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CONVENTION – 46th Meeting; and  
SCIENTIFIC GROUP OF THE LONDON  
PROTOCOL – 17th Meeting  
13 to 17 March 2023  
Agenda item 16

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## CONSIDERATION AND ADOPTION OF THE REPORT

### REPORT OF THE FORTY-SIXTH MEETING OF THE SCIENTIFIC GROUP UNDER THE LONDON CONVENTION AND THE SEVENTEENTH MEETING OF THE SCIENTIFIC GROUP UNDER THE LONDON PROTOCOL

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## 1 INTRODUCTION

1.1 The forty-sixth meeting of the Scientific Group under the London Convention and the seventeenth meeting of the Scientific Group under the London Protocol were convened from 13 to 17 March 2023, at the Hotel Grand Mogador City Center, in Casablanca, Morocco, chaired by Commander Enrique Vargas Guerra (Chile).

1.2 The joint session was attended by delegations from Contracting Parties to the London Convention, Contracting Parties to the London Protocol and observers from intergovernmental and non-governmental organizations in consultative status, as listed in document LC/SG 46/INF.1.

### Opening of the meetings

1.3 The Chair opened the proceedings by welcoming all participants to the joint session of the Scientific Groups under the London Convention and Protocol.

1.4 H.E. Mr. Mohamed Abdeljalil, Minister of Transport and Logistics, Morocco, welcomed the participants to the meetings, noting the importance that the treaties played in the prevention of pollution of the marine environment.

### Adoption of the agenda

1.5 The agenda (LC/SG 46/1 and its addenda) was adopted and is shown at annex 1. This annex includes a list of documents considered under each agenda item. The Scientific Groups also adopted a timetable for the meetings, as amended (LC/SG 46/1/1, annex 2).

## 2 WASTE ASSESSMENT GUIDANCE

### Keep under review all generic and specific guidelines

#### ***Revised guidance on best management practices for removal of anti-fouling coatings from ships, including TBT hull paints***

2.1 The Scientific Groups recalled that in 2022 the governing bodies had noted the Groups' discussion on the *Revised guidance on best management practices for removal of anti-fouling coatings from ships, including TBT hull paints*, and had endorsed the Groups' decision to establish a correspondence group on the issue, under the lead of the First Vice-Chair, who had informed the meetings of progress to date and that a report of the correspondence group would be submitted to the next joint session of the Scientific Groups in 2023 (LC 44/17, paragraph 4.2.3).

2.2 The Groups considered document LC/SG 46/2 (Chair of the Correspondence Group) reporting on the progress with the revision of the *Revised guidance on best management practices for removal of anti-fouling coatings from ships, including TBT hull paints* following the amendments to the AFS Convention to introduce controls on cybutryne. The Correspondence Group worked intersessionally and agreed that revisions were needed to make the guidance more generic, as it was initially focused on TBT removal. Therefore, the title was amended to read "*Revised guidance on best management practices for removal of anti-fouling coatings from ships*".

2.3 It was noted that the Correspondence Group had also provided comments and suggestions to the circular text to address the amendment to the AFS Convention to include cybutryne; comments were mainly focused on section 1 "Background and introduction".

The revisions to the Revised Guidance suggested by the Correspondence Group are included in the annex to the submission. A final check to ensure consistency of terms used between the Revised Guidance (annex) and the MEPC-related guidelines (as mentioned in paragraph 1.8, annex) in view of the proposed amendments to the AFS Convention would be required.

2.4 The delegation of Canada noted that the date of entry into force of the controls on cybutryne was 1 January 2023, and that they had some minor editorial corrections to the revisions to the revised guidance, which they would provide to the Secretariat.

### **Action by the Scientific Groups**

2.5 Following discussion, the Scientific Groups agreed to task the Secretariat with carrying out a consistency check and any editorial revisions and submitting the Revised Guidance to the next meeting of the governing bodies in October this year, with a view to approval.

### ***Developing recommendations on disposal of fibreglass vessels***

2.6 The Scientific Groups recalled that in 2022 the governing bodies had noted the Scientific Groups' discussion on developing recommendations on disposal of fibreglass vessels and had endorsed the Groups' instruction to the Secretariat to continue to work with UNEP and the consultant to develop the guidance on the end-of-life management of fibre-reinforced plastic (FRP) vessels and alternatives to at-sea disposal, and provide a first draft of the guidance to the joint session in 2023 (LC 44/17, paragraph 10.12.1).

2.7 It was also recalled that in 2022 the governing bodies had further invited the Scientific Groups to review and finalize the draft guidance, for submission to the governing bodies meeting in 2023 for endorsement (LC 44/17, paragraph 10.12.2) and had encouraged Parties to bring forward information on the scale and nature of this problem by way of submission to the next joint session of the Scientific Groups (LC 44/17, paragraph 10.12.3).

2.8 The Groups considered documents LC/SG 46/2/1 and LC/SG 46/INF.6. (Secretariat) on progress on the development of the guidance on the end-of-life management of FRP vessels and alternatives to at-sea disposal.

2.9 The Groups noted that since the meeting of the governing bodies in 2022, the Secretariat, despite its best efforts, had still been unable to obtain UNEP's input to the draft guidance. Given this delay, and in light of some issues raised by the consultant, the Secretariat considered it useful to present a working draft of the guidance for consideration by the Scientific Groups at this session. The draft guidance submitted by the consultant (provided in document LC/SG 46/INF.6) contained a number of placeholders where the consultant was seeking information, including input from UNEP.

2.10 The primary aim of the draft guidelines is ultimately to eliminate the disposal of FRP vessels to the marine environment although it is acknowledged that, at least in the interim, some disposal at sea might be inevitable. Where this is the case, a second aim is to ensure that such disposal is as environmentally acceptable as currently possible. This is to be achieved by providing guidance on which end-of-life management options could be considered. A further objective is to stimulate research and innovation on such alternatives.

2.11 The report of the consultant therefore concluded that, while the best longer-term solution was clearly to move towards using composite or other materials which were reusable and/or recyclable, the problem of existing FRP vessels (and other products) remained an issue in the short to medium term noting that the projected lifespan of such vessels was 30 to 50

years, although many had lasted longer than that. In this regard, a number of reports indicated that at present the best option was reuse in the cement/construction industry.

2.12 The report further highlighted that, in terms of addressing the existing problem insofar as the remit of the LC/LP was concerned, one option would be to adopt resolutions and or make amendments to relevant guidance documents to the effect that:

- .1 the placement of FRP vessels as artificial reefs was prohibited; and
- .2 the disposal of FRP vessels at sea was prohibited except in cases where there was no other disposal option and/or it was the best available option in terms of current technology. This would address the needs of SIDS and possibly some developing countries until such time as a more sustainable solution was put in place.

2.13 Furthermore, the report recommended that, in addition to the guidelines, consideration should be given to developing:

- .1 a strategy aimed at moving the entire composites industry towards materials which were reusable and/or recyclable. This would thus have a much broader scope than just FRP vessels and should be developed in collaboration with other competent bodies, in particular UNEP; and
- .2 a capacity-building project (e.g. funded by the Global Environment Facility) to take this forward, which could include a partnership with the composites industry, which already seemed to be undertaking a lot of research in this direction.

2.14 The delegation of the United States welcomed the report by the consultant and stated that FRP vessels were not good candidates for disposal at sea as they were unlikely to sink causing a hazard for navigation and contribute to pollution of the marine environment. The delegation suggested that a resolution could be developed to ensure that the disposal option, where no other options were available could be considered only in exceptional circumstances in SIDS, that FRP vessels were not suitable for consideration as artificial reefs, and that SIDS would benefit from more detail in the report regarding the disposal options.

2.15 The delegation also informed the Meetings that in the United States the Save Our Seas Act 2.0 required the National Oceanic and Atmospheric Administration and the Environmental Protection Agency to jointly conduct a study and develop a report to determine the feasibility of a nationwide vessel recycling programme. The Rhode Island Marine Trades Association Foundation was contracted to develop this report. In February 2023, federal agencies published the report, titled "Recycling Opportunities for Abandoned, Derelict, and End-of-Life Recreational Vessels", which is available online at <https://marinedebris.noaa.gov/adv-documents/recycling-opportunities-abandoned-derelict-and-end-life-recreational-vessels>.

2.16 The delegation of Sweden stated that the alternatives to disposal at sea should be thoroughly documented in the permit reports by Parties, and that the Secretariat should continue to engage with UNEP to try and secure their input.

2.17 The delegation of Canada stressed that the guidance should not endorse the disposal of FRP vessels but should highlight the exceptional nature of such disposal.

2.18 The observer from Greenpeace International also welcomed the report and the continued momentum on this issue, in particular the recommendations on moving the entire composites industry towards recyclable/rescuable products and on capacity-building. The observer also stated that the disposal option should only be accessible where no other options existed and highlighted possible implications for the vessels guidance.

### **Establishment of a Working Group on the Development of Guidance on the End-of-life Management of FRP Vessels and Alternatives to At-sea Disposal**

2.19 Following discussion, the Scientific Groups agreed to establish a Working Group on the Development of Guidance on the End-of-life Management of FRP Vessels and Alternatives to At-sea Disposal, under the lead of Dr. David W. Moore (United States). The Working Group was instructed to, taking into account documents LC/SG 46/2/1 and LC/SG 46/INF.6, comments made in plenary and any previous information submitted on the issue:

- .1 review the initial draft guidance prepared by the consultant on the end-of-life management of FRP vessels and alternatives to at-sea disposal (LC/SG 46/INF.6) and the consultant's conclusions and recommendations on the end-of-life management of FRP vessels in the report and highlighted in document LC/SG 46/2/1; and
- .2 prepare draft recommendations on this issue to the governing bodies and any further steps to be taken by the respective LC/LP bodies.

### **Report of the Working Group**

2.20 The Working Group met on 15 March 2023. The following delegations were in attendance: Australia, Canada, Germany, Italy, Japan, South Africa, Sweden and the United States.

2.21 The Scientific Groups noted that the Working Group had discussed the current version of the draft guidance and agreed that it would require additional input and revisions prior to its finalization.

### **Action by the Scientific Groups**

2.22 Having noted the outcome of the Working Group and following discussion, the Scientific Groups approved the report in general (LC/SG 46/WP.3) and in particular:

- .1 agreed that it should be emphasized that placement of FRP vessels as artificial reefs should not be considered for disposal at sea;
- .2 agreed that FRP vessels should not be disposed of at sea except in cases, limited to SIDS, where there was no other disposal alternative and/or it was the best available option in terms of current technology. It should be emphasized that disposal of FRP vessels at sea should be the option of last resort and must be accompanied by documentation to include decision rationale with consideration of all other potential FRP end-of-life management alternatives. It should be further emphasized that disposal of FRP vessels at sea, even for SIDS, should be considered only as an interim option until such time as a more sustainable solution could be identified and accompanying guidance developed;

- .3 noted that the consultant's report would benefit from additional guidance for SIDS on best management practices for the disposal of FRP vessels at sea in a safe and environmentally protective manner when it had been determined that no other options were available and consideration of alternatives to disposal at sea could be documented. This additional guidance for SIDS should be developed prior to consideration of any updates/amendments to the Waste Assessment Guidelines for Vessels;
- .4 agreed that the development of a resolution on the issue of disposal of FRP vessels could be considered at a later stage, provided that it clarified that disposal at sea could be considered in very limited circumstances in SIDS where it could be clearly documented that there were no alternatives to disposal at sea;
- .5 invited the governing bodies to continue to engage UNEP and other competent bodies to develop a strategy to encourage FRP vessel manufacturers, specifically, and where appropriate other elements of the composites industry, to develop processes and procedures for the safe and environmentally protective end-of-life management of these materials with an emphasis on recycling/reuse. This could also include a capacity-building project with industry funded through the Global Environmental Facility; and
- .6 instructed the Secretariat to, taking the above into account, provide an updated version of the draft guidance to the next joint session of the Scientific Groups in 2024.

2.23 The Scientific Groups thanked the delegations that had participated in the deliberations of the Working Group, and in particular Dr. Moore for coordinating the group.

#### ***National action levels and their application***

2.24 The Scientific Groups recalled that in 2022, noting that there had been very few submissions under this sub-agenda item to recent meetings, they had urged Contracting Parties to submit information on experiences with national action lists and action levels or related matters to future sessions (LC/SG 45/16, paragraph 2.13).

2.25 The Groups noted document LC/SG 46/INF.2 (Canada), providing information on the new guidance adopted by Canada in 2022 related to the assessment of dredged material. The guidance entitled "Biological Characterization of Dredged Material" is intended to help disposal at sea permit applicants understand, use and interpret toxicity tests as part of Canada's Upper Action Level assessment. The guidance is being implemented across Canada and formalizes advice about selecting and interpreting toxicity tests in the context of disposal at sea permit decisions. The document provides a high-level summary of the contents of the new guidance. It also serves to affirm Canada's intention to replace, reduce or refine the use of animals in testing where possible, including by using alternatives such as cellular and embryonic tests that are already included in Canada's Upper Action Level.

2.26 In the subsequent discussion the delegation of Canada provided responses to the following questions which were raised by the observer from Greenpeace International;

- .1 *Can biological tests be used to override exceedances of upper action levels?*  
Canada stated that they could not override exceedances and that it did not have chemical upper action levels, relying instead on chemical concentrations for lower action levels and biological tests to determine if the

upper action levels were exceeded. Canada recommended against using biological testing when contaminant concentrations were very high, or when the contaminants of concern were known not to cause acute toxicity;

- .2 *Are composite samples used to dilute high contaminant concentrations?*  
No, Canada's chemical characterization guidance provides details about how to establish dredged material management units that are physically and chemically homogeneous. This means that composite samples are mixed from areas that have already been chemically characterized, and where levels are very high biological testing would not be recommended;
- .3 *Why does bioaccumulation in test sediments have to be double that in test sediments? And, isn't any bioaccumulation cause for concern?* Canada stated that it very rarely used bioaccumulation testing, and would like to improve it's approach to screening for bioaccumulative potential. For now, experience with existing method suggested that anything less than double the effect was too uncertain to be reliable as a "real" effect rather than natural variability between organisms or other confounding factors; and
- .4 *Is there an opportunity to use biological tests to characterize microplastics?*  
Canada stressed that microplastics were a very complex matrix involving a variety of shapes, weathering, polymers and associated contaminants. As far as Canada was aware, there were not yet any existing tests that could effectively screen for biological effects in plastics.

2.27 The delegation of Italy informed the Meetings that it was currently discussing the dredged material assessment framework it had in place for ports and was considering biological testing and composite sampling and that it was therefore interested in Canada's guidance document.

2.28 The Groups also noted document LC/SG 46/INF.7 (United Kingdom), providing an update of work being carried out to understand the implications of revising the current United Kingdom action levels in terms of legal obligations and burden on industry. In 2020, the delegation provided the LC/LP Scientific Groups with an overview of a review of current United Kingdom chemical action levels (implemented in England and Wales) (LC/SG 44/INF.3). The first phase of the project, carried out by the Centre for Environment, Fisheries and Aquaculture Science (Cefas), was published in 2020 and was available for review at <https://randd.defra.gov.uk/ProjectDetails?ProjectId=20243>.

2.29 The delegation of Italy expressed an interest in the submission, to better understand how the weight of evidence could be applied.

2.30 The second phase of the project was to develop a standardized online framework tool for dredge and disposal assessment with input from stakeholders. The framework aimed to provide clear, user-friendly high-level guidance for all stakeholders involved in dredge and sea disposal activities, including beneficial use. Input from stakeholders would also inform a socio-economic assessment of the proposed action level changes ahead of a policy decision being made, and was available at [https://rconnect.cefas.co.uk/action\\_levels\\_tool/](https://rconnect.cefas.co.uk/action_levels_tool/).

2.31 The Scientific Groups thanked those who had shared information and urged Contracting Parties to submit information on experiences with national action lists and action levels or related matters to a future session of the Scientific Groups.



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## Waste prevention techniques

2.32 The Chair recalled that in 2022 the governing bodies had noted the Groups' discussion regarding waste prevention techniques and had invited delegations to provide submissions on this topic at future joint sessions. The governing bodies also noted that it might be appropriate to focus discussions on one or two of the waste streams that were considered acceptable for dumping and on the techniques available for waste prevention relating to them (LC 44/17, paragraph 4.2.2).

