel Declaration, which was signed by 502 experts as of 18 December 2018. The Secretariat also organized a joint GlobalHab/GO2NE workshop 11-12 June 2019, which discussed the interaction of deoxygenation and harmful algae blooms. This workshop was followed by the 2019 GO2NE meeting, which focused on the workplan of the upcoming two years, including the GO2NE summer school in September 2019, which is supported by SCOR, and the development of the Ocean Oxygen Data Portal. The IOC Secretariat further coordinated the input to the WMO Climate Change bulleting (published in February 2019) addressing deoxygenation in the ocean.

Time Series

385 Since 2013 the establishment of an interdisciplinary IOC working group, the International Group for Marine Ecological Time Series (IGMETS), has offered the possibility to improve model projections and forecasts needed to understand open ocean and coastal changes. The collected information addresses new scientific questions and serves a well-established community of practice related to ship-based time series. The interdisciplinary character of IGMETS' work IOC provides new scientific insights to improve model projections and forecasts needed to understand open ocean and coastal changes. IGMETS met 7-9 November 2018 at IOC HQ to develop the scope its second report.

386 As from 2016 an affiliated group has worked specifically to investigate Climate Change and Global Trends of Phytoplankton in the ocean, in particular the coastal ocean (TrendsPO). The Group continues the comparative analysis and synthesis of long time series data sets compiled by SCOR WG137, and expands the focus not only to the continental shelf and open oceans, but also to estuarine and upstream freshwater ecosystems where perturbations from terrestrial, atmospheric, oceanic sources and human activities converge to cause changes that ramify across local and global scales. The Group examines the land and sea connectivity using long time series of available data.

Harmful Algal Blooms

387 A number of Task Teams, working groups and activities are operating and reporting to the IOC Intergovernmental Panel on HABs (IPHAB). Several of the groups contribute to the development of a '*Global HAB Status Report*' with the aims of compiling an overview of HAB events and their societal impacts; providing a worldwide appraisal of the occurrence of toxin-producing microalgae; and assessing the status and probability of change in HAB frequencies, intensities, and range resulting from environmental changes at the local and global scale. The development of this report is intimately linked with the systematic compilation of HAB data in OBIS and the IOC Harmful Algal Event Data base HAEDAT and is funded by Flanders and cosponsored by the IAEA.

388 Another key activity under IPHAB is on Ciguatera Fish Poisoning (CFP) which the most extensive human illness caused by harmful algae. The IPHAB has initiated the development of a UN Coordinated Ciguatera Strategy involving the Food and Agriculture Organization of the United Nations (FAO), the International Atomic Energy Agency (IAEA), and the World Health Organization (WHO).

389 The long-term focus of the IOC Harmful Algal Bloom (HAB) programme is on improved understanding of the factors controlling HAB events and thereby improving management and mitigation options. The scientific key questions have for more than a decade been addressed jointly with the Scientific Committee on Oceanic Research (SCOR) through research programmes. The current decadal IOC-SCOR research programme to meet societal needs in a changing world is entitled GlobalHAB and launched in 2017 its science and implementation plan (www.globalhab.info).

390 GlobalHAB is jointly with GESAMP (as decided at GESAMP 45) preparing for an pen Science Meeting on Sargassum to identify the main research challenges to understand and the driving forces behind Sargassum mass occurrences and based on this identify additional management and mitigation options.

IOC Joint action with ICES and IMO on Ballast and other Ship Vectors

391 The ICES/IOC/IMO Working Group on Ballast and Other Ship Vectors (WGBOSV) reviews and reports on the status of shipping vector research with an emphasis on new developments in ballast water treatment technology, risk assessment, ballast water sampling devices, and selection of ballast water exchange zones consideration of appropriate discharge standards of organisms in ballast water, as well as hull fouling regulations and treatment options to reduce the risk of introducing non-native species. The WG also discusses and evaluates the sampling strategies to ensure that international guidelines are based on accurate scientific information, thereby helping to achieve consensus on difficult and technical issues.

392 WGBOSV submits documents to and participates in meetings at the IMO to ensure that international guidelines are based on accurate scientific information, thereby helping to achieve consensus on difficult and technical issues. The group meets annually and functions through extensive collaboration by expert scientists from all over the world, representing leading knowledge and expertise on this topic. Full reports at http://www.ices.dk/community/groups/Pages/WGBOSV.aspx

Nutrient's coastal Impacts research

393 Nutrient over-enrichment of coastal ecosystems is a major environmental problem globally, contributing to problems such as harmful algal blooms, dead zone formation, and fishery decline. Yet, quantitative relationships between nutrient loading and ecosystem effects are not well defined. The IOC Nutrients and Coastal Impacts Research Programme (N-CIRP) is focussing on integrated coastal research and coastal eutrophication, and linking nutrient sources to coastal ecosystem effects and management in particular. As part of the implementation strategy for N-CIRP, IOC also actively participates in a UNEP led ´Global Partnership on Nutrient Management' (GPNM) with intergovernmental organizations, non-governmental organizations and governments. GPNM has an online information portal to enable GPNM partners to monitor progress on implementing activities related to the sustainable use of nutrients. The platform provides a knowledge hub, networking opportunities and promotes global discussions on sustainable nutrient management. Concern over the impacts of altered nutrient inputs, N, P and Si, to coastal waters has led the UN to include an "Index for Coastal Eutrophication Potential" (ICEP) as indicator for SDG Goal 14.1.1 on eutrophication. To implement ICEP we need a dissolved silica model and evaluate the effectiveness of ICEP in predicting coastal impacts at the global scale. With UN Environment being the custodian agency for 14.1.1, the IOC is aiming at contributing by developing ICEP. This will require 2 postdoctoral scholars and an expert workshop to validate models.

