

RESOLUTION LP.4(8) (Adopted on 18 October 2013)  
ON THE AMENDMENT TO THE LONDON PROTOCOL TO REGULATE THE  
PLACEMENT OF MATTER FOR OCEAN FERTILIZATION AND OTHER  
MARINE GEOENGINEERING ACTIVITIES

**RESOLUTION LP.4(8)**

**ON THE AMENDMENT TO THE LONDON PROTOCOL TO REGULATE THE  
PLACEMENT OF MATTER FOR OCEAN FERTILIZATION AND OTHER  
MARINE GEOENGINEERING ACTIVITIES**

**(Adopted on 18 October 2013)**

**THE EIGHTH MEETING OF CONTRACTING PARTIES TO THE 1996 PROTOCOL TO THE  
CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF  
WASTES AND OTHER MATTER 1972,**

**RECALLING** the objectives of the 1996 Protocol to the London Convention ("London Protocol") that include the protection and preservation of the marine environment from all sources of pollution,

**RECALLING** that, in implementing the London Protocol, Contracting Parties are obliged to apply a precautionary approach to environmental protection,

**RECOGNIZING** the importance of the conservation and sustainable use of the oceans and seas and of their resources for sustainable development and that oceans, seas and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical to sustaining it,

**NOTING** the ongoing work on geoengineering within the context of the Intergovernmental Panel on Climate Change (IPCC) and the relevant parts of the IPCC Fifth Assessment Report as well as the outcomes of the IPCC expert meeting on geoengineering (Lima, Peru, 2011),

**NOTING** United Nations General Assembly resolution A/RES/67/78 on "Oceans and the law of the sea" which recalled the importance of marine scientific research for understanding and conserving the world's marine environment and resources; and United Nations General Assembly resolution 62/215, concerning "Oceans and the law of the sea", adopted on 22 December 2007, which in its paragraph 98 "encourages States to support the further study and enhance understanding of ocean iron fertilization",

**RECALLING** resolution LC-LP.1(2008) that agreed that the scope of the London Convention and the London Protocol includes ocean fertilization activities,

**REITERATING** ongoing concerns about the potential environmental impacts of ocean fertilization and noting the concerns about ocean fertilization expressed by, inter alia, the United Nations General Assembly, the United Nations Conference on Sustainable Development, the Conference of the Parties to the Convention on Biological Diversity and the Intergovernmental Oceanographic Commission of UNESCO,

**RECALLING** resolution LC-LP.2(2010) which affirmed that the London Convention and the London Protocol should continue to work towards providing a global, transparent and effective control and regulatory mechanism for ocean fertilization and other activities that fall within the scope of the London Convention and the London Protocol and have the potential to cause harm to the marine environment,

**CONCERNED** about the potential widespread, long-lasting or severe impacts on the marine environment of the placement of matter from unregulated ocean fertilization activities and other proposed marine geoengineering techniques, and determined to put in place a science based, global, transparent and effective control and regulatory mechanism for such activities,

**NOTING** decisions X/33 and XI/20 of the Conference of the Parties to the Convention on Biological Diversity which invited Parties to ensure, in accordance with the precautionary approach, that no climate-related geoengineering activities take place "in the absence of science based, global, transparent and effective control and regulatory mechanisms for geoengineering and that the Eleventh Conference of the Parties to the Convention on Biological Diversity concluded "that there is no single geoengineering approach that currently meets basic criteria for effectiveness, safety and affordability and that approaches may prove difficult to deploy or govern",

**EMPHASIZING** that ocean fertilization and other types of marine geoengineering should not be considered as a substitute for mitigation measures to reduce carbon dioxide emissions,

1 **ADOPTS** the following amendments to the London Protocol, in accordance with Article 21 of the Protocol, as set out in the annex to this resolution;

2 **REAFFIRMS** that resolutions LC-LP.1(2008) and LC-LP.2(2010) continue to apply for all Contracting Parties, pending the entry into force of the amendments to the London Protocol set out in the annex to this resolution for those Contracting Parties that accept them;