2.33 The Groups noted document LC/SG 46/INF.5 (Canada), providing information on the lessons learned from a workshop with stakeholders on the challenges and solutions to material reuse in Vancouver, British Columbia (BC), Canada. In BC, Canada's westernmost province facing the Pacific Ocean, the two most common materials disposed of at sea were dredged material and inert, inorganic geological matter. As required by the LP, permits were not granted if practical opportunities were available to reuse or recycle the material. In January 2021, Canada hosted a two-part virtual workshop titled "Reuse of Dredged and Excavated Material in the Metro Vancouver Regional District". The objectives of the workshop were to meet with stakeholders and interested parties in the Metro Vancouver Regional District, Vancouver, BC to discuss the challenges of and solutions to the reuse of dredged and inert, inorganic geological material. Participants included federal, provincial and municipal governments, First Nations, the dredging industry, the excavation industry, environmental non-government organizations, environmental consultants and others.

2.34 At the workshop, Indigenous groups shared their perspectives on material reuse. A Web tool, SediMatch (<https://sedimatch.sfei.org/>), developed to help connect dredging projects with reuse opportunities in the San Francisco Bay Area, was launched and presented by the San Francisco Estuary Institute. A number of case studies were also presented and discussed.

2.35 It was noted that the key challenges to reuse opportunities in the area had been identified in the following categories: regulatory, economic, logistical, technical, and communication/information access. Several ideas had consistently emerged to solve these challenges: 1) establish a regional working group to promote collaboration, partnership and information exchange; 2) introduce more financial incentives for reuse and disincentives for waste disposal; and 3) establish an online platform/material exchange to help connect material producers with users. Furthermore, adapting to and mitigating climate change would generate a large demand for material reuse in the near future, such as for coastal flood protection; regulators, industry and other stakeholders needed to prepare for this unprecedented demand.

2.36 In the subsequent discussion:

- .1 the delegation of Italy stressed the importance of the reuse of waste material, specifically dredged material, but highlighted that in Italy there were legislative barriers that needed to be addressed to facilitate reuse;
- .2 the observer from Greenpeace International commended Canada on the workshop, saying that it served as a good model for stakeholder engagement. In relation to the SediMatch Web tool, the observer highlighted the value in matching those producing dredged sediment with end users but stressed that this should not circumvent or reduce the level of assessment normally required; and
- .3 the Secretariat encouraged the use of information from such workshops for wider utilization to the benefit of LC/LP Parties.

### 3 MARINE GEOENGINEERING

#### Keep under review the marine scientific implications of marine geoengineering

3.1 It was recalled that in 2022, the governing bodies had noted the Scientific Groups' discussion on marine geoengineering and had endorsed the Groups' decision to re-establish the Correspondence Group on Marine Geoengineering, under the lead of Italy. The governing bodies had considered a progress report by the Correspondence Group, had approved a statement on marine geoengineering (LC 44/17, annex 2) and had assigned tasks on promotional actions to the Correspondence Group on Marine Geoengineering in addition to their previous tasks on providing recommendations on the possible listing in the new annex 4 of the LP of, and reviewing the assessment frameworks for, the four techniques identified for in-depth analysis.

3.2 It was also recalled that in 2022, the governing bodies had established a Legal Intersessional Correspondence Group on Marine Geoengineering, under the lead of Canada and Germany to address specific legal issues identified (LC 44/17, paragraphs 5.6 to 5.17 and annex 2).

3.3 The Chair of the Correspondence Group on Marine Geoengineering, Dr. Ezio Amato (Italy), and the Co-Chair of the Legal Intersessional Correspondence Group on Marine Geoengineering, Dr. Harald Ginzky (Germany) gave brief updates on the Groups' work. They informed the meetings that the Groups had met jointly in the intersessional period, progressing work on considering the four priority marine geoengineering techniques the Correspondence Group had identified for in-depth analysis for listing in annex 4: marine or terrestrial biomass cultivation for carbon removal and ocean sequestration (CDR), albedo enhancement (e.g. with microbubbles or glass spheres), marine cloud brightening and alkalinization.

3.4 The Scientific Groups considered document LC/SG 46/3 (Canada) providing, in the annex, a table that identified several considerations that were largely specific to the evaluation of macroalgae cultivation projects (one of the four techniques the Correspondence Group on marine geoengineering agreed to be prioritized and considered for in-depth analysis for listing in annex 4) and compared these to the considerations outlined in the generic assessment framework in annex 5 of the London Protocol. This preliminary set of considerations was provided to support the work of the Correspondence Group and as a basis for discussion and for determining whether specific guidance for evaluating macroalgae cultivation projects would be needed.

3.5 The Groups were further informed of the work of GESAMP Working Group 41 on ocean interventions for climate change mitigation (WG 41) by means of a presentation by one of the Co-Chairs of the Working Group, Dr. Chris Vivian. The Meetings noted the progress on the development of an integrated assessment framework (IAF) to integrate inputs from natural sciences and societal disciplines into a holistic assessment of ocean interventions for climate change mitigation. In developing the IAF WG 41 had adopted a systems approach based on the DAPSI(W)R(M) approach (Drivers, Activities, Pressures, State or State Changes, Impact (on Human Welfare), Response (as Management Measures)),<sup>1</sup> the 10 tenets of adaptive management and sustainability<sup>2</sup> and a German framework for assessing the feasibility of CO<sub>2</sub> options.<sup>3</sup>

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<sup>1</sup> Elliott, M. (2015) "And DPSIR begat DAPSI(W)R(M)!" – A unifying framework for marine environmental management. *Marine Pollution Bulletin* 118: 27-40.

<https://www.sciencedirect.com/science/article/pii/S0025326X17302692?via%3Dihub>

<sup>2</sup> Barnard, S. and Elliott, M. (2015) The 10-tenets of adaptive management and sustainability: A holistic framework for understanding and managing the socio-ecological system. *Environmental Science and Policy* 51: 181-191. <https://www.sciencedirect.com/science/article/abs/pii/S1462901115000817?via%3Dihub>

<sup>3</sup> Förster, J. et al. (2022) Framework for Assessing the Feasibility of Carbon Dioxide Removal Options Within the National Context of Germany. *Frontiers in Climate* 4, 758628. <https://www.frontiersin.org/article/10.3389/fclim.2022.758628>

3.6 The Chair thanked Dr. Vivian and GESAMP WG 41 and welcomed the updated information from the Group.

3.7 The delegation of Germany informed the Meetings that the German framework being considered by WG 41 was from a paper published by a number of German scientists and not the position of the German government, where a comprehensive regulatory framework for assessment already existed.

3.8 The delegation of the United States stated that it generally agreed with the prioritization of the four techniques identified for further analysis and stressed that Parties should remain mindful of the Guidance for consideration of marine geoengineering activities (LC-LP.1/Circ.67), which aimed to assist Contracting Parties to the London Protocol and Convention in considering whether and, if so, in what form and context, marine geoengineering activities of potential concern should be addressed. This guidance provided a recommended procedure for the consideration of such activities, including statements of concern, resolutions and development of guidance, and the LP regulatory option (LC 36/16, annex 5, paragraph 6). The delegation also highlighted that further evaluation of the techniques was needed and that some might involve dumping.

3.9 In the subsequent discussion, some delegations also provided information on marine geoengineering activities and projects:

- .1 the delegation of Canada informed the meetings that;
  - .1 it was still in contact with the Running Tide group, which was proposing deployment that would involve the release of thousands of wooden buoys seeded with kelp, which would be allowed to grow and then somehow sink to the sea floor, where the kelp biomass and the buoys would remain and sequester atmospheric carbon. Canada noted that this activity might fall within the conventional definition of disposal of organic waste, and so could potentially be controlled as a disposal at sea activity even before any consideration was given to its potential to be a type of marine geoengineering activity. The delegation also stated that they had not issued any type of permit to Running Tide;
  - .2 it remained in contact with a group called Planetary Technologies (formerly Planetary Hydrogen), which was seeking to create hydrogen fuel and release a by-product of this reaction into the sea to reduce ocean acidification (the by-product of hydrogen production was a hydroxide). As it appeared that the proposed release into the sea would take place from land, this activity would not fall under domestic disposal at sea controls. Canada committed to continue informing the Scientific Groups as this project progressed, and how it might be controlled under other domestic laws; and
  - .3 it had been approached by an academic consortium called the Ocean Frontiers Institute, which would like to establish a 1 x 2 km square "experimental area" in which to conduct ocean alkalization field research. Canada had asked the group to submit an assessment of their proposal against the generic assessment framework for marine geoengineering (contained in the 2013 amendment). Canada offered to continue to provide updates to the meetings as the project progressed.

- .2 the delegation of the United States informed the meetings that it had corresponded with, and received preliminary information from, several ocean-based carbon dioxide removal and solar radiation management research organizations regarding regulation of proposed activities involving ocean dumping. The United States considered the deposition of material in the ocean to be "dumping" subject to the domestic ocean dumping permitting statute, the Marine Protection, Research and Sanctuaries Act, if the project sponsor did not intend, anticipate or prepare to recover the material from the ocean as part of the project. The delegation also stated that it looked forward to hearing from other Parties regarding their interaction with researchers or organizations seeking to conduct marine geoengineering activities;
- .3 the delegation of Germany informed the meetings that only research projects for ocean fertilization were permissible under German law and that they required an assessment transposed from annex 5 of the 2013 amendment to the LP. The German Ministry for Research had recently allocated funding for several projects on marine geoengineering. However, currently all types of marine geoengineering activities except ocean fertilization, including research projects, were prohibited and that the relevant laws would have to be amended if any other activities were to be made permissible, but that decision had yet to be taken; and
- .4 the observer from Greenpeace International noted the increasing rate and diversity of marine geoengineering projects being proposed, and stressed the importance of considering the scientific implications of such activities given the uncertainty regarding environmental impacts and the difficulty in assessing and monitoring impacts.

### **Establishment of a Working Group on Marine Geoengineering**

3.10 Following discussion, the Scientific Groups established a Working Group on Marine Geoengineering, under the lead of Italy.<sup>4</sup> Taking into account document LC/SG 46/3, information provided by the Correspondence Group on Marine Geoengineering, comments made in plenary and any further sources of information, the Working Group was instructed to:

- .1 consider the four marine geoengineering techniques prioritized for in-depth analysis for possible inclusion in the new annex 4 to the London Protocol (2013 amendment);
- .2 develop a road map for any work to be undertaken in the intersessional period by the Correspondence Group; and
- .3 consider the possible development of a statement of concern.

### **Report of the Working Group**

3.11 The Working Group met from 14 to 16 March. Delegations from Australia, Canada, Chile, Germany, Italy, Japan, Mexico, Morocco, South Africa, Sweden, the United Kingdom and the United States, and an observer from Greenpeace International were in attendance. The Co-Chair of GESAMP WG 41 also participated in the Group.

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<sup>4</sup> The coordinator, Dr. Ezio Amato (Italy), can be contacted at [ezio.amato@isprambiente.it](mailto:ezio.amato@isprambiente.it)

3.12 The Scientific Groups noted that the Working Group had made progress on all three terms of reference, including:

- .1 refining a table of marine geoengineering scenarios prepared jointly by the Marine Geoengineering (MGE) and Legal Intersessional Correspondence Groups during the intersessional period – the scenarios were intended to serve as the basis for both the scientific assessment and the legal analysis being conducted in relation to marine geoengineering by the respective Correspondence Groups;
- .2 analysing several options for communicating the agreement reached at this meeting – having done so, the Working Group proposed a potential press briefing as shown in the annex to document LC/SG 46/WP.4; and
- .3 developing a road map for the intersessional period until the next meeting of the Scientific Groups in 2024.

3.13 The Scientific Groups also noted that in order to concisely communicate the available information about the potential effects related to four techniques and their sub-categories, the Working Group had developed and agreed on four summary tables, as shown in annex 2 to document LC/SG 46WP.4.

#### **Action by the Scientific Groups**

3.14 Having noted the outcome of the Working Group and the discussion that followed, the Scientific Groups approved the report in general (LC/SG 46/WP.4) and in particular:

- .1 endorsed the assessment of potential effects of the four marine geoengineering techniques as follows: The Scientific Groups agree that, depending on project specifics, all four techniques evaluated have the potential for effects on human health, ecosystems, other legitimate uses of the marine environment, and the potential for deleterious effects that are widespread, long-lasting or severe. Furthermore, the Scientific Groups are aware that active research is under way within all four marine geoengineering techniques and that there is considerable uncertainty regarding environmental effects of various proposed techniques; therefore, it will be essential that the Correspondence Group continues its work during the intersessional period to maintain momentum on this topic and to enable the governing bodies to make informed decisions about whether to list new MGE techniques in annex 4 of the 2013 amendment and/or take other actions;
- .2 re-established the Correspondence Group on Marine Geoengineering, under the co-lead of Italy and South Africa<sup>5</sup> to continue its work during the intersessional period with the following terms of reference:
  - .1 implement the road map presented in annex 2 of this report;
  - .2 recommend consideration of how to reach audiences outside the LC/LP and how to engage a broader range of Contracting Parties in the work of this Correspondence Group;

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<sup>5</sup> The coordinators, Dr. Ezio Amato (Italy) and Ms. Radia Razack (South Africa), can be contacted at [ezio.amato@isprambiente.it](mailto:ezio.amato@isprambiente.it) and [Rrazack@dffe.gov.za](mailto:Rrazack@dffe.gov.za), respectively.

- .3 provide a progress report to the governing bodies in October 2023; and
  - .4 provide a progress report to the joint session of the Scientific Groups in 2024;
- .3 requested that the Secretariat issue a circular describing the outputs of this meeting, the work of the LC/LP on marine geoengineering, and potentially highlighting the press briefing provided in LC/SG 46/WP.4, annex 4.

3.15 The delegation of Canada stated that they did not at this point have approval for endorsing the press briefing.

3.16 The Scientific Groups also agreed to develop a response to a recent article in Science on deep-sea impacts of climate interventions, see <https://www.science.org/doi/abs/10.1126/science.ade7521>.

3.17 Noting the heavy workload of the Correspondence Group, the Scientific Groups welcomed the offer from South Africa to co-lead the group together with Italy.

3.18 The Scientific Groups thanked those who had contributed to the work of the Group, and in particular Dr. Ezio Amato for chairing the Working Group.

3.19 The Scientific Groups also:

- .1 noted, with appreciation, the ongoing work of GESAMP WG 41 and advice provided to the Scientific Groups, and encouraged WG 41 to continue its work on the terms of reference;
- .2 recommended the governing bodies to strengthen their efforts to promote the work on these issues under the London Protocol as well as under GESAMP;
- .3 noted that it was important that the Scientific Groups were kept informed of the scientific implications of marine geoengineering proposals as they arose; and
- .4 urged delegations to share information on these issues by way of submissions to the next session of the Scientific Groups in 2024.

#### **4 CO<sub>2</sub> SEQUESTRATION IN SUB-SEABED GEOLOGICAL FORMATIONS**

4.1 It was recalled that in 2022, the governing bodies had noted the Groups' discussion on CO<sub>2</sub> sequestration in sub-seabed geological formations and had encouraged Contracting Parties and observers to report on relevant developments concerning CO<sub>2</sub> sequestration technologies and projects, through submissions to the next session of the Groups in 2023, particularly on the application of the CO<sub>2</sub> Sequestration Guidelines as the topic was of increasing interest and urgency for the LC/LP (LC 44/17, paragraph 6.20).

4.2 The Groups were informed that since the last joint session, the Secretariat had continued to see increasing interest in this matter from a number of countries, regions and industry. In particular, this related to the 2009 amendment, the 2019 agreement on provisional application, and the content and nature of future agreements for transboundary transport of CO<sub>2</sub>. It was also noted that the ocean-climate connection had been given substantial attention at the twenty-seventh Conference of Parties of the United Nations Framework Convention on

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Climate Change (COP 27) in 2022, providing further incentive to intensify LC/LP efforts to share information on these matters.

4.3 Currently, the 2009 amendment has been accepted by 10 Parties: Belgium, Denmark, Estonia, Finland, the Islamic Republic of Iran, the Kingdom of the Netherlands, Norway, the Republic of Korea, Sweden and the United Kingdom. To date six declarations of provisional application have been received from the Governments of Belgium, Norway, the Kingdom of the Netherlands, Denmark, the Republic of Korea and Sweden. Late last year, the Governments of Belgium and Denmark notified IMO of the world's first bilateral agreement on CO<sub>2</sub> export, under the 2009 amendment.

4.4 In the intersessional period, the Secretariat had taken part in some outreach activities to inform various stakeholders of the LP regulations on this matter, including dialogue with the European Commission in their preparation of an analysis paper called "The EU legal framework for cross-border CO<sub>2</sub> transport and storage in the context of the requirements of the London Protocol". The document provides an analysis of the EU CCS Directive and the London Protocol, and is available at: <https://zeroemissionsplatform.eu/zep-briefing-european-commission-analysis-paper-on-the-london-protocol/>.