Multiple Stressors

394 In addition the IOC Executive Council at its 51st session agreed to establish a new IOC working group focusing on multiple stressors. A draft policy brief introducing the issue of multiple

stressors on marine ecosystems prepared in collaboration with SCOR Working Group members– working title: Ocean under Stress: A changing ocean at all locations was presented to the 30th Session of the IOC Assembly in June 2019. The final publication will be available during the 4th quarter of 2019.

Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-Economic Aspects – World Ocean Assessment

UN World Ocean Assessment (WOA)

395 IOC continues to provide scientific and technical support to the World Ocean Assessment process established under the UNGA. A second cycle of assessment (2017–2020) was initiated under the UN Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects, starting with the holding of five regional workshops in 2017 to build capacity, support the development of assessment(s) and facilitate outreach and awareness-raising. Two of these workshops were organized by IOC, the regional workshop covering the North Pacific, was hosted by WESTPAC together with the Government of Thailand (29–30 November 2017), whilst IOCARIBE and the Government of Brazil hosted the workshop for the Wider Caribbean and South Atlantic. These considered how assessments produced by the Regular Process can be structured to help policy-makers most effectively with their tasks; and how to improve arrangements for networking among various group of experts and organizations involved in the Regular Process. Both workshops further emphasized the importance of capacity building to achieve the integrated assessment of marine environment. This is possibly an element to pursue as part of the IOC CD Strategy. A second round of regional workshops took place in 2018 so as to, *inter alia*, inform the collection of regional-level information and data for the preparation of the second World Ocean Assessment. IOC nominated experts to several of these.

396 In 2019, a Multi-stakeholder dialogue and capacity-building partnership event was held on 24–25 January at United Nations Headquarters in New York. The event aimed to increase awareness of the importance of the Regular Process and more generally the science-policy interface at all levels. It also sought to highlight the importance of capacity-building in support of the Regular Process, including regarding the preparation of integrated assessments which are important to inform decision-making by policy-makers and other relevant stakeholders. In-depth multi-stakeholder dialogues on current opportunities, gaps and needs in capacity took place. IOC through its Vice-chairperson Ariel Troisi delivered a keynote on the contribution of ocean science in global policy processes. The contribution of IOC in supporting capacity development through its dedicated CD strategy as well as its work on ocean literacy were recognized by several Member States.

Data Management

397 The IOC International Data Exchange programme (IODE) published the IOC Strategic Plan for Data and Information Management (2017–2021) and the IOC Communication and Outreach Strategy for Data and Information Management, IOC Manuals and Guides, 77 & 79. The World Ocean Database (WOD), maintained by the NOAA National Centers for Environmental Information (NCEI), is the world's largest collection of ocean data available internationally without restriction. WOD was first released in 1994 but established as an IODE project in 2000. A mirror copy has been established in January 2018 at the IOC Project Office for IODE in Ostend, Belgium.

398 In order to enhance the role of marine information management IODE at its 25th session adopted the concept of "IODE Associate Information Units" (AIUs), and an application form and associated review criteria are now available. By end of February 2019 three marine libraries have joined the IODE network as AIU.

399 The First Session of the Intersessional Working Group to Develop a Concept Paper for an Ocean Data and Information System (ODIS, 5–8 March 2018, Ostend, Belgium) decided to pursue a federated approach leveraging connections between existing systems, to improve semantic and technical interoperability between systems, and to connect data providers having limited capacity to established repositories for securing and making data accessible. The initial output will be a register of known marine data and information sources, including discovery and technical level metadata that will support federated access across these systems in the future. Over time additional sources will be added that are aligned with the FAIR Data Principles, a set of guiding principles to make data Findable, Accessible, Interoperable, and Re-usable (FAIR).

400 Since May 2017 (until 9 April 2018), the Ocean Biogeographic Information System (OBIS) grew with 269 new datasets, adding 7,700 new species and 3.1 million observations resulting in a total of 50.9 million records of 118,000 marine species. Two new national OBIS nodes were established, one in Colombia (hosted by INVEMAR) and one in the UK (hosted by the MBA). The OBIS secretariat is supporting the implementation of the OBIS-ENV-DATA standard through the development of new QC tools, available as webservices and as an R package (https://github.com/iobis/obistools)

401 OBIS is undergoing a major reengineering of its platform (OBIS2.0) which is urgently needed to drive new innovations in science and technology, and to meet the increasing demands for services from global drivers (such as GOOS, GEO BON, CBD, ISA, WOA and IPBES), as well as support the regional focus of several OBIS Nodes (e.g. USA/OBIS, Europe/EMODnet).

402 The information collected on oceanographic cruises that have been undertaken in the Large Marine Ecosystem (LME) regions around Africa will be incorporated in the African node of the Ocean Data Portal that is currently being developed under the coordination of IOCAFRICA.

