UNITED
NATIONS

EP

UNEP/EA.4/11

Distr.: General
21 December 2018

Original: English

United Nations Environment Assembly of the United Nations Environment Programme

United Nations Environment Assembly of the United Nations Environment Programme
Fourth session
Nairobi, 11–15 March 2019
Item 6 of the provisional agenda*

Programme of work and budget, and other administrative and budgetary issues

Analysis of voluntary commitments targeting marine litter and microplastics pursuant to resolution 3/7

Report of the Executive Director

Summary

The present report is being submitted pursuant to paragraph 9 of resolution 3/7[1] of the United Nations Environment Assembly of the United Nations Environment Programme (UNEP), in which the Environment Assembly requested the Executive Director of UNEP to compile voluntary commitments, as applicable, targeting marine litter and microplastics; to provide an overview of their scope in support of the work of the Environment Assembly on that issue; to better understand progress towards achieving Sustainable Development Goal target 14.1 on preventing and significantly reducing marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution, by 2025 (see General Assembly resolution 71/313); and to report to the Environment Assembly at its fourth session on the matter.

The report contains an analysis of the voluntary commitments made in the context of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14, the Our Ocean Conference, the United Nations Sustainable Development Platform, the Clean Seas campaign and the Environment Assembly portal for voluntary reporting relating to marine litter.

[1] UNEP/EA.3/Res.7.

I. Progress in the implementation of resolution 3/7

1. In accordance with resolution 3/7 of the United Nations Environment Assembly of the United Nations Environment Programme, in which the Environment Assembly requested the Executive Director, subject to the availability of resources and in cooperation with other relevant bodies and international initiatives, to compile voluntary commitments, as applicable, targeting marine litter and microplastics; to provide an overview of their scope in support of the work of the Environment Assembly on that issue; and to better understand progress towards achieving Sustainable Development Goal target 14.1 on preventing and significantly reducing marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution, by 2025 (see General Assembly resolution 71/313). The analysis covers voluntary commitments made in the context of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14,[2] the Our Ocean Conference,[3] the United Nations Sustainable Development Platform,[4] the Clean Seas campaign,[5] and the United Nations Environment Assembly voluntary reporting tool on marine litter and microplastics.[6] The distribution of the leading entities in respect of the voluntary commitments is shown in table 3 of annex I to the present report, and a list of examples from each platform is provided in annex II.

II. Recommendations and suggested action

2. In the light of the findings of the analysis, the following conclusions and recommendations are offered for the consideration of the Environment Assembly:

3. In order to better understand and measure progress, there is a need to define what a considerable reduction is and the level at which that reduction has occurred (i.e., local, national or regional). This should also factor into the increase in plastic production expected for the next 10 years, which will require an associated increase in investment and action to reduce and manage plastic waste that is at risk of becoming marine litter;

4. Even in the absence of such a definition, it could be said that if the scale of commitments continues to rise in the same way as during the period 2016–2018, provided that funding has been secured, there will be a positive trend towards reductions in marine litter by 2025 in some areas, in support of achieving target 14.1 of the Sustainable Development Goals;

5. Research should be conducted to develop technological solutions, including alternative materials, and to better understand the impact of various types of plastic on marine ecosystems;

6. Greater guidance needs to be given to civil society and small and medium-sized foundations and businesses to help them to make their commitments even more effective;

7. There needs to be greater emphasis on centralized reporting regarding progress made in respect of commitments and on monitoring changes in the levels of marine litter and microplastics in the marine environment, with a view to directing future commitments and actions, especially those of Governments;

8. Instead of creating new voluntary commitment mechanisms, ways should be explored to utilize and build on existing mechanisms, with a view to maximizing impact, synergies and efficacy.

[2] See https://oceanconference.un.org/commitments/.

[3] See http://ourocean2018.org/?l=our-ocean-commitments.

[4] See https://sustainabledevelopment.un.org/partnership/?p=7471.

[5] See https://www.cleanseas.org/.

[6] See https://papersmart.unon.org/resolution/reporting-tool.

Annex I

Analysis of voluntary commitments with regard to marine litter and microplastics

I. Analytical framework

1. The overarching objective of the analytical framework is to assess the potential and realized impact of voluntary commitments targeting marine litter and microplastics; to provide an overview of their scope in support of the work of the United Nations Environment Assembly on that issue; to better understand progress towards achieving Sustainable Development Goal target 14.1; and to report to the Environment Assembly at its fourth session on the matter; . The commitments have been made under the auspices of the United Nations and various international agreements and initiatives. The framework takes a holistic and evidence-based approach, in which prevention is paramount, but where actions to address legacy marine litter and microplastics are also vital. In the process of creating the framework, voluntary commitments across the full life cycle of plastics, including to reduce overall volumes of plastics, were considered. Moves towards resource-efficient and circular management of plastic – for example, through remanufacturing, recycling and reuse, and ways to avoid leakage – were also taken into account.

2. The framework is based on the following five considerations: (a) Every person has a responsibility to prevent marine litter and microplastics, especially from land-based sources; (b) access to environmental information and data, education and public participation are essential for effective action; (c) multiple risks to human health and well-being, especially to women, children and vulnerable groups, and to ecosystem health require a preventive approach; (d) innovation and leadership are central to tackling marine litter and microplastics in an effective and impactful manner; and (e) it is key that multiple benefits be realized from action on marine litter and microplastics.

3. Voluntary commitments on marine litter and microplastics follow two tracks:

(a) Targeted interventions that specifically address marine litter and microplastics, such as the deployment of physical barriers to prevent litter and plastics from entering the marine environment, improved management of land-based sources of waste, monitoring plastics in the marine environment and estimating human and ecosystem exposure. Targeted interventions can be applied in situations where prevention or hazard reduction actions that involve marine plastics and litter have been agreed to but need scaling up, where scientific evidence exists but policy action is needed, or where the local community needs to be made aware of the impact on human health and the environment;

(b) System-wide actions in the medium and long term to help shift the economy away from plastics and the use of fossil fuels through design-led change towards less harmful products and a circular economy of reuse, remanufacturing and recycling of plastics. Voluntary commitments of this type focus on behavioural changes and societal transformation, including the development of economic instruments to shift consumer and producer behaviour, investing in education for change, and strengthening cooperation and partnerships on knowledge, technology, finance and investment.