4.5 The Scientific Groups considered document LC/SG 46/4 (Japan), which invited Contracting Parties to share information on their experiences with the application of the CO<sub>2</sub> Sequestration Guidelines for future CCS projects, in particular on the following points and questions:

- .1 How does each Contracting Party planning to export or import CO<sub>2</sub> confirm and allocate permitting responsibilities in its bilateral agreements?
- .2 How does each Contracting Party assess alternatives in its permitting process?
- 3 How does each Contracting Party set and assess criteria for the CO<sub>2</sub> concentration or other impurities?
- .4 How does each Contracting Party set an appropriate permitting period and what items in the permits would each Contracting Party review at regular intervals, such as the whole permit or only the monitoring plan?

4.6 In addition, the delegation of Japan stated that it would be beneficial for Contracting Parties to provide information on any other issues or questions regarding the interpretation of the CO<sub>2</sub> Sequestration Guidelines in the implementation of CCS projects. These could be done by further written submissions, or through the discussions planned to take place in this, and future sessions of the Science Groups.

4.7 In the discussion that followed delegations thanked Japan for the submission and for providing the information and updates on CO<sub>2</sub> sequestration activities.

4.8 The delegation of the Republic of Korea informed the meetings that it had deposited its instrument of acceptance of the 2009 amendment of the LP in April 2022 and that it was currently establishing policy targets to reduce carbon dioxide emissions and considered CCS an important climate change mitigation measure. Private companies from the Republic of Korea were also promoting joint CCS projects with Australia and Malaysia to utilize their depleted gas fields. The delegation stated that it also had questions on the application of the CO<sub>2</sub> Sequestration Guidelines as it had many researchers working to develop related technologies. In light of this, the Republic of Korea wished to participate in CCS events, such

as the Asian CCUS Network Forum, in order to share the CCS-related information with other Contracting Parties.

4.9 The delegation of Australia informed the meetings that it had a number of projects under way to implement the 2012 Specific guidelines for the assessment of carbon dioxide for disposal into sub-seabed geological formations, and that it was working on a national action list for such activities and would endeavour to provide further information to the meetings next year.

4.10 The delegation of the United Kingdom stated that CCS activities were in an early stage of development in the United Kingdom but that it would share information with Parties as soon as it became available.

4.11 The delegation of Italy informed the meetings that its first offshore CCS project, which intended to capture CO<sub>2</sub> from a plant onshore and sequester it in an old gas field under the Adriatic Sea, was in the permitting stage and they would provide more information on the project to the next meeting.

4.12 The delegation of Canada informed the meetings that:

- .1 although Canada had not yet adopted implementing legislation to allow the disposal of CO<sub>2</sub> streams, and was therefore currently unable to issue a permit for this activity, Canadian Government departments had formed a working group to advance a comprehensive legislative and regulatory framework for CCS in Canada, including both land-based and sub-seabed CO<sub>2</sub> storage. In 2022, Canada saw significant local interest from industry, federal and provincial governments in developing carbon dioxide capture and storage capabilities in Canada's offshore areas;
- .2 a workshop had been held in September 2022 on Canada's Eastern coast to meet with stakeholders to discuss challenges and opportunities in implementing offshore CCS. At the workshop a hub model in which an injection site was used by multiple users garnered a lot of interest, but questions were raised about liability, carbon credit accounting and monitoring. In addition to the need for domestic regulations, there was also a lack of research data characterizing geological formations, a lack of education and awareness, and a lack of investment from industry due to the financial risks and uncertainties with implementing these complex projects that were largely reliant on tax credits. To overcome these gaps, Canada had announced incentives to advance carbon capture, utilization, and storage (CCUS) in Canada, including a CCUS-Investment Tax Credit that would be available to projects that permanently stored captured CO<sub>2</sub> in dedicated geological storage. The tax credit would support capital investment expenditures in technologies to capture CO<sub>2</sub>, as well as the transportation and storage of CO<sub>2</sub>. However, the absence of a regulatory framework for offshore, sub-sea storage remained a barrier to CCUS advancement in Canada's offshore; and
- .3 in light of new research and the recent publication of international standards, such as the ISO standard on the geological storage of CO<sub>2</sub>, published in 2017 (ISO 27914:2017), Canada was wondering if the 2012 Specific Guidelines for CO<sub>2</sub> storage would benefit from a review to see if updates were necessary.



4.13 The delegation of the United States informed the meetings that:

- .1 although there was growing industry interest and there were planned projects in ocean waters of a State (of the United States), there were currently no operational offshore carbon dioxide sequestration projects. The United States was currently working on developing regulations that were pertinent to the questions posed by Japan in document LC/SG 46/4 and the delegation hoped it would be in a better position to respond to the questions at a future LC/LP meeting; and
- .2 in previous years, the United States had informed the Scientific Groups of projects funded by the United States Department of Energy to characterize offshore geologic sequestration sites. In January 2023, the Department of Energy announced that several projects were selected under its CarbonSAFE Phase II funding, which sought to improve procedures to safely, efficiently and affordably assess onshore and offshore CO<sub>2</sub> project sites within a storage complex at a commercial scale. Two of these projects were focused on offshore carbon dioxide sequestration:
  - .1 the Port of Corpus Christi Authority in Corpus Christi, Texas, would study a site in near offshore waters of the Coastal Bend region of the Texas Gulf Coast; and
  - .2 the Southern States Energy Board would study a site off the Gulf Coast of Louisiana. Further information about the announcement of these projects is available at [https://www.energy.gov/fecm/project-selections-foa-2610-carbonsafe-phase-ii-storage-complex-feasibility?utm\\_medium=email&utm\\_source=govdelivery](https://www.energy.gov/fecm/project-selections-foa-2610-carbonsafe-phase-ii-storage-complex-feasibility?utm_medium=email&utm_source=govdelivery).

4.14 The observer from Greenpeace International welcomed the submission by Japan, and in particular the questions raised in paragraph 5 which, in its view, were critical to gaining a shared understanding of the ways in which the Guidelines were being interpreted, including in relation to initial site selection and monitoring requirements, even if many projects remained at an early development stage. Greenpeace International also reiterated its concerns that the term "overwhelmingly" in relation to CO<sub>2</sub> content remained too open to diverse interpretation and suggested that waste prevention auditing and the overall need to reduce reliance on disposal at sea over time should be addressed specifically through conditions within permits and contracts, and their periodic review.

4.15 The Secretariat also informed the meetings it had been contacted prior to the meetings by the observer from IEAGHG,<sup>6</sup> who had offered to provide help to Japan, and any other Parties seeking assistance, on the questions raised in document LC/SG 46/4, and that the IEAGHG had provided information to the governing bodies meeting in 2016 on a report reviewing the permits under the LP and an assessment of a CCS project in the Dutch parts of the North Sea (LC 38/6, paragraph 6.15).

4.16 Following discussion the meetings agreed to establish a Correspondence Group to gather information on experiences with the carbon dioxide streams assessment guidelines.

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<sup>6</sup> Mr. Tim Dixon can be contacted at [tim.dixon@ieaghg.org](mailto:tim.dixon@ieaghg.org)

## Action by the Scientific Groups

4.17 Following discussion, the Scientific Groups:

- .1 noted that as the CCS activities under the remit were growing, it might be appropriate to work towards a review of the 2012 Specific Guidelines for the assessment of carbon dioxide for disposal into sub-seabed geological formations and the Guidance on the implementation of article 6.2 on the export of CO<sub>2</sub> streams for disposal in sub-seabed geological formations for the purpose of sequestration in light of the experiences gained and questions raised;
- .2 agreed to establish a Correspondence Group on experiences with the carbon dioxide streams assessment guidelines, under the co-lead of Japan and Australia,<sup>7</sup> with the following terms of reference:
  - .1 taking into account document LC/SG 46/4 and any other available information, including previous submissions on the topic, the Correspondence Group on experiences with the carbon dioxide streams assessment guidelines, is instructed to:
  - .2 collect information regarding experiences with the application of the Guidelines, including the questions raised in document LC/SG 46/4, paragraphs 5 and 6; and
  - .3 submit a progress report to the governing bodies in 2023, and a report to the Scientific Groups in 2024.
- .3 agreed that it was important to strengthen the sharing of relevant and up-to-date information on all scientific, technical as well as legal aspects of CO<sub>2</sub> sequestration projects; and
- .4 encouraged Contracting Parties to inform them of relevant developments, through submissions to the next session.

## 5 REPORTING ON DUMPING ACTIVITIES

### Review of dumping reports

5.1 The Groups recalled that in 2022, the Secretariat, as instructed, had circulated the final compilation report on dumping permits for 2018 as LC-LP.1/Circ.101, and had issued the new invitation to report on dumping permits issued in 2021 as LC-LP.1/Circ.102.

5.2 The Group further recalled that in 2022, the governing bodies had instructed the Secretariat to publish the summary report on permits issued in 2019 in early 2023, submit a final draft summary report on permits issued in 2020, and submit a first draft 2021 compilation report to the meeting of the Scientific Groups and to the Correspondence Group on Assessment of Reports (CGAR), for review (LC 44/17, paragraph 7.11).

5.3 The Scientific Groups noted that the Secretariat had published the final report on permits issued in 2018 on 11 March 2022, and had issued it as document

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<sup>7</sup> The Co-Chairs, Mr. Ryuzo Sugimoto (Japan) and Ms. Heather Agnew (Australia), can be contacted at [ryuzo\\_sugimoto@env.go.jp](mailto:ryuzo_sugimoto@env.go.jp) and [heather.agnew@dceew.gov.au](mailto:heather.agnew@dceew.gov.au), respectively.

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LC-LP.1/Circ.101. The Secretariat had also prepared the final report on permits in 2019, which had been issued as LC-LP.1/Circ.105.

5.4 The Scientific Groups noted that the Secretariat had prepared a final draft summary report on dumping permits issued in 2020 under document LC/SG 46/5, on the basis of submissions received from Contracting Parties, directly or through regional bodies, covering permits issued in 2020, as well as multiple year permits in effect for that year, which were categorized in accordance with annex 1 of the London Protocol. In 2020, 87 States were registered as Contracting Parties to the London Convention and 53 States were registered as Contracting Parties to the London Protocol. To date, 30 Contracting Parties had provided a report on their dumping activities for that year.

5.5 The Groups encouraged Parties yet to submit their reports of permits issued in 2020 to do so by 23 June 2023 at the latest, to allow the Secretariat to submit the final draft for consideration by the governing bodies in line with the submission deadlines for the governing bodies' meeting in October 2023.

5.6 The Scientific Groups also noted that the Secretariat had provided a preliminary overview of the number of dumping permits reported in 2021 under document LC/SG 46/5/1 and would update the data as new reports were received. It was noted that at the time of submission, only 16 Contracting Parties had provided a report on their dumping activities for 2021.

5.7 The Groups encouraged Parties who had not reported their 2021 activities to submit reports to the Secretariat as soon as possible.

5.8 The Scientific Groups considered document LC/SG 46/5/2 (Greenpeace International) providing comments on the 2020 dumping reports. The document highlighted some trends in various waste streams, and suggested that greater transparency, combined with technical cooperation and assistance where applicable, could help yield further substantive reductions in the disposal of wastes at sea. The Scientific Groups were invited to encourage the further sharing of information, including case studies, that may be of relevance to waste prevention and alternative waste management options in relation to wastes other than dredged material, and to encourage those Parties not regularly reporting to share information on any waste streams, including organic material of natural origin, that might be presenting particular challenges with regard to waste prevention and management and for which further technical cooperation could be helpful.

5.9 The delegation from South Africa, as Chair of the CGAR, informed the meetings that the CGAR had reviewed the 2020 dumping reports and highlighted some issues and observations, which it had forwarded to the Secretariat to address. This included some amendments and clarifications for the dumping reports recorded for Canada, France, South Africa, the United Kingdom and the United States.

5.10 The CGAR also highlighted that the column heading "carbon dioxide streams from carbon dioxide capture processes for sequestration" in Table 1 (LC/SG 46/5, annex) did not convey what could be permitted under the LP very well, and could be read to include marine geoengineering as well as carbon capture and storage in sub-seabed geological formations. Therefore, the CGAR suggested replacing the column heading with "Storage of carbon dioxide streams in sub-seabed geological formations".

5.11 In the subsequent discussion:

- .1 the delegation of Sweden noted that the information provided through HELCOM might have been inaccurate and that the number of permits

- for 2020 should be 13. A correction would be submitted to the Secretariat, most likely through HELCOM;
- .2 the delegation of Japan informed the meetings that it had provided its dumping report for 2021 but this was not yet reflected in the summary report, and also requested a correction in document LC/SG 46/5, as the amounts should not be by volume, but by wet-weight;
  - .3 the observer from Greenpeace International noted that there was often more detail underlying the information in the dumping reports and encouraged the Groups to focus on the waste category organic material of natural origin at the next session. The observer also highlighted that no bulky wastes were reported again in 2020 and recommended that the governing bodies review this waste stream as it had not been used for some time; they also raised the issue of buddying between Parties to support reporting;
  - .4 the delegation from Canada thanked Greenpeace International for their submission and encouraged the sharing of waste management and waste preventions options. The delegation also encouraged non-reporting Parties to bring forward the challenges that they were facing in reporting, particularly for wastes other than dredged material, and highlighted that some of the documents on the English version of the LC/LP website were not available in the French and Spanish language versions of the website;
  - .5 the delegation of Italy recalled that last year's Science Day had focused on waste prevention;
  - .6 the delegation of the United States stressed that an easy-to-use, Web-based electronic reporting and data management system was fundamental to facilitating improved reporting rates and it therefore supported exploring ways to determine how IMO could expedite the implementation of an improved electronic reporting system. This included holding a webinar or virtual workshop prior to future meetings of the Scientific Groups or governing bodies on reporting and presenting practical examples of permitting and monitoring reports as part of LP implementation workshops. The delegation also suggested that the CGAR could be a technical resource to support Parties having difficulties in reporting, and that it would be beneficial if a reminder with respect to the annual reporting could be sent when delegations registered for LC/LP meetings.

### **Review of monitoring reports and activities**

5.12 The Groups considered this sub-agenda item, originally included under agenda item 7, under agenda item 5 as it was focused on reviewing monitoring reports and agreed it should remain under this agenda item at future sessions.

5.13 The Scientific Groups recalled that in 2022, the Scientific Groups had urged Contracting Parties to report on monitoring activities every year and to provide more detailed monitoring reports to the Secretariat or through submissions to the Scientific Groups (LC/SG 45/16, paragraph 7.12).

5.14 The Groups were informed that the summary of monitoring activities reported from 2008 to 2019 had been submitted by the Secretariat to the joint session in 2021, as contained in document LC/SG 44/7/2.

5.15 Following discussion at last year's meetings, the Groups had instructed the Secretariat to compile summary information on the reporting of monitoring on a periodic basis every three years (LC/SG 45/16, paragraph 7.12.2), which would be submitted to next year's meeting under agenda item 5.

5.16 The Groups also noted that information on those Parties that had reported on monitoring activities for 2020 and 2021 to date was provided in documents LC/SG 46/5 and LC/SG 46/5/1, as this information was now incorporated in the summary tables reporting dumping permits for 2020 and 2021 respectively.

### **Review of reporting requirements**

5.17 It was recalled that in 2022, the governing bodies had noted progress made with the implementation of the action plan to improve reporting, which had been approved by the governing bodies in 2018 and noted that most items in the action plan had been initiated, with only a few outstanding, mainly in relation to the GISIS reporting module (LC 44/17, paragraph 7.14).

5.18 The Groups were informed that the Secretariat had continued dialogue with IMO's Information and Communication Technology Services to address the outstanding issues with GISIS. However, progress on updates to the module was still pending and was in fact affecting the entire GISIS system. The Secretariat had therefore initiated a review and overhaul of the entire GISIS system, including all modules, in a process involving the module owners in the Secretariat as well as Member States. A report was to be provided to the next session of Council (C 129 in July 2023).

5.19 The Groups noted that in addition, the review of the Strategic Plan carried out by the governing bodies last year had identified reporting, including GISIS, as one of the bottlenecks in the implementation of the LC/LP. Therefore, the governing bodies instructed the Secretariat to address issues with the reporting levels, and to initiate a complete review of the reporting system, working closely with the regional organizations, as had been successful with OSPAR, HELCOM and Barcelona Convention regions (see document LC 44/17, paragraph 3.20).