3 **CONFIRMS** that the Assessment Framework for Scientific Research involving Ocean Fertilization adopted by the Contracting Parties to the London Convention and the London Protocol in 2010 is the relevant specific assessment framework referred to in annex 4 for ocean fertilization and should continue to be used to determine, with utmost caution, whether a proposed ocean fertilization activity constitutes legitimate scientific research that is not contrary to the aims of the London Protocol;

4 **REAFFIRMS** that new and relevant scientific information and knowledge on ocean fertilization and other marine geoengineering activities should continue to be reviewed by the Contracting Parties to the London Protocol in the context of the amendments; and

5 **DECIDES** that the Contracting Parties to the London Protocol should continue to develop guidance for listing additional marine geoengineering<sup>1</sup> activities in annex 4 that includes a multi-stakeholder approach consistent with article 21;

6 **DECIDES ALSO** that Contracting Parties to the London Protocol should undertake further work to develop the arrangements for seeking independent expert advice referred to in paragraph 12 of annex 5.

---

<sup>1</sup> See also explanatory text in the Report of the Meeting of Contracting Parties, paragraph 4.12.

## ANNEX

### AMENDMENTS TO ARTICLE 1 AND NEW ARTICLE 6BIS AND NEW ANNEXES 4 AND 5

#### Article 1

#### DEFINITIONS

*Add new paragraph, as follows:*

"5bis "Marine geoengineering" means a deliberate intervention in the marine environment to manipulate natural processes, including to counteract anthropogenic climate change and/or its impacts, and that has the potential to result in deleterious effects, especially where those effects may be widespread, long lasting or severe."

*Add new article, as follows:*

#### "Article 6bis

#### MARINE GEOENGINEERING ACTIVITIES

1 Contracting Parties shall not allow the placement of matter into the sea from vessels, aircraft, platforms or other man-made structures at sea for marine geoengineering activities listed in annex 4, unless the listing provides that the activity or the subcategory of an activity may be authorized under a permit.

2 Contracting Parties shall adopt administrative or legislative measures to ensure that the issuance of permits and permit conditions comply with provisions of annex 5 and takes into account any Specific Assessment Framework developed for an activity and adopted by the Meeting of the Contracting Parties. A permit shall only be issued after the activity has undergone assessment which has determined that pollution of the marine environment from the proposed activity is, as far as practicable, prevented or reduced to a minimum. A permit shall only be issued if the outcome of the assessment is that the activity is not contrary to the aims of the Protocol.

3 Article 4 does not apply to activities listed in annex 4."

*Add new annex, as follows:*

#### "Annex 4

#### MARINE GEOENGINEERING ACTIVITIES

##### 1 OCEAN FERTILIZATION

.1 Ocean fertilization is any activity undertaken by humans with the principal intention of stimulating primary productivity in the oceans. Ocean fertilization does not include conventional aquaculture, or mariculture, or the creation of artificial reefs.

.2 All ocean fertilization activities other than those referred to in paragraph .3 shall not be permitted.

- .3 An ocean fertilization activity may only be considered for a permit if it is assessed as constituting legitimate scientific research taking into account any specific placement assessment framework."

*Add new annex, as follows:*

## **"Annex 5**

### **ASSESSMENT FRAMEWORK FOR MATTER THAT MAY BE CONSIDERED FOR PLACEMENT UNDER ANNEX 4**

#### GENERAL

- 1 The purpose of this Framework is:
- .1 to assess placement activities listed in annex 4; and
- .2 to be the basis for developing Specific Assessment Frameworks for placement activities listed in annex 4.
- 2 Specific Assessment Frameworks developed for placement activities listed in annex 4 shall meet the requirements of this annex and may provide further guidance for assessing and issuing permits.
- 3 Parties meeting the terms of any Specific Assessment Framework that has been adopted by the Parties shall be deemed to be in compliance with this annex.