4. In its resolution 3/7, the United Nations Environment Assembly requested a report on voluntary commitments relating to its resolutions on reducing marine litter and microplastics. A simple voluntary reporting tool was implemented on the portal of the United Nations Environment Assembly to, among other things, allow for stakeholders to share commitments that had not previously been captured through United Nations conferences and processes, in relation to the following five categories of considerations:

- Science and data for evidence-based policy
  (see resolution 1/6, para. 1, and resolution 2/11, para. 20)
- Strengthening implementation, designing incentives, integrating policy assessments and regulatory innovations and enhancing capacity-building
  (see resolution 2/11, paras. 7, 10, 16 and 21, and resolution 3/7, paras. 4 (e), 5 and 6)
- Infrastructure, technologies and innovation

(see resolution 2/11, paras. 12, 14, 15 and 16, and resolution 3/7, paras. 5 and 6)

- Communication, education and consumer information (see resolution 1/6, para. 17, resolution 2/11, para. 10, and resolution 3/7, para. 6)
- Mobilizing stakeholders, leaders and partners (see resolution 1/6, para. 3, resolution 2/11, paras. 3, 5, 6, 13 and 22, and resolution 3/7, paras. 5, 7 and 10)

5. To assess the efficacy of planned commitments and activities, the framework has been designed to determine the effectiveness of a wide and heterogeneous mix of activities that go beyond regulation and policies. It allows comparisons to be made among the various types of voluntary commitments from Governments, civil society and business to reduce and eventually prevent marine litter and microplastics. Lastly, it helps to answer the basic question: "Is there evidence to show that the voluntary commitments are making a difference in preventing marine litter and microplastics?"

6. In the long term, the framework is designed to determine which upstream approaches and activities are most effective at achieving the aims of the voluntary commitment, in the following four stages:

Step 1: Mapping the trajectory of actions and potential outcomes

- Developing a theory of change, i.e., a simple scheme to predict how the voluntary commitment will lead to the outcomes projected. The theory of change will help in the subsequent process tracking and attribution analysis.
- Mapping the voluntary commitment to multilateral environment agreements, the 2030 Agenda for Sustainable Development and other processes such as the Global Reporting Initiative.
- Checking the extent to which the five categories of considerations listed above are addressed.
- Analysing the system for monitoring the collection of information to be used to track progress and outcomes and seeing how that can be linked to existing, relevant monitoring schemes.
- Determining whether there is a digital link with international, open access reporting platforms.

Step 2: Assessing the implementation approach

- Engaging with partners and participants involved in the voluntary commitment to ensure that the five categories of considerations are reflected in activities.
- Adopting ways of working that ensure that activities help the voluntary commitment to reach its full potential.
- Running process tracking to ensure that the voluntary commitment is meeting its aims and has sufficient funds and participants.
- Establishing a monitoring system and reporting responsibilities and collecting data. In the case of a one-off voluntary commitment it is helpful to include follow-up and feedback.

Step 3: Reporting and feedback

- Confirming with partners and participants the results of the process tracking and attribution analysis.
- Publishing the final details on and outcomes of the voluntary commitment.

Step 4: Communicating

- Confirming results with participants.
- Contributing to the development of existing and new progress reports and indicators.
- Championing the reduction and prevention of marine litter and microplastics.

A. Assessing the efficacy of voluntary commitments

7. The overall efficacy of voluntary commitments is contingent upon a number of factors. In this analysis, eight factors have been used: (a) the type of entity or organization undertaking the commitment; (b) the type of intervention; (c) a scientific understanding of the problem; (d) the

socioeconomic and environmental context and geo-political scale; (e) the time horizon; (f) the pervasiveness of the problem to be tackled – i.e., its spatial and temporal extent; (g) the level of inclusivity and representativeness; (h) the duration and level of investment and the presence or absence of a monitoring, reporting and review plan (see table 1).

8. As voluntary commitments are generally submitted in the form of descriptions of entities, actions, events, processes and issues, the language used is often qualitative and imprecise, for example, "shaping public attitudes" or "placing more emphasis on reducing plastic waste". Such language introduces uncertainty into the potential efficacy of the voluntary commitments.

9. To address that issue, a fuzzy logic approach was used (see sect. I.B.). The voluntary commitments were evaluated across the eight factors, using fuzzy sets and a fuzzy logic rule set describing the causal links between numerous variables and outcomes, and the presence or absence of monitoring and review. The factors, fuzzy sets and rule sets were developed using expert judgment and knowledge from a wide array of science policy organizations and sources, and from a previous analysis of voluntary commitments for the Beat Pollution campaign[7] of the United Nations Environment Programme (see table 2). The voluntary commitment is classified for each factor according to its characteristics in relation to efficacy and likely impact in preventing marine litter and microplastics and managing legacy plastics in the ocean. Each factor set has a range from 0 to 1 with a central midpoint. Linkages between crisp sets, e.g., between capacity development and policy dialogues, are also evaluated.

10. Once each voluntary commitment has been classified and the fuzzy rules applied, statistics are compiled by source type (Government and United Nations-related and non-governmental organization and business-related) and type of intervention. The relative efficacy on a scale from 0 to 1 of different commitments can then be compared.

Table 1

Factors used to classify voluntary contributions

Factor	Examples of classes (high, medium or low)
Institutional pedigree	• National Governments, regional organizations, United Nations bodies and related international entities • Medium-sized to large enterprises • Individuals
Intervention	• Policy development and dialogues and capacity-building implementation, and systemic processes such as curriculum development and education modules • Single events
Context	• Relating to an international agreement that is being implemented in a way that is consistent with reducing marine litter and microplastics • National level • Community or local levels
Timescale	• Greater than 5 years • Regular or periodic activities for 2 to 5 years • Single instantiation or events of less than 2 years
Pervasiveness	• Global • National or regional • Highly localized
Inclusivity and representativeness	• Elected representatives and explicit inclusion of target and vulnerable groups, as well as a broader caucus of people • Activities led by recognized, nominated and elected representatives from a range of groups and target populations • Achieved through local communities and possibly crowdsourcing
Investment	• Long-term funding or investment plans in place for the duration of the activity • Funding or investment sufficient for the first period only • Restricted to a single event or no explicit statement provided
Monitoring	• Monitoring, periodic reporting and public review • Monitoring, end-of-project reporting and review • Complete absence of monitoring, reporting and review

[7] www.beatpollution.org.