5.20 The Groups noted also that the Secretariat intended to initiate this review, based on the comments and concerns raised by delegations and end users since the launch of the module in 2015.

### **Collaboration with other international bodies on reporting**

5.21 The Scientific Groups recalled that in 2022, the governing bodies had instructed the Secretariat to continue its efforts to incorporate the historical data into the GISIS module and report back to the next joint session of the Scientific Groups in 2023 (LC 44/17, paragraph 7.17.1.3.2).

5.22 The Groups noted that the incorporation of historical data was part of the outstanding issues in the GISIS module, and was part of the review of the reporting system, as instructed by the governing bodies. The Secretariat informed that, noting that the data was available, and noting the usefulness of making this data accessible to delegations and other stakeholders, they were looking at ways to transfer this into a searchable, easily managed database, possibly independent from or linked to the GISIS system to allow for future changes.

### **Action by the Scientific Groups**

5.23 Following discussion, the Scientific Groups:

- .1 stressed the urgency in improving reporting rates in an attempt to meet the reporting targets set out in the Strategic Plan, which had a target of 75% of all Parties reporting in 2022 and the next target of 85% reporting in 2026;
- .2 urged those Parties which had not yet done so to submit their notifications for 2020 and 2021 as soon as possible, but not later than 23 June 2023 to enable compilation of the data to meet the deadline for submission of documents to the governing bodies in October 2023;
- .3 urged Contracting Parties to report on monitoring activities every year and to provide more detailed monitoring reports to the Secretariat or through submissions to the Scientific Groups;
- .4 encouraged reporting Parties to reach out to non-reporting Parties to assist them in reporting, and non-reporting Parties to contact the CGAR for assistance with reporting;
- .5 instructed the CGAR<sup>8</sup> under the lead of South Africa to meet in the intersessional period to:
  - .1 review the draft report on permits issued for 2021;
  - .2 include a review of monitoring activities in the Group's data review Process; and
  - .3 further identify ways to facilitate and support Parties to report.
- .6 instructed the Secretariat to:
  - .1 prepare a final draft report on permits issued in 2020 and a more complete draft summary report of the number of permits in 2021, for review by the governing bodies in October 2023;
  - .2 update the summary information on reporting of monitoring activities, as in document LC/SG 44/7/2, for submission to next year's session;
  - .3 continue its efforts to increase reporting through collaboration with regional bodies, including to explore ways to increase reporting in GISIS;
  - .4 continue its efforts to improve the functionality of the LC/LP GISIS Module and incorporate the historical data into the module, as part of the ongoing IMO review of GISIS as well as the Secretariat's review of the reporting system;
  - .5 review and update the information on the French and Spanish versions of the LC/LP website; and
  - .6 report back to the next joint session of the Scientific Groups in 2024.

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<sup>8</sup> The coordinator, Ms. Jessica Mans (South Africa), can be contacted at [JeMans@dffe.gov.za](mailto:JeMans@dffe.gov.za).

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## 6 TECHNICAL COOPERATION AND ASSISTANCE

### Implementation of the Barriers to Compliance (B2C) Project

6.1 The Scientific Groups recalled that in 2022, the governing bodies had noted the Scientific Groups' discussion regarding the work of the B2C Steering Group and had endorsed the Scientific Groups' instruction to the B2C Steering Group to continue supporting the Secretariat in promoting technical cooperation activities, through webinars or online meetings, to raise awareness among national/regional stakeholders about the benefits of accession to and implementation of the London Protocol and to continue its work on any outstanding issues on the B2C work (LC 44/17, paragraph 8.12.1).

6.2 It was also recalled that the governing bodies, in 2022, had noted the Scientific Groups' discussion regarding LC/LP technical cooperation activities (LC/SG 45/16, paragraphs 6.9 to 6.16), and encouraged Contracting Parties to provide support to the technical cooperation activities, where possible, and to keep the Scientific Groups informed about bilateral projects which were relevant for the Groups' work (LC 44/17, paragraph 8.12.2).

6.3 The Groups also noted that the governing bodies had been informed that the co-chair, Mr. Gildardo Alarcon Daowz (Mexico), had to step down, and invited interested delegations to contact the Secretariat, including regarding the vacant co-chair position.

6.4 The Groups were informed of the recent passing of Mrs. Mandana Mansoorian (Islamic Republic of Iran), a dear friend and colleague as well as co-chair of the B2C Steering Group, and expressed their deepest condolences to Mrs. Mansoorian's family and colleagues. A statement by the Secretary-General of IMO can be found at <https://www.imo.org/en/MediaCentre/SecretaryGeneral/Pages/Mandana-Mansoorian-.aspx>.

6.5 The Scientific Groups noted the expressions of interest to co-chair the B2C, from Dr. Yeon Chang (Republic of Korea), and from Ms. Charlotte Clarke (United Kingdom). The Groups accepted Dr. Chang and Ms. Clarke's offer, and welcomed them as co-chairs of the B2C Steering Group. During the course of the joint session, the co-chairs met informally with the B2C Steering Group to agree on its work plan for the intersessional period.

6.6 The Meetings were informed that the B2C Steering Group members had exchanged contact information and had agreed to continue work during the intersessional period, beginning with a review of the current terms of reference and work plan. The Group had agreed to review workshop materials related to the LC/LP Site Selection Guidance, including considering providing recommendations related to the selection of virtual versus in-person workshop delivery, update the *How to Seek Assistance Guidance* and to review and update the action plan on reporting. Finally, the Meetings noted that the B2C Steering Group would produce a progress report to the governing bodies meeting later in the year, and a further update to the Scientific Groups meeting in 2024.

### Technical advice to specific countries, including national and regional workshops

6.7 The Groups considered document LC/SG 46/6 (Secretariat) reporting on progress with technical cooperation activities in the intersessional period, including:

- .1 a national workshop on the implementation of LP in Thailand was held in February 2022 focusing on the *Revised guidance on national implementation of the London Protocol* and was delivered utilizing a training package on the revised guidance developed under the MEPSEAS project (LC 44/17, paragraph 8.6.1); and

- .2 a regional workshop on the implementation of LP in the Caribbean was delivered using the virtual LP workshop training package, which was developed by the Centre for Environment, Fisheries and Aquaculture Science (Cefas), United Kingdom, and reviewed by the B2C Steering Group (LC 44/17, paragraph 8.6.2).

6.8 Also in 2022, the governing bodies noted that the technical cooperation activities were likely to increase from 2023, and invited delegations in a position to do so to contribute to the LC/LP Technical Cooperation Trust Fund, and invited States to contact the Secretariat if they wished to receive assistance from the B2C Project during 2022/2023 (LC 44/17, paragraph 8.13).

6.9 The delegation of Morocco informed the Groups that a regional workshop on the London Protocol had been held the week prior to the joint session, from 8 to 10 March 2023, aimed specifically at the Francophone countries in West and Central Africa, kindly hosted by the Merchant Marine Directorate of Morocco. The workshop was held mainly in French and was attended by over 30 participants from Morocco, Gabon, the Republic of the Congo and Togo. Two experts were provided in-kind by the Government of Canada – Dr. Francois Marchand and Ms. Vicki Da Silva-Casimiro from Environment and Climate Change Canada.

6.10 The Scientific Groups noted with appreciation the contribution from the Government of Canada to the LC/LP Technical Cooperation Trust Fund, supporting the participation of one of the workshop participants to the joint session of the Scientific Groups.

6.11 The Groups were informed of planned technical cooperation activities in 2023, which included:

- .1 national workshops and follow-up activities in Madagascar, Peru and Sri Lanka;
- .2 a three-year regional capacity-building programme for ratification and implementation of the Protocol, to be carried out in cooperation with the Central American Commission on Maritime Transport (COCATRAM), which would cover Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama and the Dominican Republic, in the period 2023 to 2025, funded by the IMO Integrated Technical Cooperation Programme; and
- .3 the development of an e-learning course on the London Protocol.

### **Action by the Scientific Groups**

6.12 Following discussion, the Scientific Groups:

- .1 noted the capacity-building activities carried out since the last joint session;
- .2 expressed its gratitude to the Government of Morocco for the hosting of the regional workshop on the London Protocol the week prior to the joint session of the Scientific Groups;
- .3 expressed its gratitude to the Government of Canada for providing its experts as resource persons for the regional workshop and for its kind contribution to the LC/LP Technical Cooperation Trust Fund;
- .4 noted the technical cooperation currently in preparation by the Secretariat; and



- .5 encouraged Contracting Parties to keep the Scientific Groups informed about bilateral technical cooperation projects of relevance for the Groups' work.

### **Other technical cooperation and outreach activities**

#### ***Establishment of a Graduate School of LP Engineering Master of Project Administration***

6.13 The Groups recalled that in 2022, the governing bodies had noted the progress of the graduate school of LP Engineering Master of Project Administration (LPEM) for the spring semester 2021 at the Korea Institute of Ocean Science and Technology (KIOST), and had invited the Republic of Korea to provide more details about the LPEM course, including a course overview, as a submission to the next joint session of the Scientific Groups in 2023 (LC 44/17, paragraphs 8.18 to 8.22).

6.14 The Groups considered document LC/SG 46/6/1 (Republic of Korea), providing a course overview of the graduate school of LP Engineering Master of Project Administration (LPEM) and its progress for the fall semester 2022.

6.15 The Groups noted that in the autumn semester 2022, two students had been admitted from the Ecuadorian Navy and the Philippine Coast Guard. Since the overseas travel restrictions due to COVID-19 had been eased, the Chair of the Scientific Groups, Commander Enrique Vargas Guerra (Chile) was invited as an international expert to the LPEM campus in Busan, the Republic of Korea from 5 to 12 November 2022. Commander Vargas provided special lectures to LPEM students on various subjects of the London Protocol including legal and technical aspects. One of the LPEM students, Ms. Wendy Tatiana Gonzalez Cano from the Colombian Navy, published her research works during the LPEM course in the international journal, *Sustainability*, with the title of "How to Achieve Sustainably Beneficial Uses of Marine Sediments in Colombia?" (*Sustainability* 2022, 14, 14821. <https://www.mdpi.com/2071-1050/14/22/14821>). For further information on the LPEM application process, contact Dr. Yeon S. Chang, [yeonschang@kiost.ac.kr](mailto:yeonschang@kiost.ac.kr) and Dr. Chang Soo Chung, [cschung@kiost.ac.kr](mailto:cschung@kiost.ac.kr) of KIOST, the Republic of Korea.

6.16 The Scientific Groups noted the importance of exposing LPEM students to the work of the LC/LP bodies, to gain experience that could be useful once they returned to their countries after their studies. It was recalled that IMO allowed academics to observe meetings, and that such options could be explored, even in hybrid meetings.

### **Action by the Scientific Groups**

6.17 Following discussion, the Scientific Groups:

- .1 invited the Secretariat to further promote the LPEM course on the LC/LP website; and
- .2 requested the Secretariat to explore the possibility of allowing LPEM students to attend future LC/LP meetings as academic observers.

## **7 MONITORING AND ASSESSMENT OF THE MARINE ENVIRONMENT**

### **Reports and assessments of monitoring**

7.1 The Scientific Groups recalled that in 2022, the governing bodies had noted the Scientific Groups' discussion regarding the review of monitoring reports and activities document (LC/SG 45/16 paragraphs 7.9 to 7.12) and that they had urged Contracting Parties to report on monitoring activities every year and to provide more detailed monitoring reports to the Secretariat or through submissions to the Scientific Groups.

7.2 The Groups also recalled that the governing bodies had endorsed the Scientific Groups' instruction to the Secretariat to compile summary information on reporting of monitoring activities, as in document LC/SG 44/7/2, on a periodic basis every three years under agenda item 5 on Reporting of dumping activities, and to the B2C Steering Group, CGAR and the Secretariat to review and action the tasks that were assigned to them in the "Action plan to improve reporting on LC/LP monitoring" (LC 44/17, paragraph 12.2.1 and 12.2.2).

7.3 The Scientific Groups considered document LC/SG 46/7/1 (Canada), summarizing the disposal site field monitoring carried out in Canada in 2021. Representative sites were monitored off the Pacific, Atlantic and Arctic coasts. The studies highlighted in this document all used physical monitoring techniques, specifically hydrographic surveys, optical (video) surveys and ocean bottom current monitoring. These techniques are beneficial to the Canadian disposal at sea monitoring programme as they provide cost-effective, repeatable methods that increase our understanding of sediment dynamics, dispersivity, compliance and navigational safety at disposal sites on all three coasts.

7.4 The delegation of Italy asked a question regarding the depth of the accumulated material at the Black Point disposal site. The delegation of Canada explained that there was little leeway as the navigational depth was 12 m, and that the 7 m above the 1959 baseline elevation, selected as the navigation criterion which if exceeded would trigger a new release zone to be identified, included silting as well as disposed materials.

7.5 The observer from Greenpeace International raised a number of questions, to which Canada provided the following information:

- .1 Regarding the Black Point site, it was noted that the site was initially assumed to be disperse but this had subsequently changed. Canada explained that the dumping site had been used for more than 60 years, so it was unclear how the dispersivity was established when it was first characterized, and further studies were needed.
- .2 Regarding the Charlottetown disposal site, it was noted that there was no accumulation of fish waste, but a question was raised whether ecological differences were observed. It was stated that there was an accumulation of shells from fish processing; however, a biological assessment was not part of the objectives of the survey.
- .3 Regarding a question on dispersal at the Sand Heads disposal site, it was stated that the survey findings showed that the site was dynamic, largely due to the tidal currents.

7.6 The Groups noted document LC/SG 46/INF.8 (United Kingdom), announcing the release and availability of the annual report of the monitoring of disposal sites in England carried out by the Centre for Environment, Fisheries & Aquaculture Science (Cefas), entitled Dredged Material Disposal Site Monitoring Round the Coast of England: Results of Sampling (2018-2022). The reports can be accessed at:

<https://www.gov.uk/government/publications/dredged-material-disposal-site-monitoring-round-the-coast-of-england>.

7.7 The observer from Greenpeace International noted that the Outer Tees disposal site was included in the monitoring reports, but not the Inner Tees disposal site, which had been the subject of recent concern with regard to contaminated material. The observer asked if the United Kingdom could provide any further information on this issue. The delegation of the United Kingdom replied that they would consider the proposal.

7.8 The Scientific Groups also noted three documents by the United States:

- .1 LC/SG 46/INF.11, announcing the availability of the National Ocean Dumping Site Monitoring Assessment Reports for 2017 and 2018. These reports served as comprehensive summaries of ocean disposal site monitoring surveys conducted by the United States Environmental Protection Agency in 2017 and 2018. In 2017, EPA monitored seven designated ocean dredged material disposal sites (ODMDSs). In 2018, EPA conducted monitoring surveys at four ODMDSs. To access the 2017 and 2018 National Ocean Dumping Site Monitoring Assessment Reports and learn more about ocean disposal site monitoring activities in the United States, please see: <https://www.epa.gov/ocean-dumping/national-ocean-dumping-site-monitoring-assessment-report>;
- .2 document LC/SG 46/INF.12, announcing the availability of a report on Using Data Repositories for Ocean and Coastal Acidification Monitoring Data, which was published by EPA in 2022. To access the Using Data Repositories for Ocean and Coastal Acidification Monitoring Data report, please visit [https://www.epa.gov/system/files/documents/2022-09/12065\\_NEP%20Report\\_051622.pdf](https://www.epa.gov/system/files/documents/2022-09/12065_NEP%20Report_051622.pdf); and
- .3 document LC/SG 46/INF.13, reporting on a United States EPA training conducted for the Agency's Chief Scientist Program, sharing two presentations from the training on New Oceanographic Monitoring Technologies and Underwater Cameras. The submission provided, in its annex, the two presentations which were used to promote discussion during the training. The first, on "New Oceanographic Monitoring Technologies", discussed new technologies and equipment that could be used in the field to facilitate ocean disposal surveys, recommendations for which equipment to use and when, as well as information on the benefits and disadvantages of the technologies discussed. The second presentation on "The Underwater Cameras: Selection Considerations" covered commonly used cameras and imagery selection methods for offshore surveys, optimization of imagery techniques, successful camera deployment and the importance of imagery processing.

7.9 In response to a question from the Secretariat, the United States explained that they had adjusted the disposal zone of one of the sites monitored as a preventative measure due to the discovery of a hard substrate habitat within the original site boundary.