403 IODE launched the Ocean Data and Information System Catalogue of Sources (ODISCat) (available through http://catalogue.odis.org). The ODIS "Catalogue of Sources" aims to be an online browsable and searchable catalogue of existing ocean related web-based sources/systems of data and information as well as products and services. It will also provide information on products and visualize the landscape (entities and their connections) of ocean data and information sources. It currently welcomes 16 different types of resources. By end of February 2019, 345 online sources have been described in the catalogue. ODISCat is the first product developed within the context of ODIS and will facilitate the further deployment of the system based on existing data and information.

404 The 25th Session of the IODE Committee was held in Tokyo, Japan on 20–22 February 2019 (cf. IOC/IODE-XXV/3s). The session was preceded by a two-day scientific conference which welcomed 150 participants from 40 countries. The 35 presentations (which were recorded and available online at http://www.iode.org/iode25_sciconf) focused on (i) the UN Decade, (ii) how IODE is collaborating in ongoing major initiatives and activities that may contribute to the UN Decade, as well as (iii) regional developments, (iv) capacity development, (v) emerging opportunities for the future of IODE, including (vi) cooperation with partners. In order to maximize accessibility to the Conference all sessions were live-streamed.

FOOD AND AGRICULTURE ORGANIZATION (FAO)

Joanna Toole

FAO mourns the terrible and tragic loss of Joanna Toole who perished in the Ethiopian Airlines crash on 10 March 2019. Early 2019, Joanna had been appointed as FAO's Technical Secretary to the newly formed GESAMP Working Group on sea-based sources on marine litter including fishing gear and other shipping related litter. Joanna, a core team member of FAO's Responsible Fishing Operations Programme within the Fishing Operations and Technology Branch, was known as a true, passionate and dedicated champion for the protection of aquatic wildlife.

Marine litter and microplastics

405 FAO continues to consider the issue of marine litter and microplastics from the perspectives of i) reducing marine litter that originates from the fishing industry, in particular abandoned, lost or otherwise discarded fishing gear (ALDFG); ii) assessing the ecological impact of microplastics on fisheries resources; iii) assessing the implications of microplastics for aquaculture products, and iv) assessing food safety risks from marine litter, in particular microplastics, on human health.

406 FAO collaborates with many organisations, including relevant UN Agencies and Programmes, NGOs and academic institutions in addressing and building knowledge on marine litter and microplastics, including; UNEP and the Global Partnership on Marine Litter (GPML), the International Maritime Organization (IMO), the International Council for the Exploration of the Seas (ICES), the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) and the Global Ghost Gear Initiative (GGGI).

407 FAO contributes to the discussions of the UN Environment Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics.

FAO progress in addressing abandoned, lost or otherwise discarded fishing gear (ALDFG)

408 FAO Members have recognised abandoned, lost or otherwise discarded fishing gear (ALDFG) as a significant component of marine litter and have raised concerns about its impacts on habitats fish stocks and marine wildlife, particularly through 'ghost fishing', and as a navigational hazard and risk to safety at sea.

409 The Thirty-third Session of FAO's Committee on Fisheries (COFI33), held 9-13 July 2018 in Rome, endorsed the Voluntary Guidelines for the Marking of Fishing Gear. The Voluntary Guidelines[43] are considered an important tool in minimising the impact of ALDFG and ghost fishing, and in combatting Illegal, Unreported and Unregulated (IUU) fishing.

410 COFI 33 encouraged FAO to conduct further work on quantifying the impacts of ALDFG and developing and documenting best practices for addressing ALDFG, including the recovery and recycling of gear, the use of biodegradable gear to minimise its contribution to marine plastic pollution, as well as the reduction of ghost fishing.

411 COFI 33 further supported the development of a comprehensive global strategy to address ALDFG and encouraged the involvement of small-scale and artisanal fisheries and relevant RFMO, regional fisheries management arrangements and relevant international bodies.

412 FAO is now planning for the development of a global 'umbrella' programme to support the implementation of the Voluntary Guidelines on the Marking of Fishing Gear and other actions that are required to address ALDFG at a global scale. The programme will comprise a partnership framework with projects tailored to meet the specific needs of countries requiring support. It is expected that the programme will increase the opportunity for FAO to collaborate with partners on the issue of ALDFG and that its implementation will need to be supported by ongoing scientific advice.

413 FAO and IMO are actively supporting the initial activities of GESAMP WG43 on sea-based sources on marine litter including fishing gear and other shipping related litter. The WG's Chair,

[43] These Voluntary Guidelines for the Marking of Fishing Gear are dedicated to the memory of Joanna Toole, who worked tirelessly to reduce and manage abandoned, lost, or otherwise discarded fishing gear (ALDFG) in the ocean and to stop ghost fishing by such gear worldwide. She played a key role in the preparatory process for the formulation of the Voluntary Guidelines. Joanna Toole died tragically in the Ethiopian Airlines Flight 302 crash on 10 March 2019, en route from Addis Ababa, Ethiopia to Nairobi, Kenya. She was on her way to participate in the Fourth Session of the UN Environment Assembly (UNEA4), representing FAO. She would have spoken about marine litter and microplastics in general and specially on some key points contained in this publication.

Members, and Technical Secretaries of IMO and FAO have already had online discussions. The first physical (face-to-face) meeting of WG43 will be held in Rome during 28-30 October 2019.