Table 2

Sources of expertise for the fuzzy logic sets and rule base

Land and soil issues	• Committee on Science and Technology, Convention to Combat Desertification • Subsidiary Body on Scientific, Technical and Technological Advice and ad hoc technical expert groups, Convention on Biological Diversity • Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
Freshwater issues	• Scientific and Technical Review Panel, Ramsar Convention • UN-Water • World Water Council
Marine and coastal issues	• Scientific Council, Convention on Migratory Species • Joint Group of Experts on the Scientific Aspects of Marine Environmental Pollution, • Working groups of the International Council for the Exploration of the • Global Programme of Action for the Protection of the Marine Environment from Land-based Activities • Regional seas programmes • Regional fisheries management organizations • UN-Oceans
Chemicals and waste issues	• Basel Convention and its open-ended working group • Chemical Review Committee, Rotterdam Convention • Persistent Organic Pollutants Review Committee, Stockholm Convention • Global Mercury Partnership, Zero Mercury Working Group, Minamata Convention on Mercury
Cross-cutting	• Inter-Agency and Expert Group on Sustainable Development Goal Indicators, Department of Economic and Social Affairs of the Secretariat • Scientific Technical and Advisory Panel, Global Environment Facility • International Network for Government Scientific Advice

B. Technical note on the fuzzy logic classification[8]

11. The voluntary commitments provide descriptions of entities, actions, events, processes and issues, using imprecise, wordy phrases. One way to analyse such qualitative, linguistic or imprecise information is to adopt a fuzzy logic approach to system characterization, using fuzzy sets (Zadeh, 1965). Fuzzy set theory follows the principles of conventional set theory with one major exception: in conventional set theory, elements are divided into two categories: those that belong to a set and those that do not. The conventional, non-fuzzy or crisp set maintains a clear difference between elements that are members and those that are not. In fuzzy set theory, the linguistic variables are context-dependent variables whose values are words or sentences, such as “small”, “medium” or “large” in respect of community or organization size; or “short”, “medium” or “long” when referring to time scale. The range of possible values in this fuzzy classification is between 0 and 1, although in some cases membership functions can be single values, or singletons.

12. Initially, all input variables are converted into fuzzy variables using membership functions. The shape of the membership function (e.g., a simple vector, S-function, triangular or trapezoid) is optimized through successive observations. For the evaluation of voluntary commitments, a triangular function has been used to capture a modest level of uncertainty. For example, where the time frame ranges from a single event to being multi-decadal, the fuzzy set “short term” can operate over the range of 0 to 2 years. The membership value decreases progressively from 1 to 0 as the distance from the set point (1 year) changes. Thus at the year 1 mark, the membership is 0.5.

13. Using a fuzzy set approach allows lesser points to be recognized within the fuzzy set, which may signify other key attributes, e.g., the duration of funding. It also allows uneven delivery to be taken into account. For example, given sufficient time and access to funding, it would be possible to assign an activity timeline to a particular crisp set for completion by December 2025, for example. However, it is more likely that even with international agreements in place, the proposer can only provide an estimate of when the target or activity will be achieved. The measure of uncertainty in

[8] For background references and further reading, see section III.

assigning a particular activity to a particular crisp set can thus be taken into account. This situation is akin to one where it is difficult to assign sets in the first instance, e.g., the type of activity that, if successful, could be repeated. In this case, the activity is placed in a fuzzy set from the start to allow for evolution and expansion.

14. Uncertainty in the basic definition of a set can be further reflected in its spread, shape and overlap with adjacent fuzzy sets and captured through the manipulative operations of union, intersection and fuzzy relationships. The union operation, when applied to two fuzzy sets that are both of the same universe of discourse, is equivalent to a connective "OR". For example, in the fuzzy sets describing time scale, sets linguistically named "short" and "medium" can be defined (see the figure following paragraph 18). Applying the principle of union to the sets "short" and "medium" creates a short "OR" medium set.

15. In a similar manner, the operation of intersection when applied to two fuzzy sets is equivalent to a connective "AND". By the application of the operation of intersection to the fuzzy sets "short" and "medium" timescale, a new short "AND" medium set is created (see figure). Hedges are used to emphasize (e.g., to reflect the phrase "very", as in "very large") or de-emphasize (e.g., to reflect the phrase "somewhat") the fuzzy shape of the set. The two most common hedges are intensification (i.e., the use of the square of an expression) and dilation (i.e., the use of the square root). Finally, to extract a crisp out-value for practical needs, defuzzification is undertaken. In the present evaluation of voluntary commitments, the centroid of the set is being used. In fuzzy logic, as in conventional logic, the functions "AND", "OR" and "NOT" are used to combine the fuzzy variables in the premise (the "IF" part of a rule). Examples of such inputs are normal, abnormal, high, low or very low. Fuzzy rules use the same natural language terms as experts, making it possible to develop a heuristic rule set.

16. An example of a simple fuzzy rule set would be:

(a) IF the voluntary commitment submitted by an Organization has pedigree [Small/Low – single individual] AND has a timescale [Medium - 2025], THEN the Impact Efficacy Fuzzy Set A is [S].

(b) When the rules have multiple premises, as in many rule-based systems, the induced fuzzy sets depend on whether the premises are joined by an "AND" function or an "OR" function. In the present evaluation, only "AND" functions are used.

17. Determining that a chain of correct inferences leads to the correct answer is called validation. The general format for rules is:

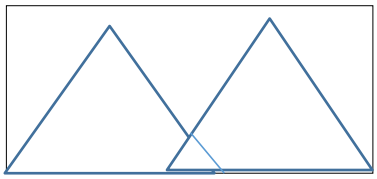
(a) IF <pedigree of submitter> AND <timescale> AND…… THEN<efficacy>

(b) In fuzzy systems, the variables are words or sentences and use natural phrases that are used in the real world. Reasoning is the crucial issue for this analysis, mainly because of the heterogeneity of the commitments and the pedigree of the entities taking forward the voluntary commitments.

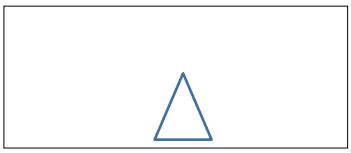
18. Finally, different types of errors need to be acknowledged, including ambiguity, incompleteness, false positives (i.e., building in a linkage when it is not true), false negatives (i.e., rejecting a linkage when it is true), imprecision (i.e., how well the situation is known), accuracy, unreliability (e.g., if the proposer of the commitment has little experience), randomness, systematicity (introduced via bias), invalid induction and deduction.