#### DESCRIPTION OF ACTIVITY

- 4 It first has to be determined whether the proposed activity is an activity covered by the listing in annex 4 and may be permitted in accordance with that annex. The determination requires a full description of the proposed placement activity, including its purpose and covering all stages. It furthermore requires a description of both the working practices during the different stages and the wastes produced (if any) in the relevant stage.
- 5 The proposal shall demonstrate that:
- the proposed activity is for a purpose other than mere disposal;
  - it is designed to fulfil its purpose;
  - the rationale, goals, methods, scale, timings and locations as well as predicted benefits and risks are stated as a clear justification for the proposal;
  - the proposed activity has the financial resources available to fulfil the programme of work before it commences.
- 6 A detailed description and characterization of the placement and all its constituents is an essential precondition for the assessment of the proposed activity and the basis for a decision as to whether a permit may be issued. If the proposed activity is so poorly characterized that proper assessment cannot be made a permit shall not be issued.

*Marine Scientific Research related to Marine Geoengineering*

7 Potential marine geoengineering techniques may require specific marine scientific research in order to, inter alia:

- better understand the natural processes which will be affected;
- understand their potential impacts on the marine environment;
- understand their potential efficacy for geoengineering purposes; and
- be able to effectively apply the assessment framework(s) to proposals for marine geoengineering

8 In case of such a specific marine scientific research activity, the following considerations apply:

- the proposed activity is designed to answer questions that will add to scientific knowledge. Proposals should state their rationale, research goals, scientific hypotheses and methods, scale, timings, duration and locations with clear justification for why the expected outcomes cannot reasonably be achieved by other methods.
- the research methodology to be applied should be appropriate and based on best available scientific knowledge and technology. The methodology should be described in sufficient detail to allow a peer review.
- the proposed activity is subject to scientific peer review at appropriate stages in the assessment process.
- economic interests do not influence the design, conduct and/or outcomes of the proposed activity. There should not be any financial and/or economic gain arising directly from the experiment or its outcomes. This does not preclude payment for services rendered in support of the experiment or future financial impacts of patented technology.
- the proponents of the proposed activity make a commitment to publish the results in peer reviewed scientific publications and include a plan in the proposal to make the data and outcomes publicly available in an appropriate and specified time frame.
- the proposed activity has the financial resources available before the work commences to fulfil the program of work.

9 Paragraphs 4 and 6 above also apply to marine scientific research.

CONSULTATION

10 Where the placement activity proposed for consideration by a Contracting Party may have any effect in any area of the sea in which another State is entitled to exercise jurisdiction in accordance with international law or in any area of the sea beyond the jurisdiction of any State, potentially affected countries and relevant regional intergovernmental agreements and arrangements should be identified and notified and a plan should be developed for ongoing consultations on the potential impacts, and to encourage scientific cooperation.

11 Contracting Parties should encourage proponents of listed activities to initiate early consultations with stakeholders so that they can address any issues prior to submitting proposals. Contracting Parties shall establish a consultation process with all relevant stakeholders nationally or internationally when a proposal is submitted. This consultation process shall be carried out during the assessment process and before a final permit decision is made. Consent should be sought from all countries with jurisdiction or interests in the region of potential impact without prejudice to international law. Where the placement activity has the potential to have any effects on an area subject to a regional intergovernmental agreement or arrangement, the process should include consultation with the relevant regional organization, with a view to ensuring consistency with applicable regional objectives and requirements.

12 Contracting Parties should consider any advice on proposals for activities listed in annex 4 from independent international experts or an independent international advisory group of experts, especially in situations where paragraph 10 applies. The advice could address scientific, technical, social or economic aspects of the proposal. It shall, as appropriate, include a peer review of the information and data provided by the proponent with regard to its scientific and technical quality. In situations where paragraph 10 applies, potentially affected countries could seek such advice from independent international experts or an independent international advisory group of experts.

#### INFORMATION FOR ASSESSMENT

13 A common set of information is required for each of the assessment elements of the framework below, namely:

- Placement site selection
- Assessment of matter to be placed into the marine environment
- Assessment of potential effects including the Impact Hypothesis
- Risk management
- Monitoring including the environmental baseline

#### PLACEMENT SITE SELECTION

14 In order to address placement site selection, Contracting Parties shall require the following information, as appropriate, to evaluate and to justify the selection of the site(s):

- the physical, geological, chemical, and biological conditions at the proposed site and the area of potential impact, and the uncertainties in these conditions in relation to the proposed activity;
- the impact on amenities, values and other uses of the sea at the proposed site and in the area of potential impacts;
- any constituent fluxes associated with the activity in relation to existing fluxes of substances in the marine environment; and
- economic and operational feasibility.