Microplastics

414 In an effort to summarize issues, findings and recommendations of previous publications[44] on microplastics, developed by FAO and GESAMP, FAO has published a short brief for policy makers and general public: FAO. 2019. Microplastics in fisheries and aquaculture. What do we know? Should we be worried? Available also in Arabic, Chinese, French and Spanish.

415 FAO contributed to the identification of participants and the preparations of the GESAMP International Workshop on assessing the risks associated with plastics and microplastics in the marine environment, held 21-23 May 2019 in Geneva, and gratefully acknowledges the generous support by the Government of Norway and the active coordination of GESAMP's Chair and staff of UN Environment.

416 Moreover, the FAO EAF-Nansen Programme that is supported by a research vessel, the R/V Dr. Fridtjof Nansen, includes a dedicated research theme in its science plan with the objective of assessing the occurrence of microplastics and marine litter in the surface and in the water column in the areas where the research vessel operates, identify hotspots and study composition and presence of chemicals associated with them. Systematic sampling of microplastics and marine litter has been done off West Africa and in the Indian Ocean since 2017 and resulting samples/data are being analysed with partner institutions. Capacity building activities are also planned to strengthen skills on samples processing and data analysis in participating countries.

417 Other steps for FAO on microplastics include building upon the information compiled in the Technical Paper and using this data to develop appropriate risk profiling tools to assess food safety impacts of microplastic pollution in collaboration with interested partners. FAO would also welcome collaboration on microplastics and aquaculture, as well as on ecological impacts on fisheries resources.

418 FAO hopes that the Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics will carefully consider sea based sources of marine litter, in particular ALDFG, within the framework of a holistic global response to the overall marine litter issue. FAO also hopes that the work of the ad hoc Expert Group will be able to support efforts to fill knowledge gaps relating to the impacts of microplastics on fisheries resources and aquaculture.

419 COFI33 expressed concern about the effects of pollution, including microplastics, on aquatic resources, and encouraged FAO to continue collecting information on its impacts on aquaculture and fishery resources, and implications for food safety, both in marine and freshwater systems, building on the work of the EAF-Nansen Programme.

Recent developments on methylmercury

420 FAO has been providing scientific advice on mercury related matters based on a risk-benefit exercise carried out during the Joint FAO/WHO Expert Consultation on the Risks and Benefits of Fish Consumption since 2010. Since then, FAO has supported Codex Alimentarius on mercury related issues and has provided scientific advice to the Codex Committee on Fish and Fishery Products and the Codex Committee on Contaminants in Foods (CCCF). The Codex Alimentarius Commission has recently adopted new maximum limits (MLs) for methylmercury in fish were, with reservations from several countries that expressed their disagreement with the change from 1

[44] Microplastics in fisheries and aquaculture: status of knowledge on their occurrence and implications for aquatic organisms and food safety. FAO Fisheries and Aquaculture Technical Paper. No. 615. Rome, Italy

mg/kg for predatory fish to 1.2 mg/kg for all tuna, 1.5 mg/kg for Alfonsino, 1.7 mg/kg for all marlin and 1.6 mg/kg for shark. CCCF had previously agreed to discontinue work on the ML for amberjack and swordfish and to establish an EWG chaired by New Zealand and co-chaired by Canada to prepare a discussion paper on the establishment of MLs for additional fish species. A footnote on the importance on consumer advice was left in the document. CCCF could consider revising the ML for tuna in the light of additional data after three years.

Recent developments on HABs

421 FAO together with IOC-UNESCO, IAEA and WHO will start working together on food safety early warning systems for toxic Harmful Algal Blooms (HABs) and toxins. In the coming months a joint FAO/IAEA/IOC-UNESCO route map will be developed for this purpose.

422 In addition, the FAO collaboration with IAEA, IOC-UNESCO and WHO that started with the interagency meeting on Ciguatera Fish Poisoning (CFP) in December 2015 will continue. After the technical meeting for the development of an Inter-Agency Global Ciguatera Strategy that took place at the IAEA Environment Laboratories in Monaco in April 2018, the four agencies have developed a coordinated strategy to address CFP. The strategy will cover the following elements: (a) improving the detection and monitoring of organisms contaminated with ciguatoxins, as well as risk forecasting; (b) improving the detection of toxins in dinoflagellate cells and fish tissue; and (c) improving epidemiological data collection, reporting and assessments.

The State of World Fisheries and Aquaculture 2018

423 FAO's flagship publication on fisheries and aquaculture SOFIA 2018 was presented to COFI33 and includes a discussion on ALDFGs and microplastics, see section on selected ocean pollution concerns on pages 154-157. See also SOFIA in brief booklet and SOFIA 2018 Flyer .

The State of the World's Aquatic Genetic Resources for Food and Agriculture

424 FAO has published the first assessment on the State of the World's Aquatic Genetic Resources (AqGR) for Food and Agriculture, with the scope of this first Report being limited to cultured AqGR and their wild relatives, within national jurisdiction.

Rebuilding of marine fisheries - Global review

425 A Global review on Rebuilding of marine fisheries was also published by FAO in 2018, providing a review of the emergence of the rebuilding paradigm, its key concepts, the trends in fishery resources, and the empirical evidence available on stocks depletion, collapse and rebuilding.

Strengthening the science-policy nexus in fisheries

426 FAO is organizing, in collaboration with many international partners, the International Symposium on Fisheries Sustainability, to be held in Rome, during 18-21 November 2019.