Fuzzy sets and union showing a union of two classes and a joint set

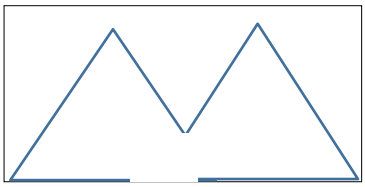
Union of two sets



Joint set



19. The factors are classified according to their characteristics in relation to efficacy and likely impact on reducing and preventing marine litter and microplastics. Each set has a range from 0 to 1 with a central midpoint. Linkages between crisp sets also need to be defined, e.g. between capacity development and policy dialogues. Each commitment is evaluated for each factor and placed in a class (either “small/low”, “medium” or “high”). The rule sets are then evaluated for combinations of factors to produce single point values, which are then combined to produce a centroid value. The efficacy of the voluntary commitments (either “low”, “medium” or “high”) was evaluated via rule sets for combining the interactions between the various factors. For this preliminary analysis, a simple series of rule sets was developed using expert judgement and knowledge from the wider science policy arena (see the box below and table 1 above).



Fuzzy logic rule sets for evaluating the efficacy of voluntary commitments

Pedigree P and Type of Intervention T
IF P [S] AND T[S] THEN Impact Efficacy [S]; IF P [S] AND T[M] THEN Impact Efficacy [S]; IF P [S] AND T[H] THEN
Impact Efficacy [S]; IF P [M] AND T[S] THEN Impact Efficacy [S-M]; IF P [M] AND T[M] THEN Impact Efficacy [M]; IF P [M] AND T[H] THEN Impact Efficacy [M-H]; IF P [H] AND T[S] THEN Impact Efficacy [S-M]; IF P [H] AND T[S]
THEN Impact Efficacy [H]; IF P [H] AND T[M] THEN Impact Efficacy [H]
Context C, Timescale T and Pervasiveness Ps
IF C[S] AND T[S] AND Ps[S] THEN Impact Efficacy [S]; IF C[S] AND T[M] AND Ps[S] THEN Impact Efficacy [M]; IF C[S] AND T[H] AND Ps[S] THEN Impact Efficacy [H]; IF C[S] AND T[S] AND Ps[M] THEN Impact Efficacy [S]; IF C[S]
AND T[S] AND Ps[H] THEN Impact Efficacy [M]; IF C[S] AND T[M] AND Ps[M] THEN Impact Efficacy [M]; IF C[S] AND T[M] AND Ps[H] THEN Impact Efficacy [S]; IF C[S] AND T[H] AND Ps[H] THEN Impact Efficacy [M]; IF C[S] AND T[H] AND Ps[M] THEN Impact Efficacy [M]; IF C[M] AND T[S] AND Ps[S] THEN Impact Efficacy [M]; IF C[M] AND T[M] AND Ps[S] THEN Impact Efficacy [M]; IF C[M] AND T[H] AND Ps[S] THEN Impact Efficacy [H]; IF C[M] AND T[S] AND Ps[M] THEN Impact Efficacy [M]; IF C[M] AND T[S] AND Ps[H] THEN Impact Efficacy [H]; IF C[H] AND T[S] AND Ps[S] THEN Impact Efficacy [M-H]; IF C[H] AND T[M] AND Ps[S] THEN Impact Efficacy [H]; IF C[H]
AND T[H] AND Ps[S] THEN Impact Efficacy [M]; IF C[H] AND T[S] AND Ps[M] THEN Impact Efficacy [M]; IF C[H] AND T[S] AND Ps[H] THEN Impact Efficacy [S]
Inclusivity and Representativeness IR and Investment Iv
IF IR[S] AND Iv [S] THEN Impact Efficacy [S]; IF IR[S] AND Iv [M] THEN Impact Efficacy [S]; IF IR[S] AND Iv [H] THEN
Impact Efficacy [M]; IF IR[M] AND Iv [S] THEN Impact Efficacy [S]; IF IR[M] AND Iv [M] THEN Impact Efficacy [M]; IF IR[M] AND Iv [H] THEN Impact Efficacy [H]; IF IR[H] AND Iv [S] THEN Impact Efficacy [M]; IF IR[H] AND Iv [M] THEN Impact Efficacy [H]; IF IR[H] AND Iv [H] THEN Impact Efficacy [H]

The outcomes of these three rule sets are then combined to determine the centroid value.

II. Analysis of voluntary commitments

A. Sources and types of voluntary commitments

20. The analysis covers voluntary commitments made in the context of the following five platforms: the United Nations Conference to Support the Implementation of Sustainable Development Goal [14],[9] the Our Ocean Conference[10], the United Nations Sustainable Development Platform[11] the Clean Seas campaign[12] and the United Nations Environment Assembly voluntary reporting tool on marine litter and microplastics.[13] The distribution of the leading entities in respect of voluntary commitments made shown in table 3 below and a list of examples from each platform is provided in annex II.

21. A total of 1,500 voluntary commitments have been made through the platform of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14, including 597 commitments under the community of ocean action on marine pollution. Of the latter, over 540 voluntary commitments relate to the reduction of marine pollution; the most common commitment is to reduce marine pollution from plastics through bans on plastic products, recycling and coastal clean-ups. The community of ocean action on marine pollution aims to support its members in implementing their marine pollution-related voluntary commitments by exchanging progress reports, experiences, lessons learned and good practices. The classification of voluntary commitments in the

[9] See https://oceanconference.un.org/commitments/.

[10] See http://ourocean2018.org/?l=our-ocean-commitments.

[11] See https://sustainabledevelopment.un.org/partnership/?p=7471.

[12] See https://www.cleanseas.org/.

[13] See https://papersmart.unon.org/resolution/reporting-tool.

registry, with a specific focus on marine litter, microplastics, microbeads and marine debris, are shown in table 3 below.

22. The United Nations Sustainable Development Platform, which contains the Global Partnership on Marine Litter commitment has been acknowledged as a key partnership mechanism for marine litter stakeholders. In that context, it has been treated as a global programme, with funding and investments in place, significant amounts of participation, high-impact interventions and ongoing reporting and monitoring. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities provides secretariat services to the Partnership and handles reporting for it.

23. Commitments made in the context of the Our Ocean Conference have grown since 2014 and now include 305 tangible and measurable commitments, covering almost all ocean basins. The majority have been submitted by Governments. The 63 commitments relating to marine pollution that are presented on the platform are distributed across all entities and include significant commitments from foundations such as the Prince Albert II of Monaco Foundation and its partners on the issue of plastics in the Mediterranean Sea; and the Ellen MacArthur Foundation, in conjunction with the United Nations Environment Programme, with respect to the new plastics economy.

24. The Clean Seas campaign now has 57 countries as members, with details of commitments provided by 44 of them, plus a number of important commitments from the business community, some of which are duplicated in the registries of the platforms of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14 and the Our Ocean Conference. For the present analysis, each entry was considered only once.