7.10 The delegation from Canada, noting that there was a legal requirement in the United States to monitor disposal sites at least once every 10 years, asked to what extent monitoring efforts could be reduced or stopped altogether. The United States responded that some sites were classed as "inactive" if they had not been used for a long time, but they would require monitoring prior to being reactivated. Some sites where there had been no change in usage and no significant issues had been identified would be monitored less frequently.

### **Action by the Scientific Groups**

7.11 Following discussion, the Scientific Groups urged Contracting Parties to report on monitoring activities every year and to provide more detailed monitoring reports to the Secretariat or through submissions to the Scientific Groups.

**Contribution to the major ocean-related initiatives on reporting and assessment of the state of the marine environment**

7.12 The Scientific Groups recalled that in 2022, the governing bodies had been informed of recent intergovernmental processes relating to the protection of the marine environment, of relevance to the LC/LP, and had encouraged delegations and the Secretariat to promote the London Protocol and the work of the LC/LP at relevant ocean-related meetings and processes in the intersessional period (LC 44/17, paragraphs 13.10 to 13.15).

7.13 The Groups considered document LC/SG 46/7 (Secretariat) providing an update on recent progress under major ocean-related initiatives of relevance to the London Convention/Protocol. In particular, it should be noted that a number of meetings that had previously been postponed due to the pandemic had now concluded, or were planned:

- .1 the fifth session of the Intergovernmental Conference (IGC) on Marine Biodiversity of Areas Beyond National Jurisdiction was convened from 15 to 26 August 2022 at the UN Headquarters, but did not manage to conclude the discussions. At the end of the second week, it was agreed to suspend the session and resume negotiations as soon as possible. The resumed fifth session convened from 20 February to 3 March 2023. At this session, the Conference reached an agreement on the text of the new legally binding instrument, which would be adopted in the near future. More information can be found at <http://www.un.org/bbnj>;
- .2 the fifteenth Conference of Parties for the Convention on Biological Diversity was held in two parts, with the second concluding session from 5 to 17 December 2022. COP 15 approved the Post-2020 Global Biodiversity Framework, which provided a strategic vision and a global road map for the conservation, protection, restoration and sustainable management of biodiversity and ecosystems for the next decade. The IMO Secretariat has provided input to the preparatory process for the Post-2020 Global Biodiversity Framework, both directly and through the UN Environmental Management Group. More information can be found at: <https://www.cbd.int/meetings/COP-15>;
- .3 the UN Decade of Ocean Science for Sustainable Development (2021-2030) which was formally launched on 1 January 2021. The third call was launched in April 2022, focusing on sustainable blue food and a sustainable ocean economy, and the fourth call was launched on 15 October 2022. The Groups noted that IMO would be represented on the Decade Advisory Board during 2023. More information can be found at: <https://oceandecade.org>;
- .4 the 2022 UN Ocean Conference to support the implementation of SDG 14 took place in Lisbon, Portugal from 27 June to 1 July 2022, co-hosted by the Governments of Kenya and Portugal. The overarching theme of the Conference was "Scaling up ocean action based on science and innovation for the implementation of Goal 14: Stocktaking, partnerships and solutions" and the Secretariat was closely involved in the preparations for the Conference, through participation in the Advisory Group for the hosts, and as co-conveners of the Informal Preparatory Working Group 1 (marine pollution), which drafted the background paper for the Interactive Dialogue on marine pollution. France and Costa Rica would jointly host the third UN Ocean Conference in 2025. More information can be found at: <https://www.un.org/en/conferences/ocean2022>;

- .5 the resumed fifth session of the United Nations Environment Assembly (UNEA-5.2) took place online and in Nairobi, Kenya from 28 February to 2 March 2022. The Meeting adopted a resolution entitled "End plastic pollution: Towards an international legally binding instrument", which committed Member States to negotiating a treaty by the end of 2024. The resolution also established an Intergovernmental Negotiating Committee (INC), which began its work in 2022, and the first meeting was held from 28 November to 2 December 2022, in Punta del Este, Uruguay, see <https://www.unep.org/events/conference/inter-governmental-negotiating-committee-meeting-inc-1>. The second session (INC-2) was scheduled from 29 May to 2 June 2023, in France;
- .6 the UN Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects (UN Regular Process), had commenced its third cycle of work, which would cover five years, from 2021 to 2025. This cycle would build on the first global integrated marine assessment First World Ocean Assessment (WOA I), which provided a baseline study of the state of the world's oceans, and the Second World Ocean Assessment (WOA II), the scope of which extended to evaluating trends and identifying gaps. More information can be found at: <https://www.un.org/regularprocess>;
- .7 the Stockholm+50 Conference took place from 2 to 3 June 2022 in Stockholm, Sweden to commemorate 50 years since the 1972 UN Conference on the Human Environment and the Stockholm Declaration. More information can be found at: <https://www.stockholm50.global/>; and
- .8 the United Nations Framework Convention on Climate Change held its twenty-seventh Conference of Parties (COP 27) in Sharm El-Sheikh, Egypt, from 7 to 18 November 2022. COP 28 was scheduled to take place from 28 November to 12 December 2023 in the United Arab Emirates. For more information, see: <https://unfccc.int/cop27>.

7.14 In the discussion that followed, the Groups noted that the co-chair of GESAMP Working Group 41 had participated in several events at the Ocean Pavilion during UNFCCC COP 27, presenting the work of GESAMP. There might be similar opportunities at COP 28 in late 2023.

7.15 The observer from Greenpeace International stated that 2023 would be an important year for highlighting the role of the LC/LP in relation to oceans and climate change, and that it would be important to not lose the current momentum on these issues. COP 28 would therefore be an important event.

### **Action by the Scientific Groups**

7.16 In conclusion, the Scientific Groups:

- .1 noted the importance for delegations to work together with the Secretariat, and to keep each other informed of opportunities for outreach to broaden cooperation at global or regional forums of relevance; and
- .2 instructed the Secretariat to promote the work of the LC/LP and GESAMP at ocean and climate related events during the year, in particular at UNFCCC COP 28.

## **8 COASTAL MANAGEMENT ISSUES ASSOCIATED WITH ACTIVITIES TO PREVENT MARINE POLLUTION**

### **Cooperation with UN agencies and other organizations**

#### ***Disposal of wastes and other matter in the marine environment from mining operations, including marine mineral mining***

8.1 It was recalled that in 2022, the governing bodies had noted the progress made by the GESAMP Working Group on the issue of impacts of wastes and other matter in the marine environment from mining operations, including marine mineral mining (WG 42) and had instructed the Scientific Groups to review Vol. A of the report of WG 42, "Impacts of mine tailings waste matter in the marine environment from mining operations" at the next joint session and provide a recommendation on next steps to the governing bodies (LC 44/17, paragraph 10.7).

8.2 The Groups considered documents LC/SG 46/8/4 and LC/SG 46/INF.16 (Secretariat) and noted that the governing bodies had been informed last year that the report of the Working Group would be split into two volumes: Vol. A: Impacts of mine tailings waste matter in the marine environment from mining operations; and Vol. B: Impacts of deep-sea mining in the marine environment from mining operations, and that the Vol. A report was nearing completion (LC 44/17, paragraph 10.2). The Scientific Groups were therefore instructed to review Vol. A of the report of WG 42 at this session and provide a recommendation on next steps to the governing bodies (LC 44/17, paragraph 10.2). The preliminary draft of Vol. A of the report of WG 42 was provided in a link contained in document LC/SG 46/INF.16, which was introduced by way of video presentation by the Chair of GESAMP WG 42.

8.3 The Groups were informed that the pre-publication copy of the report was provided in order to assist the Scientific Groups in their discussions on the matter and to agree on a recommendation on the next steps, and that, following editing, typesetting and layout, the final report would be published in the GESAMP Reports & Studies series and made available to the public on the GESAMP website.

8.4 The Scientific Groups also noted two documents by the World Organization of Dredging Associations (WODA):

- .1 document LC/SG 46/INF.3, providing, in the annex, an environmental management framework intended for waste assessment and environmental management of deep seabed mining to assist in evaluation of applications for deep seabed mining in a step-by-step process using the approach in the LC/LP Waste Assessment Guidelines. The document was presented during the WODA World Dredging Congress in Copenhagen, Denmark, 16 to 20 May 2022; and
- .2 document LC/SG 46/INF.4, providing guidance for best management practices to national jurisdictions and proponents for new (and existing) land-based mining operations that were considering disposing of mine tailings to marine waters, known as deep-sea tailings disposal. The best management practices presented in this document were intended to help government authorities evaluate new proposals for deep-sea tailings disposal, assist in managing existing deep-sea tailings disposal operations, and provide proponents and stakeholders understanding of expectations.

8.5 In the discussion that followed, the delegation of Canada informed the meetings that, under their legislation, the disposal of tailings at sea was not allowed; where disposal in freshwater lakes was permitted the material must be impounded.

8.6 The delegation of Germany noted that the work of WODA had a clear link to the work of the International Seabed Authority (ISA) on deep seabed mining, and highlighted the recent call by a group of more than 600 scientists to pause the transition to exploitation until more information had been gathered in order to inform management decisions, available at <https://www.seabedminingsciencstatement.org>. It was therefore too soon to discuss actions that would enable deep seabed mining, and the delegation also noted the calls by several countries for a precautionary pause on these activities. The delegation also highlighted that the exploitation of deep seabed mineral resources was not the primary competence of IMO, but within the competence of ISA.

8.7 The delegation of the United States welcomed the information provided in the report of GESAMP WG 42, Volume A. The delegation also thanked WODA for their submissions, while noting the need for the work of the Scientific Groups to emphasize discouraging disposal at sea and the importance of waste minimization and waste avoidance.

8.8 The delegation of Sweden suggested that under chapter 3.3, a paragraph on tolerance in organisms to hazardous substances and the subsequent loss of genetic diversity should be added, and that the text on recovery processes should be further elaborated, as this was important in the permit assessment process, and if granted would determine the length of the permit.

8.9 The observer from Greenpeace International noted that it was not the purpose of the treaties to facilitate activities, and registered its concern if guidance would be developed, as this could be taken as an agreement with such activities. The observer also suggested that GESAMP could be requested to provide information on the existing data gaps, and whether/when these could be filled, which would assist the Scientific Groups in their further consideration of this matter.

### **Action by the Scientific Groups**

8.10 In conclusion, the Scientific Groups noted that more time was needed for the Groups to properly assess the findings of the report, and consequently:

- .1 postponed the consideration of Vol. A of the report of GESAMP WG 42 to the next session in 2024;
- .2 invited delegations to provide comments on the report as well as additional information on the matter, by way of submissions to the next joint session; and
- .3 requested the Secretariat to provide the GESAMP WG 42 Chair with comments on the report made in plenary, and also liaise on how to close the knowledge/data gaps identified in the report of WG 42.

### ***Cooperation with ISA on deep seabed mining***

8.11 In 2022, the governing bodies were informed of the Scientific Group's discussion on the issue and the status of the work at ISA with respect to the development of regulations (document LC 44/17, paragraph 10.6). The governing bodies also endorsed the Scientific

Groups' agreement to raise the priority of this sub-item of the agenda to high and instruction to the Secretariat to continue to engage with ISA on LC/LP-related matters and to keep the Groups abreast of any relevant developments on this matter, at future joint sessions (document LC 44/17, paragraph 10.7.2).

8.12 The Scientific Groups were informed that, as reported at previous meetings, IMO and ISA had a continuous dialogue on several issues, including the LC/LP and related matters. Since the last joint session of the Scientific Groups the Secretariat had mainly continued the dialogue informally between the two secretariats, and in particular on the GESAMP WG 42 report. In addition, it was noted that ISA would be hosting the fiftieth annual session of GESAMP at their headquarters in Jamaica, in September 2023.

8.13 The delegation of Canada expressed support for the statement by Germany and noted that seabed mining should only take place if effective protection of the marine environment was provided through a rigorous regulatory structure, applying precautionary and ecosystem-based approaches, using science-based and transparent management, and ensuring effective compliance with a robust inspection mechanism. Therefore, Canada expressed support for collaboration between the Scientific Groups and ISA, recognizing the expertise that the Groups had in relation to preventing marine pollution, which could be relevant to the work of ISA.

8.14 The observer from Greenpeace International stated that this was not the right time to facilitate deep seabed mining.

8.15 The delegation of the United States expressed its appreciation to WODA for its efforts on best practices and to promote cooperation on these matters, but noted that this might not be within the mandate of the Scientific Groups.

8.16 The Scientific Groups also recalled a recent report by ISA and IMO entitled "Technical Study 25: Competencies of the International Seabed Authority and the International Maritime Organization in the context of activities in the Area", which was available online at: <https://www.isa.org.jm/publications/technical-study-25-competencies-of-the-international-seabed-authority-and-the-international-maritime-organization-in-the-context-of-activities-in-the-area/>.

### **Action by the Scientific Groups**

8.17 In summary, the Scientific Groups instructed the Secretariat to continue to engage with ISA on LC/LP-related matters and keep the Scientific Groups abreast of any relevant developments on this issue, at future joint sessions.

### **Marine litter and microplastics**

8.18 The Scientific Groups recalled that in 2022, the governing bodies had endorsed the Scientific Groups' decision to re-establish the Correspondence Group on Marine Litter and Microplastics. The governing bodies also noted the approval by GESAMP of terms of reference for the second phase of GESAMP WG 43, invited the GESAMP Working Group to provide progress reports, as appropriate, to the Scientific Groups meetings, and invited the GESAMP Working Group to liaise with the Correspondence Group on Marine Litter and Microplastics (LC 44/17, paragraph 9.16).

8.19 The Groups considered document LC/SG 46/8/1 (Secretariat), which provided an update in relation to several intergovernmental processes on marine litter. The Groups noted in particular that:



- .1 in September 2022, following input from the LC/LP Scientific Groups, GESAMP had approved the revised TOR and work plan for phase 2 of the WG, and had invited the Chair of the WG to re-constitute the membership of the Group and initiate the work as soon as possible. Since then, the Chair had, in dialogue with the co-sponsors of the WG (FAO, IMO and UNEP), identified experts for the second phase. The WG had met remotely at the end of February, and was planning to hold its first meeting in person in May 2023.
- .2 at MEPC 77 in 2021, the Committee had adopted a Strategy to address marine plastic litter from ships. At MEPC 79 in 2022, the Committee had adopted amendments to MARPOL Annex V to make the Garbage Record Book mandatory also for smaller ships, extending these requirements also to ships of 100 gross tonnage and above (previously the requirement was from 400 gross tonnage and above). MEPC 79 had also considered recommendations from the review of the terms of reference for the IMO Study on marine plastic litter from ships, and had invited proposals to the next session.
- .3 the IMO-FAO GloLitter Partnerships Project, for which the implementation of the LC/LP was one of the key objectives, had also made progress in the intersessional period, including the development of a number of knowledge products, as well as National Action Plans, all of which were available at <https://www.imo.org/en/OurWork/PartnershipsProjects/Pages/GloLitter-Partnerships-Project.aspx>.

8.20 The Scientific Groups noted document LC/SG 46/INF.10 (United Kingdom), providing information in relation to the work of the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic Ocean with a focus on marine litter. It was noted that the OSPAR Ministers had adopted a new North-East Atlantic Environment Strategy (NEAES) in October 2021 (see <https://www.ospar.org/convention/strategy>), and that the OSPAR Convention provided the legal framework to require Contracting Parties to take action on marine litter pollution. OSPAR's Second Regional Action Plan on Marine Litter (RAP ML 2). It would be implemented between 2022 and 2030, matching the time frame of the NEAES. The full plan can be found here: <https://www.ospar.org/documents?v=48461>.

8.21 The Scientific Groups also noted document LC/SG 46/INF.10 (Italy), presenting an overview of the EU-funded project STRONG SEA LIFE aimed at the protection and the improvement of the conservation status of the Habitats Directive priority habitat "Posidonia beds (*Posidonia oceanica*)" and the habitat "Reefs", threatened by the presence of ALDFG. Further information and details of the project can be found at <https://webgate.ec.europa.eu/life/publicWebsite/project/details/5764> and <https://www.strongsealife.eu/>.

8.22 The delegation of the United States welcomed the submission by Italy, and stated that it would appreciate updates on the project at future sessions.

8.23 The Scientific Groups also received a verbal update on the work of the Correspondence Group on Marine Litter and Microplastics, by one of the co-chairs (Germany), and noted that since the last update to the governing bodies in 2022, it had continued its work on the current terms of reference, as approved by the Scientific Groups in 2022 (LC/SG 45/16, paragraph 8.25).