United Nations Development Programme (UNDP)

Introduction

427 UNDP's operational ocean governance portfolio, valued at about $200 million in grant funding, primarily mobilized from various vertical funds (GEF, GCF, AF, LDCF) as well as bilateral sources, covers a range of programs and projects including the **Large Marine Ecosystems and Regional Fisheries Programme**, **Greening the Shipping Industry**, and **Ridge to Reef Integrated Water Resources and Coastal Area Management**. In late 2019, UNDP will also be

launching a new **Ocean Innovation Facility**. Summaries of initiatives active in the 2018-19 reporting period follows.

Large Marine Ecosystems and Regional Fisheries

Catalysing implementation of a Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Humboldt Current System (HCS).

428 The project objective is to facilitate ecosystem-based fisheries management (EBFM) and ecosystem restoration in the Humboldt current system for the sustainable and resilient delivery of goods and services from shared living marine resources, in accordance with the Strategic Action Programme (SAP) endorsed by Chile and Peru. Main project components include:

1. Recovery and maintenance at optimal population biomass levels of the majority of fisheries resources while maintaining ecosystem health and productivity under climate change scenarios;
2. Improve the environmental quality of the marine and coastal ecosystems via integrated management considering the various sources of pollutants;
3. Restore and maintain the habitat and biodiversity of marine and coastal systems at sustainable levels;
4. Diversify and add value by creating productive opportunities inside and outside the fisheries sector with people socially organized and integrated; and
5. Contribute to the population´s food security and food safety.

Implementation of the Yellow Sea LME Strategic Action Programme for Adaptive Ecosystem-Based Management

429 The objective of the regional project is to achieve adaptive ecosystem-based management of the Yellow Sea Large Marine Ecosystem bordered by China, the Republic of Korea and the Democratic People's Republic of Korea by fostering long-term sustainable institutional, policy and financial arrangements for effective ecosystem-based management of the Yellow Sea in accordance with the YSLME Strategic Action Programme (YSLME SAP) adopted by China and the Republic of Korea in 2009. To achieve this objective, the project will support the formation of the YSLME Commission to oversee the implementation of the YSLME SAP, innovate institutional arrangements, improve management capacity and quality of function. This includes, developing robust governmental coordination mechanisms, strengthening regulatory mechanisms while strengthening the incentive structure to promote environmental protection, developing mechanisms to link land and sea and resource use to carrying capacity, and systems for the participation of a range of stakeholders. The key benefits of the project include recovery of depleted fish stocks and improved mariculture production and quality' improved ecosystem health' maintenance of habitat areas strengthened stakeholder participation in management and improved policy making and skills and capacity significantly developed for region-wide ecosystem-based management

Implementation of Global and Regional Oceanic Fisheries Conventions and Related Instruments in the Pacific Small Island (w/FAO)

430 This project supports Pacific SIDS in meeting their obligations to implement and effectively enforce global, regional and sub-regional arrangements for the conservation and management of transboundary oceanic fisheries thereby increasing sustainable benefits derived from these fisheries. The project includes five Components: 1. Regional Actions for Ecosystem-Based Management, 2. Sub-regional Actions for Ecosystem-Based Management, 3. National Actions for Ecosystem-Based Management, 4. Stakeholder Participation and Knowledge Management; and 5. Project Management. The Project supports Pacific SIDS as the major bloc at the WCPFC to adopt regional conservation and management measures, supports the innovative approaches being

developed by Pacific SIDS at sub-regional level as they collaborate in fisheries of common interest, and assists SIDS to apply measures nationally in their own waters and to their fleets.

CLME+: Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems

431 CLME+ project is a 5-year project that specifically aims at facilitating the implementation of the 10-year politically endorsed Strategic Action Programme for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+ SAP). The project seeks to achieve this by facilitating ecosystem-based management/an ecosystem approach to fisheries (EBM/EAF) within the CLME+ region, in such a way that a sustainable and climate resilient provision of goods and services from the region's living marine resources can be secured. Given its regional and comprehensive nature, the CLME+ Project is uniquely positioned to address the root causes of environmental degradation, in particular the gaps and weaknesses in transboundary and cross-sectoral governance arrangements. In this same context, the project will assist stakeholders in achieving improved coordination, collaboration and integration among the wide array of ongoing and newly planned projects and initiatives that are of relevance to the wider objectives of the CLME+ SAP.

Western Indian Ocean LMEs - Strategic Action Programme Policy Harmonization and Institutional Reforms (SAPPHIRE) Project

432 This Project builds on the previous work completed under the UNDP supported GEF financed Agulhas and Somali Current Large Marine Ecosystems (ASCLME) Project in close collaboration with a number of partners. The ASCLME Project delivered the intended regional TDA and ministerially endorsed SAP for the western Indian Ocean LMEs as well as individual Marine Ecosystem Diagnostic Analyses (MEDAs) for each participating country. The ASCLME Project also created the Western Indian Ocean Sustainable Ecosystem Alliance (WIOSEA). The SAPPHIRE Project aims to support and assist the appropriate and formally mandated government institutions and intergovernmental bodies in the region to implement the activities which they require in order to deliver the SAP and to ensure sustainability of efforts and actions toward long-term management of activities within the LMEs as well as the sustainability of associated institutional arrangements and partnerships

Timor/Arafura Seas Strategic Action Programme Implementation

433 The ATSEA-2 project is the second phase of the GEF-financed, UNDP-supported ATSEA program, and is designed to enhance regional collaboration and coordination in the Arafura and Timor Seas (ATS) region. ATSEA-2 will specifically focus on supporting the implementation of the endorsed strategic action program (SAP), a 10-year vision for the Arafura-Timor Seas with the long-term objective "to promote sustainable development of the Arafura-Timor Seas region to improve the quality of life of its inhabitants through restoration, conservation and sustainable management of marine-coastal ecosystems".