Table 3

Distribution of voluntary commitments on marine litter, marine plastics, microplastics and microbeads by leading entities on the platforms used as input to the analysis

Platform and focus	Governments (Countries)	United Nations bodies and intergovernmental entities	Civil society and non-governmental organizations	Business	Total
United Nations Conference to Support the Implementation of Sustainable Development Goal 14					
Community of ocean action on marine pollution	215 (68 + European Union)	76	248	58	597[a]
Marine litter	39	10	25	0	74
Microplastics and microbeads	23	3	11	2	39
Marine debris	14	5	31	3	53
Marine pollution	28	14	20	5	65
Plastics	41	4	50	20	115
United Nations Sustainable Development Platform					
Global Partnership on Marine Litter[b]	**1**	**1**	**1**	**1**	**4**
Our Ocean Conference					
Marine pollution	**27**	**3**	**19**	**15**	**64**
Clean Seas campaign[c]	**44**	**1**	**4**	**10**	**59**

[a] The registry contains details for 597 of the 635 commitments cited by the communities of action, of which a subset of 346 specific commitments have been made regarding marine litter and plastics, microplastics and microbeads.

[b] Activities under the Clean Seas campaign were allocated according to the leading entity other than United Nations Environment Programme.

[c] Entries are for those entities that have submitted details on the voluntary commitments used in this analysis.

B. Results of the analysis of voluntary commitments

25. After the removal of duplicates, a total of 444 voluntary commitments relating specifically to marine litter and plastics were analysed. These were selected because they specifically referred to marine litter, microplastics and microbeads, including those also listed under marine debris, marine pollution and plastics where microplastics are highlighted. Using the fuzzy logic procedures mentioned above, the various categories and areas of focus were evaluated with respect to efficacy and then ranked overall (see table 4 below).

26. The results clearly show that Governments remain at the forefront of activities to reduce marine litter and debris and tackle plastics in the ocean. The number and efficacy of actions targeting microplastics is still limited. However, the importance of civil society, foundations and non-governmental organizations in tackling marine litter and plastics is growing, along with that of several global businesses committed to dealing more effectively with plastics in their supply chains.

27. The voluntary commitments fall into several broad categories: (a) expanding existing marine litter reduction and control activities and policies, for example marine plastic clean-up efforts and beach litter campaigns; (b) removing barriers to the reduction of waste plastics through behavioural and technology-related activities, including improving consumer access to information, increasing public awareness and participation, improving understanding of upfront benefits and lifetime savings on health and ecosystem services rather than just costs, and increasing the availability of innovative pollution monitoring and reduction technologies; (c) policy-related activities such as improving policy and legal frameworks to manage plastics, shifting towards a circular economy, reducing leakage and

catalysing innovation; increasing policy support, capacity and expertise; (d) economic activities such those providing incentives for plastic reuse and recycling and that reflect the costs of externalities; raising collection rates; introducing reforms to support design and remanufacture; improving clarity of pricing signals; (e) increasing awareness of marine litter and microplastics through education and targeted campaigns to raise public awareness; (f) investing in research and development, and public and private investment linked the promotion of alternatives, human and ecosystem health and innovative technologies.

28. In comparison to 2017, there has been a shift in the voluntary commitments towards a greater focus on treating the problem of marine plastics, including microbeads, at source through their removal from the supply chain, changing packaging and sourcing alternatives. In 2017, there were 70 marine commitments on the Beat Pollution platform, largely focused on cleaning up coastal environments and raising awareness regarding marine plastics. The 32 government commitments under the Clean Seas campaign focused on tackling marine plastics through bans or use restrictions on single-use plastics. Ambitious and innovative commitments from business, such as the investment management firm Circulate Capital (formerly Closed Loop Ocean), have continued into 2018, along with voluntary commitments by Governments, policies on the segregation of plastic waste generated by ships, marine accident preparedness, ecosystem-based management and cross-border cooperation.

29. The main difference in 2018 is the variety and impressive scaling-up of stakeholder engagement and innovation, and the increase in the number of voluntary commitments with high efficacy and the potential to significantly improve plastic removal and reduce leakage into coastal and marine environments. For example, 90,000 people have taken the Clean Seas pledge to eradicate single-use plastics and microbeads from their lives. From Bali to Panama, they are cleaning beaches, cataloguing what they find and changing their own behaviour by, for example, using cloth bags and carrying steel cups or cutlery with them, refusing plastic straws and demanding the removal of plastic cups or single-use bottles from their offices. A total of $10.7 billion in monetary commitments, covering 14 million km^2 of marine protected areas, have been attributed to the Our Ocean Conference.

Table 4

Analysis of the potential efficacy of 407 voluntary commitments on marine litter and microplastics

Focus	Governments (countries)	United Nations bodies and intergovernmental entities	Civil society and non-governmental organizations	Business	Overall ranking
Marine litter	High	High	High	Low	1
Microplastics and microbeads	High	Medium	Low	Low	4
Marine debris	High	High	Low	Low	2
Marine pollution	High	Medium	Medium	Low	2
Plastics	High	Low	Medium	Medium	2

30. While it is very difficult to estimate the precise outcomes of the overall number of voluntary commitments, it is possible to estimate that, based on the level of ambition stated in several voluntary commitments on beach litter clean ups and physical retention and removal of plastics and litter planned for several major river sources, by 2025, more than 35 per cent of the world's coastlines would benefit from such activities and could be cleaner in the short term, as long as the necessary resource are provided. This is also the case for some voluntary commitments that target major ports. In the long term, their success will depend on whether there is continued commitment to mobilizing resources, combined with interventions to "turn off the tap", i.e., to prevent more trash from entering the marine environment in those areas. The estimated outcomes are a function of the length of the coastline of the countries to which the voluntary commitments pertain, with respect to marine litter, microplastics (including microbeads), marine pollution and debris, as well as retrieval of waste in port facilities This is an improvement over the estimate of 30 per cent that was presented to the United Nations Environment Assembly in 2017. The year 2025 is the outer time horizon used in many commitments with a longer time frame, rather than the year 2030, which is the outer time horizon for the Sustainable Development Goals. The majority of commitments, however, have an outer time horizon of 2020.

