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**International environmental policy and
governance issues: marine plastic debris
and microplastics**

Resolution 1/6: Marine plastic debris and microplastics

Report of the Executive Director

Summary

The present report provides a summary of the implementation of resolution 1/6, on marine plastic debris and microplastics, by which the United Nations Environment Assembly requested the Executive Director, in consultation with other relevant institutions and stakeholders, to undertake a study on marine plastic debris and microplastics, building on existing work and taking into account the most up-to-date studies and data, focusing on identification of the key sources of marine plastic debris and microplastics; identification of possible measures and best available techniques and environmental practices to prevent the accumulation and minimize the level of microplastics in the marine environment; recommendations for the most urgent actions; specification of areas especially in need of more research, including key impacts on the environment and on human health; and any other relevant priority areas identified in the assessment of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). The Coordination Office of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, hosted by the United Nations Environment Programme (UNEP), is leading the preparation of the study, which will be made available to the United Nations Environment Assembly at its second session, in May 2016.

Financial resources have been mobilized from the Government of Norway to support work by UNEP on marine litter, from the Government of Germany for the socioeconomic component of the study and from the Government of the Netherlands for the Global Partnership on Marine Litter, while in-kind support is being received from other Member States. This has allowed for various activities to be implemented (support for projects and action plans, publications, videos and a massive open online course on marine litter, as detailed in section B of the present document). Technical support and expertise have been provided from a multitude of experts, in particular in relation to the development of the study. An advisory group of 29 experts has been established to support the development of policy-relevant recommendations (detailed in section C of the present report).

At its summit, held in Elmau, Germany, in June 2015, the Group of Seven decided to develop an action plan to combat marine litter, which is being developed with technical input from UNEP to

* UNEP/EA.2/1.

increase synergies and avoid duplication. The Group of Seven recognized the importance of using and supporting existing platforms and tools for cooperation in that field, including the Global Partnership on Marine Litter, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and the regional seas conventions and action plans.

Financial and in-kind support is provided by the private sector to the Working Group 40 of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection and for the identification of the best available techniques component of resolution 1/6.

A. Implementation of resolution 1/6 by UNEP and its partners

1. The present report provides a summary of the implementation of resolution 1/6, on marine plastic debris and microplastics, by which the United Nations Environment Programme (UNEP) and the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities, through the Global Partnership on Marine Litter, were mandated to undertake a study on marine plastic debris and marine microplastics, building on existing work and taking into account the most up-to-date studies and data, focusing on identification of the key sources of marine plastic debris and microplastics; identification of possible measures and best available techniques and environmental practices to prevent the accumulation and minimize the level of microplastics in the marine environment; recommendations for the most urgent actions; specification of areas especially in need of more research, including with regard to key impacts on the environment and on human health; and any other relevant priority areas identified in the assessment of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP). The UNEP Global Programme of Action Coordination Office is leading the preparation of the study, the results of which will be published in April 2016 and will inform the discussions at the second session of the United Nations Environment Assembly, in May 2016.

2. The core of the study, prepared with GESAMP, focuses on strengthening the evidence base concerning microplastics and their key sources. In addition it covers the impact of microplastics on fisheries and aquaculture (led by the Food and Agriculture Organization of the United Nations (FAO)); a compilation of best available techniques (prepared with the American Chemistry Council) and best environmental practices; modelling of marine debris (prepared with the Commonwealth Scientific and Industrial Research Organization); and socioeconomic aspects of marine litter (prepared with the Institute for European Environmental Policy).

3. In line with resolution 1/6 and as described below, the study will also contain recommendations for the most urgent actions and the specification of areas that are especially in need of more research, including with regard to key impacts on the environment and human health. Each of the above components has been initiated and progress is within the planned timeframe.

4. An advisory group, made up of 29 representatives nominated by Governments and major groups, has been established. The advisory group met in Nairobi from 8 to 10 December 2015. Experts from over 20 countries revised a draft of the study and drafted policy-relevant recommendations (detailed in section C of the present report). The study includes ten thematic areas such as sources of marine litter and monitoring methodologies.

5. An analysis of socioeconomic aspects of marine litter at the global level, composed of a scoping of current issues and research findings, the identification of gaps in current knowledge and priority actions and the identification of the main costs of action and inaction, is being prepared by the Institute for European Environmental Policy, on behalf of UNEP, as an input to the study. A preliminary version was submitted in time to provide input for the Group of Seven Summit, held in Elmau, Germany, on 7 and 8 June 2015. The Group of Seven acknowledged the work of UNEP, invited UNEP to address topics of priority concern to the Summit, including marine litter, and echoed the decision of the United Nations Environment Assembly to give the issue high priority.