Improving Ocean Governance and Integrated Management in the Benguela Current LME

434 The GEF co-funded Benguela Current Large Marine Ecosystem (BCLME) Programme has promoted the integrated management and sustainable use of marine resources of the BCLME since 2002. Over the past years, BCLME has accomplished several achievements in the three countries (Angola, Namibia and South Africa) among which the establishment of Benguela Current Commission, and the signing of the Benguela Current Convention, were milestones. Building on the strong political commitment of the three countries to sustainable management of the BCLME and on the past GEF investment in the region, the project aims to 1) promote further policy, legal, institutional and management reform at both regional and national level to implement SAP and Convention; 2) promote the engagement of communities as well as private sectors in stress

reduction demonstration activities and in the implementation of SAP and Conventions; and 3) strengthen institutional and human capacity building through, among other means, south-south cooperation.

Towards joint integrated, ecosystem-based management of the Pacific Central American Coastal Large Marine Ecosystem (PACA)

435 The Pacific Central-American Coastal Large Marine Ecosystem (PACA) extends from southern Mexico to northern Peru. Nine countries share PACA (from north to south): Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panamá, Colombia and Ecuador. The objective of the PACA project is to promote ecosystem-based management of the Pacific-Central American Large Marine Ecosystem through: strengthening of regional governance, improvement of governance instruments for joint management at regional level, implementation of initial on-the ground pilot actions to address common key issues and advance collaborative work and replication, and knowledge management.

Strengthening of the enabling environment, ecosystem-based management and governance to support implementation of the Strategic Action Programme of the Guinea Current Large Marine Ecosystem (w/UNEP, UNIDO, FAO)

436 The project objective is strengthening the enabling environment, ecosystem-based management and governance to support implementation of the ministerially endorsed Strategic Action Program of the Guinea Current Large Marine Ecosystem. UNDP will lead on Component 3: Assessments, stakeholder and inter-ministerial consultations

Scaling up the Implementation of the Sustainable Development Strategy for the Seas of East Asia

437 The project seeks to reduce pollution and rebuild degraded marine resources by scaling up the implementation of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) – in Cambodia, People's Republic of China, Indonesia, Lao PDR, Philippines, Thailand, Timor Leste and Vietnam – countries that share six large marine ecosystems (LMEs) and related catchment areas. It represents a transformation process, culminating in a self-sustaining, country-owned regional organization (PEMSEA) and continuing commitments of funding and support for the implementation of SDS-SEA over the longer term. It also makes a stronger linkage between sustainable development of river basins, coastal and marine areas and local, national and regional investment processes by the public and private sectors in support of a "blue economy".

Global Sustainable Supply Chains for Marine Commodities

438 Overexploitation of marine fisheries is a major global issue and a key driver of changes in the marine environment. Excessive fishing is caused by a variety of inter-acting factors, including the growing global demand for seafood. This project contributes to address key aspects of the market forces that drive overfishing. The project will add to the transformation of the seafood market by mainstreaming sustainability in the value chain of important commodities from developing countries, improving emerging tools such as corporate sustainable purchase policies, sustainable marine commodities platforms, and fisheries improvement projects (FIP), developing national capacities, and generating learning to be shared worldwide. The project target fisheries include tuna, mahi mahi (dorado) and other pelagic fish in the Eastern Pacific Ocean; tuna in the Western Pacific Ocean; Small Pelagic in Ecuador; Filipino octopus; and blue swimming crab fisheries in Indonesia and The Philippines.

Coastal Fisheries Initiative – Latin America component

439 The project objective is to demonstrate holistic, ecosystem-based management and improved governance of coastal fisheries in the South-East Pacific. The project is the LAC

component of the GEF Coastal Fisheries Initiative programme (CFI) which aims to motivate a change shift towards an integrated, inclusive and sustainable approach to fisheries management and development. The project addresses the key issue of weak fisheries governance in coastal fisheries in Ecuador and Peru, focusing mainly on artisanal and small-scale fisheries. The project strategy is (1) to establish communities of practice with fishers, stakeholders and authorities of both countries, (2) implement hands-on trials in fishery-specific (seven fisheries) and area-specific cases (two sites), (3) systematically document, exchange and disseminate experience and lessons within each country, between both countries and among participants of CFI, and (4) apply lessons to improve existing fisheries governance schemes or to implement new ones.

Strengthening Global Governance of Large Marine Ecosystems and Their Coasts through enhanced sharing and application of LME/ICM/MPA knowledge and information tools (LME:LEARN)

440 LME:LEARN is a program to improve global ecosystem-based governance of Large Marine Ecosystems and their coasts by generating knowledge, building capacity, harnessing public and private partners and supporting south-to-south learning and north-to-south learning. A key element of this improved governance is mainstreaming cooperation between LME, MPA, MSP and ICM projects in overlapping areas, both for GEF projects and for non-GEF projects. The project plans to achieve a multiplier effect using demonstrations of learning tools and toolboxes, to aid practitioners and other key stakeholders, in conducting and learning from GEF projects.