Table 5
Distribution of voluntary commitments that address each of the resolution clusters of the United Nations Environment Programme

Resolution cluster	Number of voluntary commitments	Average effectiveness
Science and data for evidence-based policy (See resolution 1/6, para. 1, and resolution 2/11, para. 20)	32	Medium
Infrastructure, technologies and innovation (See resolution 2/11, paras. 12, 14, 15 and 16, and resolution 3/7, paras. 5 and 6);	98	High-medium
Communication, education and consumer information (See resolution 1/6, para. 17, resolution 2/11, para. 10, and resolution 3/7, para. 6)	70	Medium
Strengthening implementation, designing incentives, integrating policy assessments and regulatory innovations, and enhancing capacity-building (See resolution 2/11, paras. 7, 10, 16 and 21, and resolution 3/7, paras. 4e, 5 and 6);	204	High-medium
Mobilizing stakeholders, leaders and partners (See resolution 1/6, para. 3, resolution 2/11, paras. 3, 5, 6, 13 and 22, and resolution 3/7, paras. 5, 7 and 10)	40	Medium-low

31. The rule-based, fuzzy logic, expert judgement approach used in the present analysis underlines the high efficacy of government commitments, international initiatives with sufficient funding and commitments by foundations and businesses that can be scaled up geographically; the medium efficacy of actions with limited funding and fragmented or low participation on the part of United Nations agencies and international organizations; and the medium to low efficacy of activities carried out by individuals, small businesses and local civil society entities. Given that the greatest potential for future growth in terms of investment and human resources is likely to be through small and medium-sized enterprises, foundations and communities, it is crucial that better guidance be given to them on how they can improve the efficacy of their commitments.

32. In the light of the findings of the analysis, the following conclusions and recommendations are offered for the consideration of the United Nations Environment Assembly:

(a) In order to better understand and measure progress, there is a need to define what a considerable reduction is and the level at which that reduction has occurred (i.e., local, national or regional). This should also factor into the increase in plastic production expected for the next 10 years, which will require an associated increase in investments and actions to reduce and manage plastic waste that is at risk of becoming marine litter;

(b) Even in the absence of such a definition, it could be said that if the scale of commitments continues to rise in the same way as during the period 2016–2018, provided that funding has been secured, there will be a positive trend towards reductions in marine litter by 2025 in some areas, in support of achieving target 14.1 of the Sustainable Development Goals;

33. Research should be conducted to develop technological solutions, including alternative materials, and to understand the impact of various types of plastic on marine ecosystems;

34. Greater guidance needs to be given to civil society and small and medium-sized foundations and businesses to help them to make their commitments even more effective;

35. There also needs to be greater emphasis on centralized reporting on progress made in respect of commitments and on monitoring changes in the levels of marine litter and microplastics in the marine environment, with a view to directing future commitments and actions, especially those of Governments;

36. Instead of creating new voluntary commitment mechanisms, ways should be explored to utilize and build on existing mechanisms, with a view to maximizing synergies and efficacy.

III. Background literature

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Annex II

Voluntary commitments

A1.1 Selected examples from the registry of voluntary commitments relating to marine litter, marine plastics, microplastics and microbeads arising from the United Nations Conference to Support the Implementation of Sustainable Development Goal 14

Australia

In August 2003, injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris was listed as a key threatening process under the country's Environment Protection and Biodiversity Conservation Act of 1999. A threat abatement plan was prepared in 2009 to address the key threatening process, with the primary focus of addressing the impact of entanglement and ingestion of marine debris on vertebrate marine life. Australia is updating the threat abatement plan, incorporating new actions needed to abate the listed key threatening process. The plan provides national guidance on specific action to prevent and mitigate the impact of harmful marine debris on vertebrate marine life, through six major objectives: (a) contributing to the long-term prevention of the incidence of marine debris; (b) identifying key species, ecological communities, ecosystems and locations impacted by marine debris for priority action; (c) conducting research to understand and mitigate the impact of marine microplastics and plastic debris on marine species and ecological communities; (d) removing existing marine debris; (e) monitoring the quantities, origins and types of and hazardous chemicals contaminants in marine debris, and assessing the effectiveness of management arrangements over time for reducing marine debris; and (f) increasing public understanding of the causes and impact of harmful marine debris, including microplastics and hazardous chemical contaminants, in order to generate behaviour change. The Government of Australia is responsible for implementing actions that are its direct responsibility, and will look to guide the implementation of actions where other groups are taking the lead.

Belgium

The Federal Minister of Environment, Ms. Marie Christine Marghem, together with the association for producers and distributors of cosmetics, cleaning and maintenance products, adhesives and sealants of Belgium and Luxembourg, has committed to the preparation of a sectoral agreement that aims at eliminating microplastics from consumer products covered by the association, especially cosmetic products. The agreement includes commitments with respect to scientific knowledge monitoring, adjustment processes, communication and training, and the development of specific sectoral actions. In accordance with the agreement, a substitution will be made for the plastic microbeads used to exfoliate or cleanse the human body in rinse-off cosmetic products available on the Belgian market.

Canada

The Government of Canada is committed to protecting oceans and marine life for future generations. In support of that goal, in February 2017, Fisheries and Oceans Canada announced over 1 million Canadian dollars in support for two new research projects to monitor contaminants and investigate their impact in the Pacific Ocean and the Arctic Ocean, in partnership with the Vancouver Aquarium. Fisheries and Oceans Canada is providing 399,000 Canadian dollars to the Vancouver Aquarium to help implement Pollution Tracker, a new science programme that will assist in identifying the sources of contaminants in British Columbia and informing policies and management decisions. The programme is conducting international-calibre scientific research on priority topics concerning ocean pollution. Its focus is on determining the sources and consequences of ocean pollution, communicating results to stakeholders and the public, and providing guidance with respect to best practices, consumer choices and policies. The programme will involve sampling mussels and near-shore sediment along the coast of British Columbia to collect data on a wide range of contaminants such as hydrocarbons, flame retardants, pesticides, pharmaceuticals and microplastics. Fisheries and Oceans Canada is also providing the Vancouver Aquarium with an additional 215,000 Canadian dollars to study, for the first time, microplastics in the Arctic Ocean and their biological effects on marine life. A further 520,000 Canadian dollars in in-kind support, such as vessel use, will be provided to assist in the collection of samples. The microplastics project will use sophisticated technology to analyse samples of seawater, ice and zooplankton, as well as the stomach contents of fish and marine mammals, to better understand the distribution and uptake of microplastics in the Arctic.

Project Aware

As an international not-for-profit marine conservation organization, Project Aware works for a clean, healthy ocean, focusing on reducing the underwater impact of marine debris and preventing trash from entering the ocean. At least 817 different species have ingested or become entangled in marine debris, and it is estimated that more than 250 million tons of plastic will make its way into the ocean by 2025. The cost is estimated to reach $8.1 billion per year in environmental damage. Although it is thought that over 70 per cent of marine debris that enters the ocean ends up on the sea floor, little quantitative information is available regarding the types and quantities involved. Recognizing the power of the diving community as citizen scientists to help to fill this void in information, Project Aware developed "Dive against Debris", the world's first and only underwater marine debris survey operating on a global scale, yielding data about the types, quantities and impact on marine life that such debris inflicts in the ocean.