6. UNEP is providing support for the development of regional and national action plans and, where such action plans already exist, of national activities to implement them. Discussions are under way with the Mediterranean Action Plan; the Black Sea Commission; the Caribbean Environment Programme; the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region; the Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region; the Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region; the Action Plan for the Protection of the Marine Environment and Coastal Areas of the South-East Pacific; the Permanent Commission for the South Pacific; the Secretariat of the Pacific Regional Environment

Programme; the Regional Organization for the Protection of the Marine Environment; the South Asia Cooperative Environment Programme; and the Coordinating Body on the Seas of East Asia.

7. Supporting activities related to education and awareness-raising include the first massive open online course on marine litter, developed with the Open University of the Netherlands. The course, which started on 26 October 2015 and has around 6500 participants, consists of a leadership track and an experts/practitioners track (www.marinelittermooc.org/learn/marine-litter-mooc-october-2015). The Global Programme of Action is also developing a global campaign on marine litter.

B. Summary table

<i>Implementation of resolution</i>	
Coordination with relevant entities	<ul style="list-style-type: none"> • Coordination has taken place with e.g., the International Maritime Organization (IMO), FAO, the Global Environment Facility and multilateral environmental agreement secretariats, including the Convention on Biological Diversity, the Convention on the Conservation of Migratory Species of Wild Animals, the International Whaling Commission, the regional seas conventions and action plans, the United Nations Convention on the Law of the Sea, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants. • Coordination with the Group of Seven secretariat to provide support where possible for the development of a Group of Seven action plan to combat marine litter. • Discussions have taken place with representatives of the Organization for Economic Cooperation and Development and the International Union for Conservation of Nature regarding their planned marine litter work, and information has been shared on the ongoing and planned activities of UNEP. • Webinars have been held with members of the Global Partnership on Marine Litter to provide updates on resolution 1/6 and the work of UNEP. • Initial contacts among regional seas conventions and action plans (e.g., the Mediterranean Action Plan, the Convention for the Protection of the Marine Environment of the North-East Atlantic and the Baltic Marine Environment Protection Commission) have been established to develop collaboration, common strategies and lessons learned on marine litter.
Support for national and regional action plans	<ul style="list-style-type: none"> • Support will be provided for the revision of regional action plans on marine litter for the Black Sea and for Africa (Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region and Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region). Requests for technical and financial support have been received from other regions as well. • Cooperation is ongoing with the Mediterranean Action Plan for the implementation and follow-up of its regional action plan on marine litter. • Work is under way in Nigeria to develop a national action plan on marine litter. • Municipal action plans were supported in Chile, Colombia, Ecuador, Panama and Peru. • Technical input has been provided to the Group of Seven action plan to combat marine litter with the aim of increasing synergies and avoiding duplication of effort. • A waste minimization demonstration project in Samoa has been finalized.¹ • Regional nodes of the Global Partnership on Marine Litter have been established. The Northwest Pacific Regional Node is hosted by the Northwest Pacific Environmental Cooperation Centre and Northwest Pacific Action Plan and the Wider Caribbean Regional Node is hosted by the Gulf and Caribbean Fisheries Institute and the UNEP Caribbean Regional Coordinating Unit. Work on nodes for the Mediterranean and the South Pacific is under way. • Collaboration with and support for national networks/associations: Portuguese-speaking partnership/network, Brazil and South Africa.

¹ www.youtube.com/watch?feature=player_embedded&v=FibX2E6xydI.

Implementation of resolution

Preparation of study on marine plastic debris and microplastics for submission to the United Nations Environment Assembly at its second session	<ul style="list-style-type: none"> • An advisory group with 29 members has been established. Three advisory group webinars on the study have been convened. • A global modelling workshop was held from 30 August to 3 September 2015 to further the modelling/monitoring component. • Drafting group meetings of GESAMP Working Group 40 were held 3–5 September 2015 and 6 November for the microplastics component of the study. • Second meeting of GESAMP Working Group 40 was held 3–5 November 2015 to finalize the microplastics component for the study. • The face-to-face advisory group review meeting was held 8–10 December 2015 in Nairobi. • Following the inclusion of the advisory group comments, the revised draft went through a peer-review process involving regional seas conventions and action plans and other relevant multilateral environmental agreements. It is currently being finalized following a final review by the advisory group. • The study will be launched in April 2016.
Awareness and education (crosscutting)	<ul style="list-style-type: none"> • <i>Plastics in Cosmetics: are we polluting the environment through our personal care?</i> report published on 8 June 2015.² • Massive open online course on marine litter developed and enrolment opened - start date for the course was 26 October 2015 (including a two-week leadership track and a six-week experts track).³ • <i>Biodegradable Plastics and Marine Litter</i> report published on 17 November 2015 to mark the twentieth anniversary of the Global Programme of Action.⁴ • Draft strategy and visual concept for the Global Campaign on Marine Litter being developed and to be launched in 2016, possibly linked to both World Environment Day and World Oceans Day. • Proposal for an interactive exhibit on marine litter developed for internal consideration by the United Nations Environment Assembly at its second session. It aims to showcase solutions and innovations to further the understanding of opportunities related to the implementation of the policy-relevant recommendations of the study. • Vital graphics on marine litter under development. Those and other supporting graphics and figures will be prepared and used in the study. • Publication on legislation relevant to marine litter being prepared. • Study on gender, plastics and chemicals being prepared. • “Abandoned, Lost and Discarded Gillnets and Trammel Nets. Methods to Estimate Ghost Fishing Mortality Rates and Levels and Status of Regional Monitoring and Management” report finalized. It will be co-published with FAO. • Port Reception Facilities training package finalized (IMO lead), with sections of it used in the above-mentioned massive open online course. • Case study on synthetic fibres in wastewater being developed in collaboration with the United Nations Educational, Scientific and Cultural Organization and the Plastic Soup Foundation. • Presentations on the progress of implementation of resolution 1/6 given at major events and side events organized at the sixteenth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea. • Collaboration with the Race for Water Odyssey, a sailing expedition around the world to assess and raise awareness of plastic pollution in the five ocean gyres. • Concept note developed for an online global marine litter monitoring platform and shared with potential partners for initial discussions on opportunities. • Promotional video developed for the Global Partnership on Marine Litter and additional videos and case studies on a number of topics developed for use in the massive open online course on marine litter.