Greening the Shipping Industry

Transforming the Global Maritime Transport Industry towards a Low carbon Future through Improved Energy Efficiency (GloMEEP)

441 Global Maritime Energy Efficiency Partnerships (GloMEEP) is a GEF-UNDP-IMO project aimed at supporting the uptake and implementation of energy efficiency measures for shipping, thereby reducing greenhouse gas emissions from shipping. GloMEEP supports ten Lead Pilot Countries of the project to implement these measures, through: legal, policy and institutional reforms, awareness raising and capacity-building activities, and establishment of public-private partnerships to support low carbon shipping. The Lead Pilot Countries (LPCs) of the GloMEEP project are: Argentina, China, Georgia, India, Jamaica, Malaysia, Morocco, Panama, Philippines and South Africa.

Building Partnerships to Assist Developing Countries to Reduce the Transfer of Harmful Aquatic Organisms through Biofouling (GloFouling Partnerships)

442 The overall objective of the GloFouling Partnerships Project is to build capacity in developing countries for implementing the IMO Biofouling and other relevant guidelines for biofouling management and to catalyse overall reductions in the transboundary introduction of biofouling-mediated IAS with additional benefits in the reduction of GHG emissions from global shipping. The GloFouling Project is divided into five major components: 1. Legal, Policy and Institutional Reforms (LPIR) in participating countries, developed and implemented to minimise the risk of Invasive Aquatic Species (IAS) transferred through biofouling; 2. Capacity building and technical support for the implementation of the 2011 Biofouling Guidelines and best practices for biofouling management in other ocean industries; 3. Public-private partnerships to bring active private sector participation at global, regional, national and local levels, to support the development of innovative technological and other solutions and financial sustainability for the control and management of biofouling; 4. Knowledge management systems and enhanced stakeholder and institutional cooperation for research, monitoring and evaluation of biofouling management and control measures; and 5. Monitoring and evaluation.

Ridge-to-Reef Integrated Watershed and Coastal Area Management

Implementing a Ridge to Reef approach to Preserve Ecosystem Services, Sequester Carbon, Improve Climate Resilience and Sustain Livelihoods in Fiji

443 This R2R approach in priority catchments will bolster Fiji's national system of marine protected areas through an enhanced, representative and sustainable system of LMMA including greater protection of threatened marine species. Negative impacts of land-based activities on these MPAs will be reduced through development and implementation of integrated catchment management plans, including mangrove protection, the adoption of appropriate sustainable land use practices and riparian restoration in adjoining upstream watersheds as well as terrestrial PAs, restored and rehabilitated forests. The R2R planning and overarching management approach is comprehensive; it aims to cover all activities within a catchment and out to the sea to ensure natural resource sustainability and biodiversity. The selected priority catchments are Ba River, Tuva River and Waidina River/Rewa Delta on Viti Levu and Labasa River, Vunivia River and Tunuloa district on Vanua Levu

Reimaanlok - Looking to the Future: Strengthening natural resource management in atoll communities in the Republic of Marshall Islands employing integrated approaches (RMI R2R)

444 As a Small Island Developing State (SIDS), the Republic of Marshall Islands (RMI) has a strong dependence on natural resources and biodiversity not only for food and income. The Marshallese relationship with the islands forms the basis of its culture and way of life which has developed in harmony over thousands of years. In the face of global threats, RMI still has pristine waters and coral reefs that contribute to ecosystem services and livelihoods. In recognition of the importance of its natural assets, RMI together with other SIDS responded to global conservation targets through the Micronesia Challenge and specifically for its part, it prepared Reimaanlok to serve as a clear roadmap of the way forward. This project aims to support operationalizing the Reimaanlok – the National Conservation Area Plan, adopted in 2008 to effectively conserve at least 30% of the nearshore marine resources and 20% of the terrestrial resources across Micronesia by 2020. The project objective is to sustain atoll biodiversity and livelihoods by building community and ecosystem resilience to threats and degrading influences through integrated management of terrestrial and coastal resources. The principles and processes outlined in Reimaanlok will be implemented in 5 islands/atolls, the lessons from which will guide replication in other sites

Implementing a Ridge to Reef approach to protect biodiversity and ecosystem functions in Tuvalu (R2R Tuvalu)

445 The objective of the Tuvalu R2R Project is "to preserve ecosystem services, sustain livelihoods and improve resilience in Tuvalu using a 'ridge-to-reef' approach". To achieve this objective, the project focuses on: enhancing and strengthening conservation and protected areas; rehabilitating degraded coastal and inland forests and landscapes and supporting the delivery of integrated water resource management (IWRM) and integrated coastal management (ICM) at a national scale whilst piloting hands-on approaches at the island scale (on three selected pilot islands); enhancing governance and institutional capacities at the national, island, and community levels for enhanced inland and coastal natural resource management; and improving data and information systems that would enable improve evidence-based planning, decision-making, and management of natural resources in Tuvalu.