8.24 The delegation of Canada updated the meetings regarding collaboration with the IAEA on the NUTECH plastics initiative and methods to quantify plastics in the marine

environment. The delegation highlighted the great potential for the NUTECH initiative to improve our ability to recycle plastic waste and to assist in quantifying and characterizing microplastics in the ocean to better inform clean-up and restoration efforts upstream. Canada had approved and funded a related project titled "Application of nuclear technologies to minimize plastic pollution and its impact", which would be conducted by Canadian Nuclear Laboratories over the next year.

### **Action by the Scientific Groups**

8.25 Following discussion, the Scientific Groups:

- .1 re-established the Correspondence Group on Marine Litter and Microplastics under the lead of Germany and Nigeria,<sup>9</sup> with the existing terms of reference, and instructed it to provide a full report to the next joint session of the Scientific Groups in 2024, and a progress report to the governing bodies in October 2023; and
- .2 invited delegations to share information on the topic of marine litter and microplastics at the next joint session.

### **Underwater noise from anthropogenic sources**

8.26 It was recalled that in 2022, the governing bodies had noted the Scientific Groups' discussion on the issue of underwater noise from anthropogenic sources and the instruction to the Secretariat to report back to the next joint session on the outcomes of the work of the IMO Sub-Committee on Ship Design and Construction (SDC) and MEPC on this matter, and any other developments of relevance to the Scientific Groups; and had noted their invitation to delegations to submit information regarding underwater noise in relation to the development of carbon capture and storage, to future sessions of the Scientific Groups. The governing bodies were also informed that the Secretariat had submitted a proposal to the Global Environment Fund (GEF), regarding funding of a global underwater vessel noise project (GloNoise) (LC 44/17, paragraph 10.34 to 10.36).

8.27 The Groups were informed that SDC had met for its ninth session in January 2023, and had agreed on draft revised guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life. The draft revised guidelines provide an overview of approaches applicable to designers, shipbuilders and ship operators to reduce the underwater radiated noise of any given ship. They are intended to assist stakeholders in establishing mechanisms and programmes through which noise reduction efforts can be realized and revise the previous guidelines (issued in 2014). They include updated technical knowledge, including reference to international measurement standards, recommendations and classification society rules. They also provide sample templates to assist shipowners with the development of an underwater radiated noise management plan. The draft guidelines will be submitted to MEPC 80, in July 2023, for approval.

8.28 Furthermore, the Groups were informed of the preparations for a GEF-funded capacity-building project to prepare developing countries for the revised guidelines. The so-called GloNoise project was approved by GEF in 2022, and the project implementation document had recently been submitted to GEF. If approved, the project was expected to receive US\$ 2 million in funding under GEF International Waters focal area, to be executed by IMO over a period of two years.

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<sup>9</sup> The coordinators, Mr. Axel Borchmann (Germany) and Mr. Abdulmumuni Dirisu (Nigeria), can be contacted at [Axel.Borchmann@bmu.bund.de](mailto:Axel.Borchmann@bmu.bund.de) and [abduldirisu@yahoo.com](mailto:abduldirisu@yahoo.com), respectively.

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## Action by the Scientific Groups

8.29 In conclusion, the Scientific Groups instructed the Secretariat to report back to the next joint session on the outcomes of MEPC on this matter, and any other developments of relevance to the Scientific Groups.

### Deposition of materials jettisoned during the launch of space vehicles

8.30 The Scientific Groups recalled that in 2022, the governing bodies had noted the Scientific Groups' discussion on the issue of the deposition of materials jettisoned during the launch of space vehicles and invited delegations to share information on this issue with future meetings. The governing bodies also instructed the Secretariat to continue its outreach efforts on this issue, and reiterated the value of delegations liaising with their counterparts attending the Committee on the Peaceful Use of Outer Space (COPUOS) (LC 44/17, paragraphs 10.13 to 10.18).

8.31 The Groups considered document LC/SG 46/8/3 (Greenpeace International), providing an update on the current situation regarding the deposition of space launch vehicle components into the marine environment and efforts to assess their potential impacts, insofar as had been possible given the very limited information available in the public domain.

8.32 The Groups noted that, in the absence of further information-sharing by Parties, it would likely remain impossible to provide a more comprehensive overview of the nature and scale of the deposition of space launch vehicle components into the marine environment, and therefore its likely cumulative impacts. It could therefore be beneficial to invite Parties to report on such activities and the assessment of their impacts on the marine environment on a voluntary basis to future sessions of the Scientific Groups.

8.33 The delegation of Greenpeace also invited the Groups to consider whether any existing guidance developed under the LC/LP in relation to the disposal at sea of wastes or other matter might have relevance and application to support a more consistent and transparent approach to assessment of the impacts of such activities.

8.34 In the ensuing discussion, the following was expressed:

- .1 the delegation of Sweden informed the Groups that as part of a European project, they were currently assessing the issue of reuse of launch vehicles;
- .2 the delegation of the United Kingdom expressed support for the proposals presented in the submission by Greenpeace International as a possible way to gather more information; and
- .3 the delegation of the United States also welcomed the sharing of information at future sessions.

8.35 The Scientific Groups noted document LC/SG 46/INF.9 (United Kingdom), providing an update on the Virgin Orbit space launch from Spaceport Cornwall in the United Kingdom, which was licensed in 2022. As part of the assessment, the Marine Management Organisation (MMO) of the United Kingdom consulted with the Civil Aviation Authority of the United Kingdom, IMO, OSPAR, Irish and Portuguese authorities and the public, along with many other interested parties. All application and licence documents can be viewed online on the MMO public register. The launch subsequently took place from Spaceport Cornwall on the evening of 9 January 2023, at approximately 10 p.m. GMT. Virgin Orbit subsequently notified stakeholders that the rocket vehicle had experienced an anomaly that had resulted in the

vehicle not achieving orbital velocity. Virgin Orbit were therefore carrying out an ongoing investigation. The MMO was now working with Virgin Orbit and other relevant authorities and considering any necessary actions.

8.36 In response to a question from the delegation of Sweden, the delegation of the United Kingdom informed the meetings that they had held consultations with Portugal prior to the issuance of the permit, since the impact had been estimated to potentially occur in Portuguese waters. The Secretariat also informed the Groups that they had been consulted by MMO as part of the stakeholder consultations.

8.37 The delegation of Greenpeace International noted that information regarding this topic was also part of an upcoming OSPAR meeting, and suggested that the Secretariat might be able to liaise with the OSPAR secretariat for sharing information.

8.38 The delegation of the United Kingdom stated that they would be happy to share further information at future sessions, as the investigation concluded.

### **Action by the Scientific Groups**

8.39 In conclusion, the Groups:

- .1 noted the information provided under this sub-item;
- .2 invited Parties to report on such activities and the assessment of their impacts on the marine environment on a voluntary basis to future sessions of the Scientific Groups in order to allow for a more comprehensive overview of the nature and scale of the deposition of space launch vehicle components into the marine environment; and
- .3 requested the Secretariat to invite the OSPAR secretariat to share information at the next joint session in 2024.

### **Cooperative measures to assess and increase awareness of environmental effects related to waste originating from chemical munitions dumped at sea**

8.40 The Groups recalled that in 2022, the governing bodies had noted the Scientific Groups' discussion on the topic of cooperative measures to assess and increase awareness of environmental effects related to waste originating from chemical munitions dumped at sea, and had been informed of several projects in this matter being undertaken by delegations. The governing bodies had encouraged delegations to submit additional information to the Scientific Groups (LC 44/17, paragraphs 4.4 to 4.5 and 10.43 to 10.47).

8.41 The Groups considered document LC/SG 46/8 (Sweden) providing a summary of the investigations, including exploratory fishing and sediment sampling, undertaken by Sweden in a dumpsite area in the Skagerrak between 2016 and 2021. After WWII 28 shipwrecks, filled with unknown amounts of chemical munitions, had been scuttled in a deep-water area west of the island of Måseskär. The area was today subject to intense bottom trawling, mainly for Norway lobster. The main purpose of the investigations was to elucidate which wrecks were a source of chemical munition contamination in the marine environment and if both sediment and biota were affected and to what degree. The work on assessing the amounts and effects of the chemical munitions in the dumping area was part of Sweden's efforts to achieve good environmental status under the EU Marine Strategy Framework Directive, including to reduce the dispersal of hazardous substances in marine areas containing dumped munitions, conventional and chemical. The Scientific Groups were encouraged to give advice on how the situation could be alleviated, providing examples from other areas with dumped chemical munitions.

8.42 In the discussion that followed, the delegation of the United States informed the Groups of its relevant experience with managing restoration efforts for chemical munitions contained within vessels dumped at sea, which included several ongoing projects related to monitoring of unexploded ordnance in the marine environment. Publications on the subject included a report titled "Recovered Chemical Warfare Material Response Process" and one titled "Environmental Quality Technical Guidance for Military Munitions response Actions", which were accessible online at: [https://www.publications.usace.army.mil/portals/76/publications/engineerpamphlets/ep\\_75-1-3.pdf](https://www.publications.usace.army.mil/portals/76/publications/engineerpamphlets/ep_75-1-3.pdf); and [https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM\\_200-1-15.pdf](https://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_200-1-15.pdf).

8.43 The observer from Greenpeace International queried what efforts could be made internationally to alleviate the issue, and whether, as reported in some media, the recent incidents at the NordStream pipeline could have affected and redispersed areas of chemical munitions dumped at sea.

8.44 The delegation of Sweden responded that efforts to manage the area were complicated by the fact that fishing activities were governed by the EU Common Fisheries Policy, as well as several bilateral agreements. Regarding the redispersal of munitions at the NordStream site, there had so far not been any evidence to support such speculations, and further research would be required to be able to draw any conclusions.

### **Action by the Scientific Groups**

8.45 The Groups noted the information provided under this sub-item of the agenda and invited delegations to share further information on the issue at future sessions of the Scientific Groups.

## **9 HABITAT MODIFICATION AND ENHANCEMENT**

### **Beneficial use of waste materials and experience with habitat enhancement activities**

9.1 The Scientific Groups recalled that in 2022, the governing bodies had noted the Scientific Groups' discussion in relation to beneficial use of wastes and experience with habitat enhancement activities and had endorsed the Groups' decision to re-establish a Correspondence Group on Beneficial Use of Wastes, under the lead of the United States; they had also endorsed the Groups' instruction to the Secretariat to consider how best to promote the outputs of the Correspondence Group on Beneficial Use of Wastes, and of Science Day 2022 on "Alternative uses of waste" on the LC/LP website (LC 44/17, paragraphs 10.42.1 and 10.42.2).

9.2 It was also recalled that the governing bodies had considered a progress report from the Correspondence Group, and had urged Contracting Parties and observer organizations to submit case studies on beneficial use of waste materials and on experiences with habitat enhancement activities to the next joint session of the Scientific Groups (LC 44/17, paragraphs 10.38 to 10.41 and 10.42.3).

9.3 The Groups considered document LC/SG 46/9 (Chair of the Correspondence Group), providing a progress report from the Correspondence Group and its work on developing a document synthesizing relevant information relating to the state of the practice for beneficial use of LC/LP waste streams and providing recommendations on how to further encourage beneficial use of waste materials and habitat enhancement activities.

9.4 The Groups noted that a request for submissions had been circulated in November 2022, but to date no information had been received. It was therefore recommended that the Correspondence Group be extended for another year (through 2024) to allow additional time for Contracting Parties to provide submissions and enable the Correspondence Group to avail itself of several important and impending publications on the topic, including an anticipated PIANC (World Association for Waterborne Transport Infrastructure) publication summarizing the current state of the practice.

9.5 The delegation of Canada stated that it would be interested in learning whether any Parties had successfully implemented a registry or tracking system for material reuse projects, and in receiving advice from Parties on establishing financing mechanisms for reuse projects. Canada suggested that Parties could be encouraged to report on waste prevention and alternative waste management options for wastes, on a voluntary basis. The delegation also suggested changing the name of the Correspondence Group by replacing the word "beneficial" with the word "reuse".

9.6 The coordinator of the Correspondence Group requested that Parties should be encouraged to submit case studies to the Group, to facilitate its work.

9.7 The delegation of the United Kingdom informed the meetings that it had published a beneficial use handbook entitled "Restoring Estuarine and Coastal Habitats with Dredged Sediment" (<https://catchmentbasedapproach.org/learn/restoring-estuarine-and-coastal-habitats-with-dredged-sediment/>) that provided practical and regulatory guidance on the beneficial use of sediments arising from dredging activities.

### **Action by the Scientific Groups**

9.8 In conclusion, the Scientific Groups:

- .1 agreed to change the name of the Correspondence Group to "reuse of wastes and beneficial use of dredged material";
- .2 re-established the Correspondence Group, under the lead of the United States,<sup>10</sup> with the same terms of reference, and invited the Group to provide a report to the next joint session of the Scientific Groups in 2024;
- .3 invited delegations to provide copies of any relevant publications (e.g. guidance, technology descriptions and/or relevant case studies) relating to the beneficial use of LC/LP-related wastes and/or their use in habitat restoration/enhancement to the Correspondence Group as soon as possible; and
- .4 urged delegations to submit case studies on beneficial use of waste materials and on experiences with habitat enhancement activities at the next session of the Scientific Groups.

## **10 MATTERS RELATED TO RADIOACTIVE WASTES**

10.1 It was recalled that in 2022, the governing bodies had noted the Groups' discussion on matters related to radioactive wastes (LC 44/17, paragraph 4.2.4).

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<sup>10</sup> The coordinator, Dr. David W. Moore, can be contacted at [David.W.Moore@usace.army.mil](mailto:David.W.Moore@usace.army.mil).

10.2 The Scientific Groups noted document LC/SG 46/INF.15 (SPREP), which shared information on the work of the Panel of Independent Scientific Experts (Expert Panel), appointed by the 18 Member States of the Pacific Islands Forum to independently assess the data relating to the decision by Japan to discharge Advanced Liquid Processing System (ALPS) treated nuclear wastewater from TEPCO's Fukushima Daiichi Nuclear Power Plant into the Pacific Ocean. The document briefly presented the scientific assessment and its findings.

10.3 The delegation of the Republic of Korea expressed its concerns regarding the discharge of wastewater from the Fukushima Daiichi Nuclear Power Plant into the sea. First, according to the paragraph 6 of document LC 43/11/2 (Japan), measures would be taken prior to the discharge regarding the potential impact on the marine environment, and to ascertain the environmental situation through continuous monitoring after the discharge, in close cooperation with IAEA. Second, according to paragraph 7 of the same document, the discharge would be suspended until the safety of further discharges was secured, if an "irregular value" were detected in the process of continuous monitoring of the sea area. Third, according to paragraph 9, the Government of Japan held sessions during international conferences at IAEA, OECD/NEA and other international organizations. Bearing these points in mind, the Government of the Republic of Korea requested that the Government of Japan share the monitoring plans and the environmental impact assessment plans with the LC/LP Contracting Parties, and share the detailed information on the "irregular value" that the Japanese Government would use as a condition to suspend the discharge. In addition, the Republic of Korea was of the view that it was necessary for the Government of Japan to provide information within the LC/LP, including information on the treatment of radioactive wastewater.

10.4 The delegation of Japan stated that the LC/LP prohibited, in principle, the dumping of wastes and other matter generated on land from vessels, aircraft, platforms or other man-made structures at sea, and that the discharge of wastes and other matter from land-based facilities to the sea was not subject to the regulation of the LC/LP. Japan therefore considered that the discharge of ALPS-treated water from the Fukushima Daiichi Nuclear Power Station was outside the scope of the LC/LP regulations, therefore it was not appropriate for LC/LP bodies to take up the issue. The delegation further stated its disagreement with the last part of paragraph 20, paragraphs 21 and 22 of document LC 44/11 (Secretariat). The delegation further stated that an independent review of the handling of ALPS-treated water was being conducted by IAEA, which was the competent international authority which possessed the necessary expertise, and was the most appropriate organization to address this issue. The delegation reminded the Scientific Groups that in October 2022, IAEA had presented information on the work of the IAEA review missions to the governing bodies, where it was explained that IAEA would assess whether the discharge of ALPS-treated water would be in accordance with well-established IAEA safety standards. The second round of visits by the mission took place in November 2022 for the assessment of safety and protection, and in January for the regulatory activities and processes. The reports from those missions were expected to become available from IAEA shortly.