² http://apps.unep.org/publications/pmtdocuments/-/Plastic_in_cosmetics_Are_we_polluting_the_environment_through_our_personal_care_-2015Plas.pdf

Plastics in Cosmetics Factsheet:
<http://unep.org/gpa/documents/publications/PlasticinCosmetics2015Factsheet.pdf>

³ www.marinelittermooc.org/learn/massive-open-online-course-mooc-on-marine-litter-october-2015

⁴ <http://unep.org/gpa/documents/publications/BiodegradablePlastics.pdf>

C. Policy-relevant recommendations

8. In the light of the evidence and findings contained in the study entitled “Marine plastic debris and microplastics: global lessons and research to inspire action and guide policy change”,⁵ and in order to address problems related to marine litter in the most efficient and effective way, it is recommended that States:

- (a) Take cognizance of the study and its main findings, including that:
 - (i) The accumulation of plastic litter in the ocean is a common concern for humankind owing to its far-reaching environmental, social and economic impacts;
 - (ii) While prevention is key, improving waste collection and management is the most urgent short-term solution to reducing plastic inputs, especially in developing economies;
 - (iii) Long-term solutions include improved governance at all levels as well as behavioural and system changes, such as a more circular economy and more sustainable production and consumption patterns;
 - (iv) Stormwater overflows and runoffs as well as inadequate waste water treatment contribute substantially to marine plastic and microplastic pollution, and their improvement will have additional far-reaching socioeconomic benefits;
 - (v) Stakeholder engagement, including the private sector, as well as legislation, the use of market-based instruments, best environmental practices and best available techniques, play a key role in marine plastic pollution mitigation;
- (b) Strengthen the implementation and enforcement of existing international and regional frameworks, encourage States that have not yet ratified such frameworks to do so and promote compliance with frameworks and instruments, including stringent environmental assessment practices according to national and regional circumstances;
- (c) Review existing regulatory frameworks, institutional arrangements and other instruments related to marine litter and their enforcement to identify synergies and gaps as well as potential solutions to address gaps globally and regionally;
- (d) Strengthen and increase cooperation at all levels, including international multi-stakeholder initiatives such as the Global Partnership on Marine Litter;
- (e) Invite international bodies to address and take into account as emerging issues of concern those aspects of the marine litter issues identified in the report, including microplastics and nanoplastics, that are of particular relevance to them. For example:
 - (i) The Basel, Rotterdam and Stockholm conventions in relation to the sound management of chemicals and wastes;
 - (ii) Appropriate bodies, such as the Strategic Approach to International Chemicals Management and the Organization for Economic Cooperation and Development, to consider macroplastics, microplastics and nanoplastics;
 - (iii) World Trade Organization in relation to trade and environment;
 - (iv) Institutional financing bodies (e.g., Global Environment Facility, World Bank);
 - (v) Non-traditional groups such as trade organizations;
 - (vi) Organizations already addressing marine litter such as UNEP, IMO and FAO;
- (f) Quantify the relative contributions of all critical land-based and sea-based sources and investigate pathways of marine litter, including macrolitter and microlitter;
- (g) Prioritize actions for marine litter mitigation, including through the identification of hotspots and the examination of future scenarios, by the use of best available technologies (e.g., models and simulations);

⁵ The full study will be launched during the last week of April 2016 and will be available for download from www.unep.org.

