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**Ad hoc open-ended expert group
on marine litter and microplastics
Third meeting**

Bangkok, 18–22 November 2019
Item 6 (c) of the provisional agenda*

Introduction to activities under the mandate of the Ad Hoc Open-Ended Expert Group: Technology resources

Draft approach for technology and innovation mapping

Note by the Secretariat

1. The Ad Hoc Open-Ended Expert Group (AHEG) was established through the United Nations Environment Assembly resolution UNEP/EA.3/Res.7 paragraph 10. Its mandate was extended through resolution UNEP/EA.4/Res.6 paragraph 7, which also requested the group to, amongst other things, through subparagraph 7(b):

“Identify technical and financial resources or mechanisms for supporting countries in addressing marine plastic litter and microplastics”

In addition to this, given the topical relevance of “environmentally sound technological innovations, options, and measures for reducing the risk of discharges of litter into the marine environment” (UNEP/EA.4/Res.6 subparagraph 2(d)), these will be included as one among other technical resources to be identified in this Inventory. The above will be delivered in the form of an Inventory of technical resources and mechanisms, including environmentally sound technological innovations, to support countries in addressing marine plastic litter and microplastics.

2. This document aims to outline the approach for the preparation of such an Inventory and is presented to the Third Meeting of the Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics (AHEG 3) for discussion and consideration. The ultimate objective of the Inventory is to identify technical resources as well as technological innovations relevant for the prevention and reduction of both land-based and sea-based sources of marine litter, with a main focus on land-based (waste management) and near-shore (litter capturing) technologies and a priority on low- and medium-cost options, across the whole life cycle of plastics. The Inventory will be aligned with, and feed into, the stocktaking exercise mandated under UNEP/EA.4/Res.6 subparagraph 7(a) and described in Working Document UNEP/AHEG/2019/3/2. This draft Inventory approach may be revised based on feedback received from consultations at the AHEG 3 in order to ensure it adequately responds to the request set out in subparagraph 7(b).

* UNEP/AHEG/2019/3/1

Introduction

3. The proposed approach for the Inventory of technical resources and mechanisms has been prepared to cover a wide range of measures to prevent and manage marine plastic litter and microplastics, including environmentally sound technologies, options, and measures to reduce the risk of discharges into the marine environment. It is designed to provide an overview of existing technological solutions for the sustainable management of plastics across their entire life cycle, with a focus on low- and medium-cost options. It will aim to identify knowledge gaps and capacity gaps in the implementation of these existing technical solutions, as well as identify points of interventions for political decision-makers.
4. The goal of the Inventory is to identify technical resources and technological solutions relevant for the prevention and reduction of both land-based and sea-based sources of marine litter, with a main focus on land-based (waste management) and near-shore (litter capturing) technologies and a priority on low- and medium-cost options, across the whole life cycle of plastics.
5. The inventory will take place in two phases:
 - (i) Phase 1 (October-November 2019): Develop an annotated outline of the Inventory, identify relevant initiatives that can contribute information, and present approach and expected deliverables to the AHEG 3 for feedback;
 - (ii) Phase 2 (December 2019 – May 2020): Collect, synthesize and evaluate technical resources, including technological solutions and innovations, through stakeholder consultation and collaboration with existing databases.
6. The output of the Inventory will be an online and publicly available database of technical resources and mechanisms, including technological innovations, guidance and capacity building resources for the adequate selection and implementation of technological innovations.
7. The results will feed into multiple other work streams mandated by resolution UNEP/EA.4/Res.6, such as the stocktaking exercise (subparagraph 7a) and the assessment (subparagraph 2b) and will be presented to future meetings of this Ad Hoc Open-Ended Expert Group.