## ASSESSMENT OF MATTER TO BE PLACED INTO THE MARINE ENVIRONMENT

15 Characterization and assessment of matter proposed to be placed into the marine environment, including its constituents shall take into account as appropriate:

- .1 origin, total amount, form and average composition and fate;
- .2 properties: physical, chemical, biochemical and biological;
- .3 toxicity;
- .4 persistence: physical, chemical and biological; and
- .5 accumulation and biotransformation in biological materials or sediments.

## ASSESSMENT OF POTENTIAL EFFECTS

16 Assessment of potential effects shall lead to the "Impact Hypothesis", a concise statement of the expected consequences of the placement activity within the area of the activity and within the area of potential impacts, including transboundary effects. It provides a basis for deciding whether to approve, reject or suggest revisions to the proposed placement activity and for defining risk management and mitigation measures and environmental monitoring requirements.

17 The assessment of potential effects should integrate information on the characteristics of the proposed placement activity, conditions at the proposed site(s), any relevant fluxes, and any proposed construction techniques. The assessment shall specify the potential effects on human health, on marine ecosystem structure and dynamics including sensitivity of species, populations, communities, habitats and processes, amenities and other legitimate uses of the sea. It shall define the nature, temporal and spatial scales and duration of expected impacts based on reasonably conservative assumptions.

18 An analysis of the proposed placement activity should be considered in the light of an assessment of the following concerns: human health risks, environmental costs, hazards, (including accidents), economics and exclusion of future uses. Cumulative impacts from repeated activities or from other activities may also be a relevant consideration. If this assessment reveals that adequate information is not available to determine the likely effects of the proposed placement activity then this activity shall not be considered further.

19 Each assessment of potential effects shall conclude with a statement supporting a decision to approve, reject or suggest revisions to a proposed placement activity.

## RISK MANAGEMENT

20 Risk Management procedures are necessary to ensure that, as far as practicable, environmental risks are minimized, inter alia, through mitigation and contingency planning, and the benefits maximized and that a precautionary approach is applied.

21 Strategies to manage or mitigate risks need to be appropriate for the risks under consideration. They may be imposed as additional conditions by a Contracting Party or included as an intrinsic part of the proposal. The strategies may include temporal, spatial or operational restrictions.

22 Contingency planning will also need to be considered for responding to monitoring in cases where the Impact Hypothesis is found to be incorrect. This may include the cessation of placement activities.

## MONITORING

23 A well-designed monitoring regime is necessary and should consider both short and long-term impacts and, where possible, determine whether the activity has achieved its purpose.

24 The purpose of monitoring is to verify that permit conditions are met – compliance monitoring – and that the assumptions made during the permit review and site selection process were correct and sufficient to protect the environment and human health – field monitoring. It is essential that such monitoring programmes have clearly defined objectives. The type, frequency and extent of monitoring will depend on the Impact Hypothesis as well as on predicted local and regional consequences.

25 Monitoring is also used to determine the area of impact and to ascertain that changes are within the range of those predicted. The establishment of baseline conditions prior to a placement activity as well as monitoring of control sites is essential for ongoing monitoring and the detection of any impacts beyond those predicted.

## PERMIT AND PERMIT CONDITIONS

26 A decision to issue a permit shall only be made if:

- .1 the assessment has been satisfactorily completed and has shown that the proposed activity is an activity covered by the listing in annex 4 and may be permitted in accordance with that annex;
- .2 the activity is designed to fulfil its purpose. It has to be demonstrated that the proposed activity has the financial resources available before it commences to fulfil the programme of work including any permit conditions requiring e.g. mitigation, contingency planning and monitoring;
- .3 all impact evaluations are satisfactorily completed;
- .4 the risk management and monitoring requirements have been determined;
- .5 conditions are in place to ensure that, as far as practicable, environmental disturbance and detriment would be minimized and the benefits maximized;
- .6 the consultation requirements are fulfilled pursuant to paragraphs 10, 11 and 12;
- .7 it is determined that pollution of the marine environment from the proposed activity is, as far as practicable, prevented or reduced to a minimum, therefore not contrary to the aims of the Protocol.