- (h) Develop cost-effective monitoring and assessment strategies with regard to marine litter at all levels, taking into account existing programmes, especially at the regional level. In the development of such strategies, States:
- (i) Promote harmonization and standardization of methods (e.g., protocols, sampling) for marine litter, including for assessment and monitoring of marine litter contamination;
 - (ii) Establish monitoring programmes for marine litter with a view to establishing baselines, e.g., for quantities of litter along coastlines, in water columns, on the ocean floor, in the upper ocean and in biota;
 - (iii) Report on actions they have taken in order to prevent, reduce and control marine littering, and evaluate the results thereof;
 - (iv) Strengthen international cooperation for data and information exchange, including capacity-building for States that need it;
 - (v) Improve identification, allocation and analysis of material flow cost accounting;
 - (vi) Develop key performance indicators to track and monitor the success of monitoring and assessment;
 - (vii) Share information (e.g., through a global or regional platform) on marine litter on a regular basis;
- (i) Promote synergies with implementation and monitoring of the Sustainable Development Goals and related processes;
- (j) Promote willing and informed stakeholder participation in marine litter prevention and reduction strategies and policies, including by:
- (i) Mapping out relevant stakeholders prior to interventions in order to ensure their inclusion;
 - (ii) Providing and protecting a right to access to relevant information on marine plastics, including microplastics and nanoplastics;
 - (iii) Enabling the needs and considerations of vulnerable groups to be taken into account;
 - (iv) Recognizing gender aspects in the generation and prevention of marine litter;
- (k) Assess socioeconomic and environmental costs associated with marine litter impacts (costs of inaction) and enhance cost-effective and cost-benefit analysis of mitigation and clean-up measures (costs of action); and facilitate financing, public-private partnerships, capacity-building and technology transfer;
- (l) Develop global and regional marine litter indicators to guide the prioritization of targeted interventions;
- (m) Using the precautionary principle and taking into account that there is unequivocal and quantified evidence of the degree of impact of marine plastic debris, reduce marine litter sources through measures such as market-based instruments and regulatory frameworks, including through:
- (i) A drastic reduction or ban of single-use plastic products;
 - (ii) The promotion of measures to reduce plastic material use and of other incentives for behavioural change towards more sustainable production and consumption patterns;
 - (iii) The promotion of eco-friendly and recyclable materials in industrial production;
 - (iv) A phase-out of non-recoverable plastic materials that potentially accumulate in marine environments (e.g., microplastics in personal care products);
 - (v) The promotion of extended producer responsibility programmes and life cycle assessments;
 - (vi) The promotion of technological innovation to address sources;

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- (vii) The promotion of the “6Rs” framework: redesign-reduce-remove-reuse-recycle-recover;
 - (n) Consider the economic, social and environmental costs of marine litter in investments and the development of waste management policies and practices, and encourage:
 - (i) Improved waste delivery, including to port reception facilities, collection, sorting and recycling;
 - (ii) Improved effectiveness of waste and wastewater infrastructure;
 - (iii) Proper management and control of dumpsites, especially when situated close to coasts;
 - (iv) The promotion of integrated waste management;
 - (v) The re-evaluation of plastic waste as a resource;
 - (vi) Appropriate recycling activities to improve recovery, in addition to providing economic opportunities and supporting alternative livelihoods;
 - (o) Support efforts to promote a life cycle approach to plastic products, including the consideration of the degradation of different polymers and the rate of fragmentation (in the marine environment) by:
 - (i) Internalizing the environmental and social costs of products (cost internalization);
 - (ii) Enhancing the process of closing the loop in product and process development and manufacturing as well as in life cycle chains of plastic products;
 - (iii) Improving the lifespan of products;
 - (iv) Promoting green public and private procurement;
 - (v) Considering green engineering principles and frameworks, eco-design and eco-labelling, among others;
 - (vi) Strengthening the ability of private actors, including small and medium-sized enterprises, to shift to greener activities;
 - (p) Be aware that, until there is an internationally agreed definition of biodegradability (in the marine environment), the adoption of plastic products labelled as “biodegradable” will not bring about a significant decrease either in the quantity of plastic entering the ocean or the risk of physical and chemical impacts on the marine environment;
 - (q) Promote cost-effective activities and instruments as well as cooperation at all levels with regard to risk-based and environmentally sound clean-up activities for marine litter in rivers and coastal and marine areas, according to national circumstances; and facilitate financing, public-private partnerships, and capacity-building and, in that regard, develop and utilize international criteria for collective removal actions, clean-up and restoration including with regard to quantities, population, sensitivity of ecosystem, feasibility;
 - (r) Strengthen education and awareness measures on marine litter by:
 - (i) Introducing elements into educational curricula at all educational levels;
 - (ii) Providing educational and outreach materials targeted to specific interest groups and range of ages to promote behavioural change.
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