Approach and methodology

8. The scope will be focused on low-cost and medium-cost options, with high-cost not prioritised so as to ensure accessibility for a broader range of countries. As marine litter reportedly consists of up to 80 % of plastics (UN, 2017), the main focus will be on plastics. Both land-based and sea-based sources of marine litter are included (cf Figure 1). The main focus will be on macro plastics, although contributions from sewage systems will be considered as well. Within the scope of technologies to be investigated are both land-based and near-shore technological solutions, leaving out technologies that operate in open waters.
9. With land-based solutions, we refer to all stages of the waste management chain, namely waste prevention (e.g. phase-out of single-use plastics), waste collection, sorting, processing as well as the treatment of plastic wastes and wastewater. With near-shore solutions we refer to technologies to capture litter in rivers and coastal areas. Priority, however, will be given to litter capturing as well as waste prevention and collection, while only small-scale/low-cost/decentralized solutions for waste processing and treatment will be considered. The evaluation of the techniques will consider the connection between collection and processing, i.e. provide insight on the quality of the collected plastics in relation to their recyclability. While it is important to consider measures to incorporate principles like eco-design for future products, this is outside of the scope of this approach.

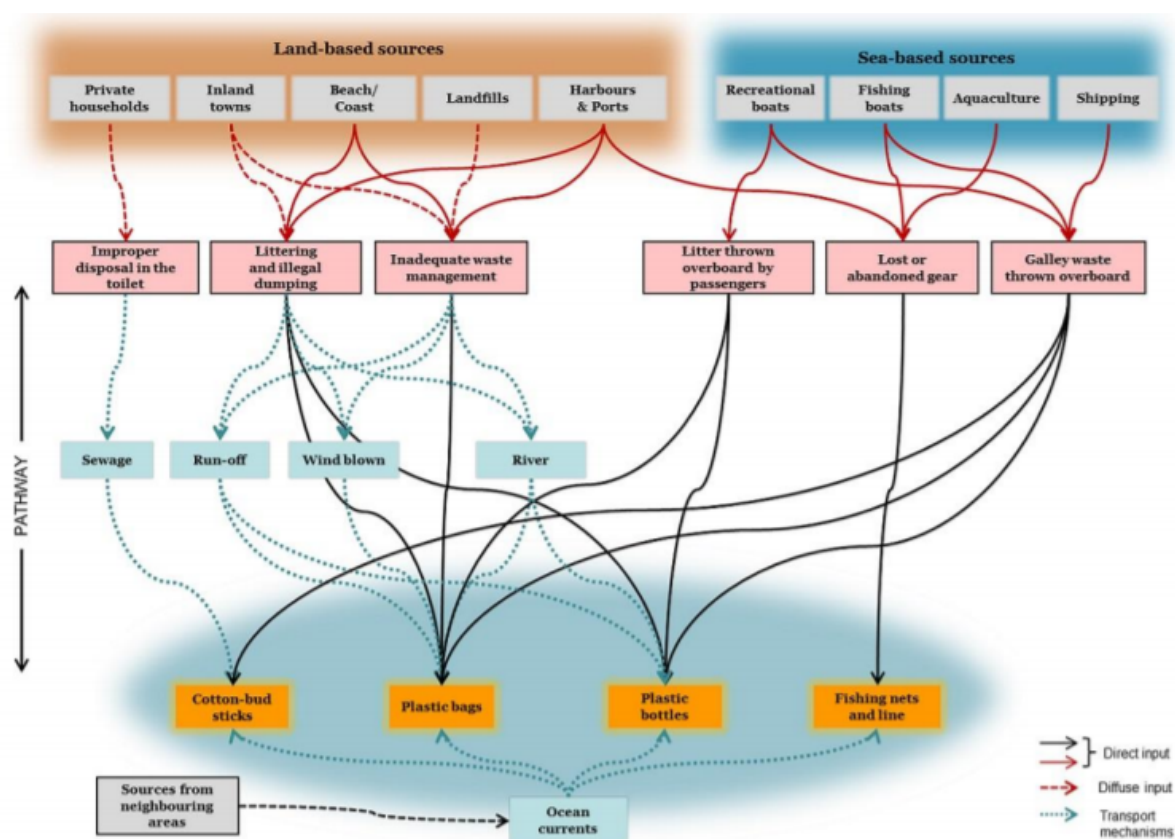


Figure 1: Multiple sea- and land-based sources (grey boxes) of 4 common items of marine litter and their potential pathways of entrance (blue boxes) into the marine environment (Veiga et al., 2016). This figure is included for illustrative purposes; the Inventory will not be limited to these components.