Since the inception of "Dive against Debris" in 2011, more than 25,000 divers have conducted almost 4,000 surveys, removing and reporting over 800,000 debris items from shallow ocean environments. Data collected so far consistently show that the majority of items are plastics (currently accounting for 63 per cent of all items reported). The activities of "Dive against Debris" fall under the following themes:

1. Building evidence to advocate for change: "Dive against Debris" provides immediate relief to underwater habitats and marine life through the direct removal of debris, while also building the evidence necessary to advocate for change and work towards solutions in the long term.

2. Empowering scuba divers to be agents of positive change: with a view to further supporting the programme and better equipping divers with the skills and knowledge necessary to independently conduct their own surveys, report data accurately and become true debris activists, Project Aware launched the "Dive against Debris Distinctive Specialty Course", which is available in 12 different languages. The "Adopt a Dive Site" initiative capitalizes on the commitment demonstrated by our most dedicated Dive against Debris leaders, empowering community leaders and dive businesses to take ownership of their local dive sites to conduct monthly surveys at their adopted sites, as well as implementing changes to reduce the waste that their businesses generate.

3. Bringing change through strategic partnerships: marine debris is a complex problem with both local and global effects requiring strategic collaboration. Project Aware is committed to developing solutions through partnerships with communities, Governments, non-governmental organizations and businesses. The underwater perspective on the marine debris issue that scuba divers help shape through collecting "Dive against Debris" data is unique. Marine litter is also one of the clearest symbols of a resource-inefficient economy. Project Aware is working with partners toward a much-needed transition from a linear "take, make and dispose" model of economic growth to a circular economy where products are designed to be reused and recycled continuously.

A1.2 Selected examples from the register of commitments arising from the Our Ocean Conference relating to marine litter, marine plastics, microplastics and microbeads

Indonesia

Indonesia has committed to reducing waste by 30 per cent and to properly handling 70 per cent of total waste generated in 2025. The target is set out in Presidential Regulation No. 97 (2017) on the national policy and strategy on solid waste management. Waste reduction is done through prevention, recycling and reuse at the source of solid waste generation, including plastic bag restriction, community-based composting and waste banking as an instrument to implement community-based reduction, reuse and recycling, with a view to improving social cohesion and economic opportunities at the community level. This land-based approach is aimed at preventing litter from getting into the ocean.

Indonesia has put forth a national plan of action to combat marine debris for the period 2018–2025 as stated in Presidential Regulation No. 83/2018, which involves 16 ministries, local governments, private sector entities and non-governmental organizations, with a total planned budget of $1 billion. It has committed to carrying out public awareness-raising programmes through communication, information and education activities in order to succeed in reducing marine litter and microplastics.

Indonesia will use plastic bag waste to substitute for 5–7 per cent of the bitumen in asphalt for road construction in the period 2018–2025 and commits to accelerating the implementation of energy recovery from solid waste using environment friendly technology in 12 cities through the implementation of Presidential Regulation No. 35 (2018) by means of a public-private partnership scheme.

Through its Ministry of the Environment, local government, civil society and non-governmental organizations, Indonesia will promote 40 local government acts by 2025 to stop the use of plastic bags in modern market and commits to developing a road map for waste reduction on the part of producers as a fundamental aspect of implementing extended producer responsibility and a circular economy.

Japan

Japan has allocated $167 million to create marine litter monitoring technology and international cooperation with Asian countries. It announced the allocation of $1.16 million for the launch of a programme entitled "WebGIS maritime domain awareness situational indication linkages" in early 2019 in order to collect and share marine-related information for multiple purposes, including maritime environment conservation and maritime industry promotion.

Netherlands

The Netherlands announced the allocation of $113,000 to support the embedding of best practices into the management of fishing gear in Indonesia through the "Global Ghost Gear Initiative" in follow-up to the work done during the pilot project in 2017. By embedding and improving current management practices for gillnets, including gear marking, end-of-life net management, lost gear reporting and other best practices, it is expected that the loss and abandonment of fishing gear will have been significantly reduced by 2025 in critical hotspot areas and that more than 1 million marine animals will have been protected by 2018.

The Netherlands noted that it had made $11.4 million available for the period 2018–2022 to promote innovations to reduce microplastic emissions from plastic litter, car tyres, paint and clothing into the aquatic environment and for research into the effects of microplastics on human health. It also announced that it would promote circular design in production by training product developers of at least 10 per cent of all producing companies in the Netherlands through workshops on the circular design of products, packaging and business models by 2022.

The Netherlands stated that it would work towards a concrete international green deal promoting circular design with the Government of Indonesia and multinational companies in 2019. The objective is to reduce the amount of small single-use plastic packaging brought to the Indonesian market during the period 2019–2025, thereby substantially reducing plastic pollution of the oceans.

Chile

Chile has committed to eliminating the use of plastic bags by local merchants. In 2019, a law will enter into force that will prohibit all local merchants from using plastic bags; small and medium-sized companies will have until 2020 for disposal. As a result, by 2020 Chile will be free of plastic bags from merchants. Chile is also implementing a campaign to end the use of plastic straws.

European Union

The European Union announced a project worth €9 million to reduce plastic waste and marine litter in South-East Asia. The project is to support a transition to the sustainable consumption and production of plastic and to contribute to significantly reducing marine litter, including by supporting European approaches, policies and business models. The project will focus on China, Indonesia, Japan, the Philippines, Singapore, Thailand and Viet Nam, but is also aims to indirectly support countries in the Mekong region and in the rest of the Association of Southeast Asian Nations (ASEAN). As part of the recently launched plastics strategy, the European Union is committed to working with partners around the world to come up with global solutions to marine pollution.

The European Union announced that, as part of its plastics strategy, it had initiated work on the following: (a) new rules for packaging to improve the recyclability of plastics and increase the demand for recycled plastic; (b) new measures to curb plastic waste and littering, with a focus on single-use plastics and fishing gear (including a new legislative proposal published on 28 May 2018 and currently under discussion) and the use of microplastics in products; and (c) developing harmonized rules for the definition and labelling of biodegradable and compostable plastics.

The European Union provided further support for its plastics strategy by allocating €100 million under its Horizon 2020 research and innovation programme to finance innovation in the development of smarter and more recyclable plastic materials, improving recycling chains, as well as tracing and removing hazardous substances and contaminants from recycled plastics.