10.5 The delegation of Japan further stated that it was of the view that the IAEA safety standards, based on which IAEA conducted their review, were the most reliable standards currently available, developed in consultation with the relevant international organizations and all IAEA Member States. The delegation stated that it considered that the LC/LP did not have relevant expertise nor a mandate on radiation safety, expressed doubt that engaging in discussions in these bodies would complement expert discussions within IAEA and therefore the delegation saw no merit for duplicative discussion. The delegation also stated that it opposed arguments that would imply that the activities of the IAEA would be deficient in this respect.

10.6 Finally, the delegation of Japan stated that it had been taking measures, strictly abiding by relevant international law, and giving due consideration to international practice. Japan would continue to handle the issue of ALPS-treated water in a transparent manner, and would continue its efforts to provide information, based on scientific evidence, to the international community. Japan reiterated that they saw this as a voluntary diplomatic effort, and not because of a mandate from, or an obligation to, the London Convention/Protocol, and would continue to be opposed to discussing the matter here in this forum.

10.7 The observer from Greenpeace International thanked SPREP for submitting document LC/SG 46/INF.15 and noted that the expert panel convened by SPREP to provide a scientific assessment of the planned discharges of radioactive wastes from the Fukushima Daiichi Nuclear Power Plant had independently identified a number of concerns that were consistent with those that Greenpeace had raised during earlier meetings of the Scientific Groups and governing bodies. This included limits to the characterization of the wastes and limits to the consideration of alternatives to discharge to the sea. In response to Japan's intervention, Greenpeace International stated that, although advice from IAEA was invaluable to the work of the LC/LP, the governing bodies of those instruments ultimately had the responsibility and competence to discuss and decide upon issues of relevance relating to the management of radioactive wastes.

10.8 The delegation of the United States stated that it understood that the Government of Japan had examined several options related to the dispersal of the treated water currently being stored on-site at the Fukushima Daiichi site, and that in this unique and challenging situation, Japan had weighed the options and effects, and been transparent about its decision. The delegation considered that Japan appeared to have adopted an approach in accordance with globally accepted nuclear safety standards, and looked forward to the Government of Japan's continued international coordination on monitoring the outcomes of this approach.

10.9 The United States did not support any proposals to establish separate working groups, intersessional correspondence groups or ad hoc groups of legal experts on dumping under the auspices of the LC/LP on this issue, as the matter had already been dealt with in appropriate forums. The United States reaffirm its support for the Government of Japan's close collaboration with the IAEA to ensure that decommissioning efforts of the Fukushima Nuclear Power Plant, including the expected treated water dispersal remained comprehensive, transparent and consistent with internationally accepted nuclear safety standards. The delegation expressed its strong support for the nuclear safety standards and security guidance developed and championed by IAEA.

### **Action by the Scientific Groups**

10.10 In conclusion, the Scientific Groups thanked SPREP for its submission, and noted the views expressed during the discussion.

## **11 OUTCOME OF SCIENCE DAY: EMERGING TECHNOLOGIES IN MARINE GEOENGINEERING**

11.1 The First Vice-Chair, Dr. Cristian Mugnai (Italy), presented a brief summary of the Science Day symposium on "Emerging technologies in marine geoengineering" that had been held on Thursday, 16 March 2023. The Scientific Groups were offered the following presentations:

- .1 "Marine geoengineering and the London Protocol", by Dr. Andrew Birchenough, IMO;



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- .2 "The London Protocol amendment of 2013 on marine geo-engineering", by Dr. Harald Ginzky, German Environment Agency (Germany);
  - .3 "The activities of GESAMP WG 41 on Ocean interventions for climate change mitigation", by Dr. Chris Vivian, Co-Chair of GESAMP WG 41;
  - .4 "Some perspectives on marine geoengineering from the NGO community" by Dr. David Santillo, Greenpeace International;
  - .5 "CDRmare research activities and current state of knowledge on marine CO<sub>2</sub> removal options" by Andreas Oschlies, GEOMAR – Helmholtz Centre for Ocean Research (Germany);
  - .6 "An inventory of marine geoengineering projects" by Dr. Chris Vivian, Co-Chair of GESAMP WG 41;
  - .7 "Marine geoengineering and international laws" by Professor Neil Craik, University of Waterloo (Canada);
  - .8 "The Sargasso Sea Commission: navigating into uncharted waters" by Mr. David Freestone, Executive Secretary, the Sargasso Sea Commission;
  - .9 "Ocean alkalinity enhancement and the mitigation of ocean deoxygenation" by Mr. Douglas Wallace, Oceanography Department, Dalhousie University, (Canada); and
  - .10 "National Oceanic and Atmospheric Administration's (NOAA) carbon dioxide removal interest" by Dr. Gabriella Kitch, NOAA Ocean Acidification Program (United States).

11.2 The Scientific Groups were informed that the presentations had been very well received by participants, resulting in productive discussions throughout the day. The main issues addressed included concerns regarding performing marine geoengineering techniques, the potential benefits versus risks of deployment, the definition of nature-based solutions, the critical issues in marine CDR Measurement, Reporting, and Verification, and the need for, and importance of, sharing data. Also, the "new" theme of reoxygenation of the marine environment, using oxygen generated from the hydrogen industry, was presented.

11.3 The Scientific Groups were also informed that a number of the speakers had provided video presentations and then connected remotely to engage in the lively discussion sessions. The presence of students from the Institut Supérieur d'Etudes Maritimes of Casablanca was noted with appreciation.

11.4 The Scientific Groups also noted the request by participants to include the biographies of the speakers, their presentations and abstracts on the LC/LP website, to disseminate the outcomes of Science Day to a wider audience.

11.5 Finally, the Groups noted that the resuming of face-to-face meetings, including Science Day, proved to be more effective in providing a lively debate, although the possibility of virtual participation at future sessions would also guarantee the involvement of external speakers without additional costs.

11.6 The Scientific Groups thanked all the speakers who took part to the event, in particular Professor Neil Craik and Professor Douglas Wallace from Canada for attending in person at their own cost to share their expertise with the Group.

### **Planning of Science Day 2024**

11.7 The Scientific Groups recalled that at recent meetings it had been agreed that a shorter list of three proposed topics for Science Day should be forwarded to the governing bodies for confirmation. The two remaining topics that were on the list from 2020 were:

- .1 experience with cumulative effects assessments; and
- .2 strategies for the reduction of wastes for disposal at sea.

11.8 In addition, the Groups noted the increasing interest in CO<sub>2</sub> sequestration in sub-seabed geological formations, and that it might be timely to consider CO<sub>2</sub> sequestration and experiences with the application of the carbon dioxide stream assessment as a potential topic for Science Day 2024.

### **Action by the Scientific Groups**

11.9 Following discussion, the Scientific Groups agreed that the following three topics for Science Day 2024 should be forwarded to the next session of the governing bodies in October 2023 for confirmation:

- .1 CCS and experiences with the 2012 Specific guidelines for the assessment of carbon dioxide for disposal into sub-seabed geological formations;
- .2 interlinkages between the LC/LP and the new legally binding instrument on marine biodiversity of areas beyond national jurisdiction (BBNJ); and
- .3 reuse of waste and beneficial use of dredged material.

## **12 GUIDELINES, MANUALS, BIBLIOGRAPHIES AND INFORMATION EXCHANGE**

12.1 The Groups were informed of the progress with LC/LP publications and noted that the *Guidelines for Selecting Sites for the Dumping of Wastes and Other Matter at Sea and for Developing Site Management and Monitoring Plans*, was currently in the process of being typeset.

12.2 The delegation of the United Kingdom, on behalf of WODA, informed the Scientific Groups that a Statement on Decarbonization of Dredging had been issued at WODA's World Dredging Congress in Copenhagen on 19 May 2022: <https://dredging.org/media/ceda/org/documents/guidance/various/statement.pdf>. The Groups were informed that the Central Dredging Association (CEDA) had established a Decarbonization Commission to address dredging techniques and technologies and approaches to reducing carbon emissions and had published the following two papers, available on the CEDA website (<https://dredging.org/resources/ceda-publications-online/position-and-information-papers>):

1. Energy Efficiency Considerations for Dredging Projects and Equipment; and
2. Dredging and Seafloor Integrity.

12.3 The Groups were also informed that the Western Dredging Association had established a new Sustainability Initiative: How the Dredging Industry Contributes to Our Communities' Resilience, Sustainability, and Adaptation in a Changing Environment, and that WODA would submit more information on the initiative to the next meeting of the Scientific Groups in 2024.

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## 13 REVIEW OF THE JOINT WORK PROGRAMME

### Review of the LC/LP Scientific Groups Work Programme

13.1 It was recalled that in 2022, the Scientific Groups had updated and adopted its Work Programme taking into account comments made during the session by correspondence (LC/SG 45/16 paragraphs 13.1 to 13.3 and annex 3). Subsequently in 2022, the governing bodies had considered and approved the LC/LP Scientific Groups Work Programme for the period 2022-2024 (LC 44/17, paragraphs 14.2 to 14.3 and annex 7).

### Action by the Scientific Groups

13.2 Following discussion, the Scientific Groups adopted the updated LC/LP Scientific Groups Work Programme for 2023-2025, as amended and set out in annex 3, for consideration by the governing bodies at their next meeting.

### Dates for the next joint session of the Scientific Groups

13.3 It was recalled that before the COVID-19 pandemic the Scientific Groups had normally met at IMO Headquarters and in various regions every alternate year, but that the pandemic had made it necessary to hold the last two meetings online and by correspondence. With this year's meeting, the Scientific Groups had returned to that practice.

13.4 The Groups were also informed that the governing bodies this year would be meeting from 2 to 6 October 2023 and therefore LC/SG 47 would probably need to take place in March or April 2024, most likely at IMO Headquarters.

## 14 ANY OTHER BUSINESS

### Progress report on activities under GESAMP

14.1 The Scientific Groups were informed of activities under GESAMP (LC/SG 46/14), and noted the following:

- .1 GESAMP had held its forty-ninth session from 5 to 9 September 2022 in person at IMO Headquarters. The full report of the session would be available on the GESAMP website, <http://www.gesamp.org> in due course;
- .2 GESAMP currently had working groups and task teams addressing a wide range of topics, and it was noted that several of these had been discussed under previous agenda items, including ocean interventions for climate change mitigation (WG 41) under item 3, sea-based sources of marine litter (WG 43) under item, impacts of wastes and other matter in the marine environment from mining operations, including marine mineral mining (WG 42), as well as climate change and greenhouse gas related impacts on contaminants in the ocean (WG 45) under item 8;
- .3 the next annual session of GESAMP would be from 18 to 22 September 2023, hosted by ISA; and
- .4 further information on GESAMP and its activities could be obtained from the website at <http://www.gesamp.org>.

### **Progress on the implementation of the LP-LC Strategic Plan**

14.2 The Scientific Groups recalled that in 2022 the governing bodies had carried out the first full review of the LP/LC Strategic Plan and instructed the Secretariat to follow up on the identified actions and to report on progress made at the next session (LC 44/17, paragraphs 3.1 to 3.20).

14.3 The Groups were informed that following the review by the governing bodies late last year, the Secretariat had been assigned several tasks (LC 44/17, paragraph 3.20), namely:

- .1 address issues with the accessions to the LP and acceptance of the outstanding amendments;
- .2 address issues with the reporting levels and initiate a complete review of the reporting system;
- .3 address the lack of information from Contracting Parties on legislation and designation of national authorities; and
- .4 promote the work of the LP and LC.

14.4 The Secretariat was proceeding with all these tasks, and would provide a full progress report to the governing bodies in October.

### **Commemoration of 50 years since the adoption of the London Convention**

14.5 The Groups were informed that to commemorate the fiftieth anniversary of the London Convention in 2022, the Secretariat had arranged a joint academic conference together with the World Maritime University (WMU), held at WMU, Malmö, Sweden, and online, from 11 to 13 October 2022, with the title "Protecting the ocean – moving forward at 50: London Convention and Stockholm Declaration". The conference was well attended with over 600 participants from 93 countries, 185 registered in person, and it successfully highlighted and promoted the achievements and future work of the LC/LP.

14.6 The Secretariat was working on the conference outputs with WMU, which would include:

- .1 a conference summary publication aimed at LC/LP parties which would be a visually attractive record of the event; and
- .2 an academic output as a special issue from the International Journal of Marine and Coastal Law with expected online publication in autumn 2023, and the hard copy issue in the first quarter of 2024.

## **15 ELECTIONS OF OFFICERS FOR BOTH SCIENTIFIC GROUPS**

15.1 The LC Scientific Group unanimously elected Dr. Cristian Mugnai (Italy) as Chair, Ms. Jessica Mans (South Africa) as First Vice-Chair, and Dr. Yeon Chang (Republic of Korea) as Second Vice-Chair for its forty-seventh session and the intersessional period.

15.2 The LP Scientific Group also unanimously elected the same officers as Chair and First and Second Vice-Chair, respectively, for its eighteenth session and the intersessional period.

## **16 CONSIDERATION AND ADOPTION OF THE REPORT**

16.1 The joint report of the forty-sixth meeting of the Scientific Group under the London Convention and the seventeenth meeting of the Scientific Group under the London Protocol was reviewed on the final day of the session, Friday, 17 March 2023, which was followed by a commenting period of five days prior to the issuance of the final report.

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**ANNEX 1**

**AGENDA FOR THE FORTY-SIXTH MEETING OF THE SCIENTIFIC GROUP OF THE LONDON CONVENTION AND THE SEVENTEENTH MEETING OF THE SCIENTIFIC GROUP OF THE LONDON PROTOCOL**

**1 Adoption of the agenda**

LC/SG 46/1	Secretariat	Provisional agenda
LC/SG 46/1/1	Secretariat	Annotations to the provisional agenda
LC/SG 46/INF.1	Secretariat	List of Participants

**2 Waste Assessment Guidance**

LC/SG 46/2	Chair of the Correspondence Group	Progress report from the Correspondence Group on Revisions to the Revised Guidance on Best Management Practices for Removal of Anti-fouling Coatings from Ships, Including TBT Hull Paints
LC/SG 46/2/1	Secretariat	Progress on the development of the guidance on the end-of-life management of FRP vessels and alternatives to at-sea disposal
LC/SG 46/INF.2	Canada	Summary of Canadian guidance on using biological tests to characterize dredged material
LC/SG 46/INF.5	Canada	Lessons learned from a workshop with stakeholders on the challenges and solutions to material reuse in Vancouver, British Columbia, Canada
LC/SG 46/INF.6	Secretariat	Development of guidance on the end-of-life management of FRP vessels and alternatives to at-sea disposal: Report of the consultant
LC/SG 46/INF.7	United Kingdom	Update on the Review of United Kingdom action levels for the assessment of dredged materials
LC/SG 46/WP.3	Chair of the Working Group	Report of the Working Group on the development of guidance on the end-of-life management of FRP vessels and alternatives to at-sea disposal

### 3 Marine Geoengineering

LC/SG 46/3	Canada	A preliminary evaluation of the need for a specific assessment framework on macroalgae cultivation for carbon sequestration
LC/SG 46/WP.4	Chair of the Working Group	Report of the Working Group on Marine Geoengineering

### 4 CO<sub>2</sub> sequestration in sub-seabed geological formations

LC/SG 46/4	Japan	Invitation to share experiences with the application of the CO <sub>2</sub> Sequestration Guidelines
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### 5 Reporting on dumping activities

LC/SG 46/5	Secretariat	Final draft summary report on dumping permits issued in 2020
LC/SG 46/5/1	Secretariat	Preliminary overview of the number of dumping permits reported in 2021
LC/SG 46/5/2	Greenpeace International	Comments on the final draft summary report on dumping permits issued in 2020

### 6 Technical cooperation and assistance

LC/SG 46/6	Secretariat	National and regional workshops
LC/SG 46/6/1	Republic of Korea	Progress report on the graduate school of London Protocol Engineering Master of Project Administration (LPEM)

### 7 Monitoring and assessment of the marine environment

LC/SG 46/7	Secretariat	Update on major ocean initiatives
LC/SG 46/7/1	Canada	Results of Canada's 2021 disposal site monitoring programme
LC/SG 46/INF.8	United Kingdom	Dredged material disposal site monitoring around the coast of England: Results of sampling (2018-2022)
LC/SG 46/INF.11	United States	National Ocean Dumping Site Monitoring Assessment Reports for 2017 and 2018
LC/SG 46/INF.12	United States	Using data repositories for ocean and coastal acidification monitoring data
LC/SG 46/INF.13	United States	New oceanographic monitoring technologies