Application of Ridge to Reef Concept for biodiversity conservation, and for the enhancement of ecosystem service and cultural heritage in Niue

446 This project will enhance Niue's capacities to effectively create and manage its protected areas, focusing on the expansion of its PA estate on land and on its marine areas through a combination of community conservation areas and government-led PA. In the Community

Conservation Area, strict protection and sustainable use zones will be identified and planned carefully, recognizing that tenure over most land areas are vested in local communities. This project has been designed to engineer a paradigm shift in the management of marine and terrestrial PA sites from a site centric approach to a holistic ridge to reef management approach, whereby activities in the immediate production landscapes adjacent to marine and terrestrial protected areas will be managed to reduce threats to biodiversity stemming from key production activities (tourism and agriculture). Additionally, the project also introduces the concept of connectivity in landscape and seascape in Niue. The terrestrial protected area will include a landscape that links strictly protected community areas (Tabu) to each other to enhance their integrity and to form a corridor between them. Similarly, the creation of a protected area in Beveridge Reef is expected to sustain recruitment of clams and other marine species for Niue's coral reefs and vice versa.

ASEAN IWRM: Reducing Pollution and Habitat Loss and Preserving Environmental Flows to the East Asian Seas through the Implementation of Integrated River Basin Management

447 The project objective is to improve governance and management responsiveness and capacities in integrated water resources management, pollution load reduction from nutrients and other land-based activities, protection and conservation of freshwater environmental flows, and alleviation of climate vulnerability through demonstrations, planning, and strengthening of integrated river basin management in selected countries in the East Asian Seas. The project consists of three components: 1. Baseline Assessment of Source to Sea Management Continuum; 2. IRBM Pilot Projects for Improved Governance and Management of River Basins/Sub-Basins and Associated Coastal Areas, and 3. Knowledge management and learning.

Restoring marine ecosystem services by rehabilitating coral reefs to meet a changing climate future (Seychelles/Mauritius)

448 The objective of the project is to upscale and mainstream the rehabilitation of coral reefs degraded by coral bleaching in order to restore essential ecosystem services in the face of climate change threats and to generate knowledge about the most effective solutions for dissemination to SIDS and countries within the wider region. The project will contribute to demonstrating where, when and how healthy or restored coastal ecosystems can contribute to cost-effective solutions that address current and growing risk from natural hazards and climate change. The project will demonstrate innovations in adaptation finance for transformational impact both by using new technologies and different financial models to create cost effective solutions to sustain these adaptation measures beyond the project lifespan. By adopting the regional approach, it is expected that the stakeholders involved will develop the technical and scientific partnerships as well as a common political understanding and will to promote the use of effective natural solutions in adaptation and disaster risk reduction.

Implementing Integrated Land, Water & Wastewater Management in Caribbean SIDS: IW-ECO (w/UNEP)

449 The overall project objective is to contribute to the preservation of Caribbean ecosystems that are of global significance and the sustainability of livelihoods through the application of existing proven technologies and approaches that are appropriate for small island developing states through improved fresh and coastal water resources management, sustainable land management and sustainable forest management that also seek to enhance resilience of socio-ecological systems to the impacts of climate change. UNDP roles include responsibility for support in strengthening of livelihood opportunities in the development and execution of small-scale community investments associated with the national sub-projects in the eight countries through the GEF Small Grants Programme as well as execution of activities under Regional Sub-project 4 on Knowledge Management.

Ridge to Reef - Testing the Integration of Water, Land, Forest & Coastal Management to Preserve Ecosystem Services, Store Carbon, Improve Climate Resilience and Sustain Livelihoods in Pacific Island Countries

450 The purpose of the regional project is to test the mainstreaming of 'ridge-to-reef' (R2R), climate resilient approaches to integrated land, water, forest and coastal management in the PICs through strategic planning, capacity building and piloted local actions to sustain livelihoods and preserve ecosystem services. This regional project provides the primary coordination vehicle for the national R2R STAR Projects that are part of the Pacific R2R Program, by building on nascent national processes from the previous GEF IWRM project to foster sustainability and resilience for each island through: reforms in policy, institutions, and coordination; building capacity of local institutions to integrate land, water and coastal management through on-site demonstrations; establishing evidence-based approaches to ICM planning; improved consolidation of results monitoring and information and data required to inform cross-sector R2R planning approaches. This project will also focus attention on harnessing support of traditional community leadership and governance structures to improve the relevance of investment in ICM, including MPAs, from 'community to cabinet'.

UNDP Ocean Innovation Facility

451 In late 2019, UNDP will be launching its "Ocean Innovation Facility (OIF)". The Ocean Innovation Facility is a unique new mechanism that has been designed to accelerate progress on SDG14 via the identification, financing, advising and mentoring of truly innovative, entrepreneurial and creative approaches towards ocean and coastal restoration and protection that sustains livelihoods and advances the 'blue economy'. Towards maximizing and catalyzing impact, OIC seeks innovations that are transferable, replicable and scalable. The OIF will issue a series of staggered 'Ocean Challenges' or Requests for Proposals, each focused on a specific SDG14 target. Initial concepts may be submitted by public or private entities, including governments, private companies (including start-ups), NGO/CSO, United Nations entities, academic institutions, and intergovernmental organizations. The OIF will also work to develop, disseminate and provide easy access to information and resources on successful ocean innovations, both of these funded by the OIC and others. This will be primarily done through the OIC website and the Ocean Action Hub, an established knowledge platform which aims to connect experts and practitioners. The OIC will coordinate and share information with related initiatives such as the World Bank's ProBlue, Sustainable Ocean Fund, Sustainable Ocean Alliance, and others.