10. The order of work will be laid out as follows:

Phase I:

- i. Collect information on existing organizations and initiatives concerned with marine litter prevention and identify potential cooperation partners
- ii. Gather data from reports, scientific literature and industry on existing technological solutions, both land-based (waste management, wastewater treatment) and near-shore (litter capturing)

Phase II:

- iii. Collect information on the status and potential barriers of implementation of the identified technological solutions in various regions of the world.
- iv. Prepare recommendations for political decision-makers on the preferred points of intervention based on effectiveness and efficiency considerations.

The first two points are of a descriptive nature. A comprehensive list with existing organizations and initiatives dealing with technological solutions for marine litter prevention will be compiled in point 1 in order to avoid duplication of efforts and to identify potential cooperation partners early in the process.

The purpose of point 2 is to collect data on existing technological solutions to be fed into a public database at a later stage of the project. This point is best structured based on the most relevant sources and pathways in a specific regional context (cf Figure 1) and the corresponding technical resources and technological innovations which are suitable for implementation. As the situation for marine litter and waste management in developing countries differs significantly from developed countries, a first crucial step is to define robust criteria for the review, on a) how to select technologies, and b) what data and information exactly to collect. Data will be gathered from UN reports, scientific literature and industry, i.e. technology providers, and through supporting organisations such as *inter alia*, the International Environmental Technology Centre (IETC) and the International Solid Waste Association (ISWA). The

collected information will include information on the provider, availability on the market, basic process principles, price, input and output material (type, quality) capacity, etc. of identified resources.

Point 3 deals with the practicalities of implementation. Based on interviews and reports information will be gathered on the status and potential barriers of implementation of the identified technological solutions in various regions of the world. Knowledge gaps and capacity gaps will be evaluated.

In point 4 recommendations for political decision-makers on the preferred points of intervention based on effectiveness and efficiency considerations will be given.

11. The timeline is as follows:

<i>Timeline</i>	
<i>October-November 2019</i>	Collect background material and identify current initiatives that can contribute information
<i>November 2019</i>	Develop annotated outline of technical inventory and technical report - ready for discussion with the group
<i>21 November 2019</i>	Deep Dive session at the Global Sustainable Technology and Innovations Conference (GSTIC2019) in Brussels (20-22 November) with representatives of contributing organisations
<i>18-22 November 2019</i>	Present approach and expected deliverables to the 3 rd Ad Hoc Open-Ended Expert Group meeting in Bangkok
<i>December 2019 – April 2020</i>	Collect, synthesize and evaluate technological solutions through stakeholder consultation and collaboration with existing databases
<i>May 2020</i>	Present first version of Inventory to 4 th Ad Hoc Open-Ended Expert Group meeting
<i>May – October 2020</i>	Finalize database, develop technical report and gap report in consultation with key stakeholders
<i>October 2020</i>	Report final outcomes to 5 th Ad Hoc Open-Ended Expert Group meeting

12. The expected deliverables are the following:

- i. A database of technological solutions to prevent and reduce marine litter
- ii. A technical report describing the role of the technological solutions in sustainable management of plastics throughout their value chain
- iii. An evaluation of knowledge gaps and capacity gaps, with attention for differences in various regions of the world, especially developed and developing countries
- iv. Policy recommendations for best points of intervention to prevent and reduce marine litter.

Key questions

13. The AHEG may wish to comment on the methodology proposed to guide the secretariat in carrying out the mandate of subparagraph 7(b). In particular:

- i. What is the most cost-effective scope for the Inventory to maximise the amount of relevant information within a time- and resource-limited framework?
- ii. What are key criteria for the inclusion or exclusion of technical resources in this Inventory?
- iii. What is the most useful categorisation of technical resources for policymakers?
- iv. Is the scope of the Inventory, as currently defined, appropriate?