## 8 Coastal management issues associated with activities to prevent marine pollution

LC/SG 46/8	Sweden	Results of Sweden's investigations into a chemical munitions dumpsite
LC/SG 46/8/1	Secretariat	Update on recent progress on issues related to marine litter
LC/SG 46/8/2	Secretariat	Progress report of the GESAMP Working Group on Climate Change and Greenhouse Gas Related Impacts on Contaminants in the Ocean (WG 45)
LC/SG 46/8/3	Greenpeace International	Concerns relating to de facto disposal at sea of jettisoned space-vehicle components: an update
LC/SG 46/8/4	Secretariat	Progress of GESAMP WG 42 and the Report Vol. A: Impacts of Mine Tailings Waste Matter in the Marine Environment from Mining Operations
LC/SG 46/INF.3	WODA	Environmental management framework for deep seabed nodule mining
LC/SG 46/INF.4	WODA	Best management practices for deep-sea tailings disposal
LC/SG 46/INF.9	United Kingdom	Update on the Virgin Orbit space launch from Spaceport Cornwall, United Kingdom
LC/SG 46/INF.10	United Kingdom	Update on the work of OSPAR with a focus on marine litter
LC/SG 46/INF.14	Italy	STRONG SEA LIFE (Survey and Treatment ON Ghost Nets Sea LIFE)
LC/SG 46/INF.16	Secretariat	Pre-publication copy of the report of the report of GESAMP WG 42: Volume A

## 9 Habitat modification and enhancement

LC/SG 46/9	Chair of the Correspondence Group	Report of the Correspondence Group on the beneficial use of wastes
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## 10 Matters related to radioactive wastes

LC/SG 46/INF.15	SPREP	Pacific assessment and concerns with respect to plans to discharge nuclear wastewater from Fukushima Daiichi Nuclear Power Plant into the Pacific Ocean
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**11 Outcome of Science Day: "Emerging technologies in marine geoengineering"**

**12 Guidelines, manuals, bibliographies and information exchange**

No documents submitted

**13 Review of the LC/LP Scientific Groups Work Programme**

LC/SG 46/WP.2	Secretariat	Draft joint work programme of the Scientific Groups (2023-2025)
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**14 Any other business**

LC/SG 46/14	Secretariat	Report on GESAMP activities
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**15 Election of officers for both Scientific Groups**

No documents submitted

**16 Consideration and adoption of the report**

LC/SG 46/16	Report of the Forty-sixth Meeting of the Scientific Group of the London Convention and the Seventeenth Meeting of the Scientific Group of the London Protocol
LC/SG 46/WP.1	Draft Report of the Forty-sixth Meeting of the Scientific Group of the London Convention and the Seventeenth Meeting of the Scientific Group of the London Protocol
LC/SG 46/WP.1/Rev.1	Revised Draft Report of the Forty-sixth Meeting of the Scientific Group of the London Convention and the Seventeenth Meeting of the Scientific Group of the London Protocol

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## ANNEX 2

### Road map for the Scientific Groups' Correspondence Group on Marine Geoengineering

- 1 Outputs were completed during LC/SG 46:
  - .1 share flow chart explaining links between Scientific Groups and the Legal Intersessional Correspondence Group work, and purpose of various tables;
  - .2 share revised (finalized) scenario table;
  - .3 summary tables of LC-LP.1/Circ.67 effects analyses;
  - .4 summary statement capturing the outputs of the group for the week;
  - .5 promotion ideas (in particular, those that can be completed before the governing bodies meetings); and
  - .6 this road map.

### Scientific Groups-governing bodies intersessional period

2 *Provide recommendations on the possible inclusion of marine geoengineering activities in the new annex 4 to the London Protocol (2013 amendment) using the Scientific Groups' outputs and other available information:*

- .1 Complete LC-LP.1/Circ.67 analysis by the Correspondence Group based on existing table 1 drafts;
  - .1 review draft LC-LP.1/Circ.67 tables prepared by volunteer leads; and
  - .2 aim to share draft tables with governing bodies as part of our progress report (early July);
- .2 Virtual meetings as needed, including with Legal Intersessional Correspondence Group;
- .3 Communicate finalized scenarios to the Legal Intersessional Correspondence Group; and
- .4 Plan additional technical work required to complete TOR and the time required to complete it.

3 *Promote and increase awareness of the importance of the LC/LP work and instruments in the context of marine geoengineering, developing other suitable actions to raise awareness (e.g. a documentary):*

- .1 Press briefing based on outputs from this week (i.e. LC-LP.1/Circ.67 effects analysis);

- .2 Response letter to Science Journal publication last week to note that LC/LP are working on this;
- .3 Recorded webinar on IMO website about work done at Scientific Groups (description of technique, overview of potential effects as per outputs of Scientific Groups) – link to it in governing bodies progress report;
- .4 Consider other pre-recorded webinars;
- .5 Consider how to package information for governing bodies (perhaps develop a presentation with images?);
- .6 Consider how to ensure the message reaches beyond the governing bodies (e.g. an event including IMO permanent representatives?);
- .7 Develop a short and a long presentation about the MGE work under the LC/LP (and the LC/LP itself), and have them translated;
- .8 Consider developing a poster about the MGE work under the LC/LP;
- .9 Aim to present at MEPC (possibly after the governing bodies); and
- .10 Consider other venues for potential outreach.

4 *Consider how to reach audiences outside these bodies, and how to engage other Contracting Parties in the work of this correspondence group.*

**Remainder of intersessional period**

- .1 Complete LC-LP.1/Circ.67 analysis (as needed); and
- .2 Plan and complete work incorporating outputs from governing bodies.

5 *Consider the need for the development of new guidance, or update existing guidance, for the marine geoengineering techniques identified by GESAMP WG 41, and in doing so take into account previous work carried out by the LC/LP on the issue, including the Guidance for consideration of marine geoengineering activities (LC 36/16, annex 5);*

- .1 Completion of evaluation of relevant annex 5 and LC/LP guidance.

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**ANNEX 3**

**LC/LP SCIENTIFIC GROUPS WORK PROGRAMME (2023-2025)**

L = Low; M = Medium; H = High Cells with dashed background indicate issues not under the Scientific Groups remit.

Supports Strategic Directions				Description	WHEN				WHO				
SD1	SD2	SD3	SD4		2023	2024	2025	Target Completion Date	GBs (Contracting Parties)	SGs	LP CG	B2C	OLCP (Sec)
	✓	✓	✓	1	<b>Review and develop guidance and address technical and scientific issues to enhance implementation of the London Convention and Protocol</b>				Ongoing	✓	✓		
	✓	✓	✓	1.1	<b>Waste Assessment Guidance (WAG): Generic and Specific Assessment Guidelines</b>				Ongoing	✓	✓		
					.1 Review of Generic and Specific Guidelines	M	M	M	Ongoing		✓		
					.2 Review of and experience with Specific Guidelines for the assessment of platforms and other manmade structures at sea	M	M	M	Ongoing		✓		
					.3 Development of recommendations regarding guidance on fibre reinforced plastic (FRP) vessels	M	M	M	2024		✓		
					.4 Review and experience of further guidance on disposal site selection	L	L	L	Ongoing		✓		
					.5 Development of recommendations about further guidance on marine cumulative effects assessment	L			2023		✓		
					.6 Review of and experience with practical implementation of the WAGs	M	M	M	Ongoing		✓		
					.7 Update of the interim action levels (IALs) every five years at a minimum	M	M	M	Ongoing		✓		
					.8 Collection of information on protection of higher trophic levels as related to the WAGs	L	L	L	Ongoing		✓		
					.9 Waste prevention techniques	M	M	M	Ongoing		✓		
					.10 Consideration of the consequences of new waste prevention techniques on implementation of the LP/LC	M	M	M	Ongoing		✓		
					.11 Revision of the guidance on removal of anti-fouling coatings	H			2024		✓		
✓	✓	✓		1.2	<b>Other technical and scientific issues</b>					✓	✓		
					.1 Habitat modification/enhancement	M	M	M	Ongoing		✓		
					.2 Beneficial use of waste or other materials	M	M	M	Ongoing		✓		
					.2.1 Inventory on beneficial use and habitat enhancement activities (info submitted to LC/LP)	M	M	M	2024		✓		
✓	✓	✓		1.3	<b>Monitoring and Assessment</b>					✓	✓		
					.1 Reports and assessment of field monitoring	H	H	H	Ongoing		✓		
					.2 Research results, new techniques and strategies	M	M	M	Ongoing		✓		
				1.4	<b>Science Day</b>					✓	✓		
	✓	✓	✓		.1 Identify Science Day topic to support effective implementation of the LP/LC or to identify and evaluate emerging issues. As appropriate, invite experts to participate in Science Day formatted as an open symposium	M	M	M	Ongoing		✓		
✓		✓		2	<b>Address and manage climate change</b>					✓	✓		
✓		✓		2.1	<b>CO<sub>2</sub> sequestration in sub-seabed geological formations (LP)</b>					✓	✓		
					.1 Experience with implementation of CO <sub>2</sub> sequestration guidelines/technologies and their application	H	H	H	Ongoing		✓		
					.2 Compilation of information on ongoing projects and experiences with the application of the CO <sub>2</sub> sequestration guidelines	H	H	H	Ongoing		✓		✓
✓		✓		2.2	<b>Marine Geoengineering</b>				Ongoing	✓	✓		
					.1 Keep under review the marine environmental implications of marine geoengineering	H	H	H	Ongoing		✓		
					.2 Evaluation of GESAMP (WG 41 phase 2) report on marine geoengineering activities	H	H	H	2024		✓		

Supports Strategic Directions				Description	WHEN				WHO					
SD1	SD2	SD3	SD4		2023	2024	2025	Target Completion Date	GBs (Contracting Parties)	SGs	LP CG	B2C	OLCP (Sec)	
					.3 Compilation of information on planned and ongoing marine geoengineering projects	M	M	M	Ongoing		✓			
✓	✓		✓	<b>3</b>	<b>Boundary issues and emerging matters of concern</b>					✓	✓	✓		
✓	✓	✓	✓	<b>3.1</b>	<b>Cooperation with certain UN agencies and industry orgs., as appropriate, with regard to:</b>				Ongoing	✓	✓			
					.1 Riverine and marine disposal of tailings and associated wastes from mining operations						✓			
					.1.1 Evaluation of GESAMP WG 42 report Vol. A on impacts of wastes and other matter in the marine environment from mining operations, including marine mineral mining	M	M	L	2024		✓			
					.1.2 Share information on actions undertaken by other bodies, e.g., OSPAR				Ongoing	✓				
					.2 Marine Litter and Microplastics						✓			
					.2.1 Update the inventory on issue of marine litter and microplastics (LP/LC relevant issues)	M	M	M	Ongoing		✓			
					.3 Cooperative measures to assess and increase awareness of environmental effects related to waste originating from chemical munitions dumped at sea	M	M	L	tbd		✓			
					.4 Deep Seabed Mining						✓			
					.4.1 Deep seabed mining in Area: Evaluation of relevant GESAMP report Vol. B; provision of expertise regarding waste assessment to ISA	H	H	L	2024		✓			
					.4.2 Deep seabed mining in areas of national jurisdiction: development of summary of seabed mining activities/projects taking place in areas of national jurisdiction	L	L	L	tbd		✓			
					.5. Outstanding cooperative work						✓			
					.5.1 Jettisoned space vehicle components - dialogue with COPUOS	L	L	L	Ongoing		✓			✓
✓				<b>3.2</b>	<b>Underwater noise from anthropogenic sources (LP-LC noise related issues only)</b>	L	L	L	Ongoing	✓	✓			
✓	✓			<b>4</b>	<b>Address matters related to the management of radioactive wastes and other matter</b>					✓	✓			
✓	✓			<b>4.1</b>	<b>Review of ongoing issues in relation to dumping of radioactive wastes and other matter</b>	L	L	L	Ongoing	✓	✓			
✓				<b>5</b>	<b>Promote and improve compliance with the LP and LC</b>					✓	✓	✓	✓	✓
✓				<b>5.1</b>	<b>Implementation of compliance procedures and mechanisms (LP)</b>	H	H	H	Ongoing			✓		
✓				<b>5.2</b>	<b>Improve reporting under the LP and LC</b>	H	H	H	Ongoing	✓	✓	✓	✓	✓
✓				<b>5.3</b>	<b>Compliance with the reporting requirements under the LP and LC</b>	H	H	H	Ongoing	✓		✓		
✓					.1 Contracting Parties submit annual reports on dumping permits issued	H	H	H	Ongoing	✓				
✓					.2 Contracting Parties submit their compliance and field monitoring reports	H	H	H	Ongoing	✓				
✓					.3 Contracting Parties submit their legislative and administrative measures, and the effectiveness of the measures				Ongoing	✓				
✓					.4 Provide assistance existing and prospective parties to strengthen reporting				Ongoing			✓	✓	✓
✓					.5 Implementation of electronic reporting of dumping activities	M	M	M	2026					✓
✓					.6 Enhanced collaboration with regional bodies on reporting	M	M	M	Ongoing	✓		✓		✓
✓					.7 Review, circulate and publish summary reports with data for target: SD1	H	H	H	Ongoing					✓

Supports Strategic Directions				Description	WHEN				WHO										
SD1	SD2	SD3	SD4		2023	2024	2025	Target Completion Date	GBs (Contracting Parties)	SGs	LP CG	B2C	OLCP (Sec)						
	✓																		
	✓			5.4	Implementation of the Action Plan to Improve Reporting under the LP and LC	H	H	H	Ongoing		✓	✓	✓	✓					
	✓			5.5	Technical/Scientific review and assessment of dumping and monitoring reports	H	H	H	Ongoing		✓								
	✓			5.6	Reporting of observed dumping incidents which may be in violation of international treaties	L	L	L	Ongoing		✓		✓						
✓	✓	✓		6	Promote LP through outreach, technical cooperation and assistance to existing members for implementation and prospective members for ratification or accession						✓	✓	✓	✓	✓				
✓	✓		✓	6.1	Provide technical cooperation and assistance to existing and prospective members	M	M	M	Ongoing		✓		✓						
					.1 Complete "Barriers to Compliance" Project Work Plan	M	M	M	Ongoing		✓		✓						
					.2 Reporting on the Technical Co-operation Trust Fund	M	M	M	Ongoing										✓
					.3 Create tools to support countries in the development of LP implementing legislation								✓	✓	✓				
✓			✓	6.2	Provide outreach materials to prospective new Contracting Parties and existing members new communications materials, including regional workshops and country-to-country outreach strategies	M	M	M	Ongoing			✓		✓					
					.1 Improvement/update of the LP and LC website	M	M	M	Ongoing		✓		✓	✓					
					.2 Promotion of the LP and LC at international meetings, including high level audiences	M	M	M	Ongoing										✓
					.3 Update all existing publications and prepare new publications, and promote approved publications in accordance with communications plans (LC/LP publications)	M	M	M	Ongoing			✓		✓	✓				
	✓	✓			.4 Manuals, Bibliographies and Information Exchange (related to other bodies)	M	M	M	Ongoing			✓							
✓	✓	✓			.5 Establish a communications group or dedicated individual or promotions officer to support SD1, SD3	M	M	M	Ongoing		✓	✓		✓	✓				
✓	✓	✓			.6 Create a virtual centre of excellence in SGs (e.g., on dredging and disposal, geoengineering, etc., through better proposition of guidance and technical assistance				Ongoing		✓			✓	✓				
✓				6.3	Update national focal points and expert registration	M	L	L	Ongoing		✓								✓
✓	✓	✓		7	Promote the work of the LP and LC externally through relations with other organizations in the field of marine environmental protection						✓	✓	✓						✓
		✓		7.1	Improve and further develop the implementation of collaborative arrangements with other UN entities, IGOs and NGOs	M	M	M	Ongoing		✓	✓							✓
✓			✓	7.2	Advice from international organizations on specific issues – GESAMP	M	M	M	Ongoing		✓	✓							✓
✓	✓			7.3	Contribution to the major ocean-related initiatives on reporting and assessment of the state of the marine environment	M	M	M	Ongoing		✓	✓							
					.1 Follow up with Global Reporting and Assessment of the State of the Marine Environment (UN Regular Process)	M	M	M	Ongoing		✓	✓							
				7.4	Promotion of LP/LC scientific groups as formal body for scientific cooperation and collaboration				tbd										
				8	Address overarching and cross-cutting issues, including assessment of implications of changes to marine environment (SD4 first task of implementation plan)														
✓	✓	✓	✓	8.1	Operationalize and implement the Strategic Plan for the London Protocol and London Convention	M	M	M	Ongoing		✓	✓	✓	✓	✓				
✓				8.2	Review Work Programmes	M	M	M	Ongoing		✓	✓	✓	✓	✓				