27 In case that adequate information is not available to make the determinations in paragraph 26, the permitting authority shall request additional information before taking a decision or shall not issue a permit.

28 The provisions of the permit shall ensure, as far as practicable, that risks for human health and the marine environment are avoided, environmental disturbance and detriment are minimized and the benefits maximized. Any permit issued shall contain conditions specifying among others:

- .1 the types and sources of matter to be placed;
- .2 the location of the placement site(s);
- .3 the methods to be used in achieving the placement activity;
- .4 risk management, monitoring and reporting requirements; and
- .5 removal and/or disposal/reuse/recycling of items, as appropriate, at the end of placement activity.

29 Permits should be reviewed at regular intervals, taking into account the results of monitoring, the objectives of monitoring programmes and relevant research. Review of monitoring results will indicate whether field programmes need to be continued, revised or terminated and will contribute to informed decisions regarding the continuance, modification or revocation of permits. Monitoring provides an important feedback mechanism into future permitting decisions for the protection of human health and the marine environment.

#### REPORTING

30 The outcomes of any assessment and documentation of any permit issued shall be reported to the Secretariat and shall be made publicly available at or shortly after the time the decision is made. The Secretariat should then inform Contracting Parties."

## CONSEQUENTIAL AMENDMENTS

Consequential amendments are shown, as follows:

**Article 1.9 of the Protocol is amended as follows:** "Permit" means permission granted in advance and in accordance with relevant measures adopted pursuant to article 4.1.2, 6bis or 8.2

**Article 3.1 of the Protocol is amended as follows:** "In implementing this Protocol, Contracting Parties shall apply a precautionary approach to environmental protection from dumping of wastes or other matter or from placement of matter for marine geoengineering activities which may be considered for permits according to annex 4".

**Article 9.1.2 of the Protocol is amended as follows:** "keep records of the nature and quantities of waste or other matter for which ~~dumping~~ permits have been issued and where practicable the quantities actually dumped, or placed in accordance with article 6bis, and the location, time and method of dumping or placement; and"

**Article 9.2 of the Protocol is amended as follows:** "The appropriate authority or authorities of a Contracting Party shall issue permits in accordance with this Protocol in respect of wastes or other matter intended for dumping or, as provided for in article 6bis, placement or, as provided for in article 8.2, incineration at sea:"

**Article 9.3 of the Protocol is amended as follows:** "In issuing permits, the appropriate authority or authorities shall comply with the requirements of article 4 and article 6bis, together with such additional criteria, measures and requirements as they may consider relevant."

**Article 10.1.2 of the Protocol is amended as follows:** "vessels and aircraft loading in its territory the wastes or other matter which are to be dumped, ~~or incinerated~~, or placed in accordance with article 6bis, at sea; and"

**Article 10.1.3 of the Protocol is amended as follows:** "vessels, aircraft and platforms or other man-made structures believed to be engaged in dumping, ~~or incineration~~, or placement in accordance with article 6bis, at sea in areas within which it is entitled to exercise jurisdiction in accordance with international law."

**Article 13.1 of the Protocol is amended as follows:** "Contracting Parties shall, through collaboration within the Organization and in coordination with other competent international organizations, promote bilateral and multilateral support for the prevention, reduction and where practicable elimination of pollution caused by dumping or placement of matter for marine geoengineering activities as provided for in this Protocol to those Contracting Parties that request it...".

**Article 18.1 of the Protocol is amended as follows:** "Meetings of Contracting Parties or Special Meetings of Contracting Parties shall keep under continuing review the implementation of this Protocol and evaluate its effectiveness with a view to identifying means of strengthening action, where necessary, to prevent, reduce and where practicable eliminate pollution caused by dumping, and incineration, or placement in accordance with article 6bis, at sea of wastes or other matter. To these ends, Meetings of Contracting Parties or Special Meetings of Contracting Parties may:"

RESOLUTION LP.4(8) (Adopted on 18 October 2013)  
ON THE AMENDMENT TO THE LONDON PROTOCOL TO REGULATE THE  
PLACEMENT OF MATTER FOR OCEAN FERTILIZATION AND OTHER  
MARINE GEOENGINEERING ACTIVITIES