The European Union announced the upgrading of its floating macro-litter monitoring application for mobile monitoring of the flow of pollution from rivers into the ocean. While in the past the app was mainly used by scientists, version 2.0 will be made accessible to the general public. Not much is known

about the amount of marine pollution coming from rivers, but by extending the app to a broader user audience, that knowledge is likely to improve further.

The European Union highlighted its support for a waste management programme for the Pacific region. The European Union will provide €17 million to support Pacific countries in addressing issues relating to health and well-being, marine litter and biodiversity conservation.

European Commission

The European Commission, together with the United Nations Environment Programme and support from the Oceanographic Museum of Monaco, the European Union of Aquarium Curators, the World Association of Zoos and Aquariums, the Aquarium Conservation Partnership and the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization, announced that it will coordinate a global coalition of 200 aquariums by 2019 to raise public awareness about plastic pollution. Aquariums will engage in ongoing activities in their facilities and in communication actions via all possible channels. They will be invited to change their procurement policies, for example in canteens and shops, to eliminate all single-use plastic items. They will also be encouraged to create alliances with all potential partners and multipliers, such as sponsors, funders and non-governmental organizations, to maximize their impact by promoting best practices in behavioural change on a local, regional, national and global scale.

Thailand

Thailand has committed to encouraging approximately 10,000 commercial fishing vessels in Thailand to collect at least 1 kg of marine debris per day/per vessel from fishing nets during their operations for recycling and other purposes. The target is to eliminate a minimum of 350 tons of marine debris.

United Nations Environment Programme

The United Nations Environment Programme, together with the Coordinating Body on the Seas of East Asia and the Swedish International Development Cooperation Agency, has committed to reducing marine litter from land-based sources in the seas of East Asia by addressing the management of the plastics value chain. A total of $6.5 million in new funding will be used towards identifying and scaling up market-based solutions and appropriate regulatory and fiscal incentives; strengthening the scientific basis for decision-making; conducting outreach to increase public awareness and bring about consumer behavioural change; and undertaking regional networking, coordination and stakeholder engagement towards coherent and effective action. The activities will implement key provisions of the regional action plan on marine litter of the Coordinating Body on the Seas of East Asia and directly delivers on Sustainable Development Goal 14, target 1, and Goal 12, target 5.

Norway

Norway is setting up a programme to assist developing countries in combatting marine litter and microplastics. It committed $15 million to the World Bank's PROBLUE multi-donor trust fund in 2018.

Joint Programming Initiative for Healthy and Productive Seas and Oceans

The Joint Programming Initiative for Healthy and Productive Seas and Oceans has committed to providing funding of at least $9 million for cutting-edge international research into microplastics in the marine environment beginning in 2020. The research will focus on the following: (a) the major microplastic sources, especially macro-plastic fragmentation; (b) new analytical methodologies, including for nano-sized particles; (c) the effects on the marine environment; (d) concepts to reduce the discharge of plastics into the marine environment. By creating the international knowledge base that is necessary for action, this new research will contribute to the achievement of Goal 14 and to the realization of the actions plans to combat marine litter of the Group of Seven and the Group of 20.

Japan Agency for Marine-Earth Science and Technology

The Japan Agency for Marine-Earth Science and Technology will contribute to the scientific understanding of marine pollution caused by thin and widely dispersed microplastics through a project on the development of an automated microplastic analysis method with a hyperspectral camera, which will be completed in 2022 and another project to improve the technology used to measure plastic debris in seafloor sediment, which will be completed in 2020. The project will cost an estimated $340,000.

The agency allocated $3.8 million to a project focused on its deep-sea debris database in the period 2017–2018. The database provides marine debris data to the public and uses visual means to awaken the public to the fact that marine pollution by human beings extends to the deep ocean. Data is collected from deep-sea videos and photos taken during research surveys by submersibles, such as the "Shinkai 6500" and the "Hyper-Dolphin", which are owned by the agency. The database provides lists of debris classified by shape or material and the location of debris sunken to the deep sea, plus videos and photos

of debris. The research for the database was featured 180 times in the media in 28 countries and the corresponding webpage received 340,000 views in the fiscal year 2017–2018.

Global Environment Facility

The Global Environment Facility (GEF) is committed to promoting a circular economy approach to closed-loop production and consumption. GEF will invest in public-private partnerships that work along the entire life cycle of plastic by promoting alternative sustainable materials, rethinking product design to move towards circularity, raising consumer awareness to create market demand for sustainable products, using technology to improve collection and ensuring efficient recycling that feeds back into material needs. Based on the circular economy approach, GEF commits to preventing 50,000 tons of plastic from entering the ocean as part of its recently approved four-year funding cycle for the period 2018–2022.

Prince Albert II of Monaco Foundation

The Prince Albert II of Monaco Foundation, together with its partners the Surfrider Foundation Europe, the Tara Expeditions Foundation, the Mava Foundation and the International Union for Conservation of Nature**,** announced that it would invest $570, 000 in 2019 for the development of the "Beyond Plastic Med" initiative, which supports concrete projects to curb plastic pollution in the Mediterranean.

Circulate Capital

Circulate Capital, in conjunction with the Ocean Conservancy, announced the allocation of at least $150 million of investment capital for waste and recycling innovations, and for companies and projects in East Asia and on the Indian subcontinent that prevent plastic waste from entering the ocean over a 10-year period.

World Bank

The World Bank will commit more than $1 billion over the next seven years to advance the sustainable oceans and blue economy agenda in developing countries, including $250 million to specifically address marine litter and pollution. The World Bank's commitment to addressing marine litter and pollution over the next six years in developing countries will consist of $150 million for pollution and watershed management in China and $100 million to improve solid waste management services for urban populations in selected cities in Indonesia. In China, the project will aim at reducing levels of nitrogen, phosphorus and pesticides in water. The funding for Indonesia includes World Bank co-financing of a $1.1 billion programme to improve solid waste management services for approximately 45 million urban residents across 30 metropolitan areas and large and medium-sized cities. Given that 80 per cent of marine plastic pollution comes from land sources, this is a significant commitment to the oceans agenda. In participating cities, the programme is expected to increase solid waste collection rates to 85 per cent (from an estimated 65 per cent), decrease marine plastic pollution by half, and increase waste reduction rates by 300 per cent.

World Wide Fund for Nature

The World Wide Fund for Nature has unveiled a project entitled "No more plastics in our ocean', a three-year, $7.5 million global initiative funded by the Norwegian Government. The initiative will help to advance global governance solutions to effectively address the scourge of marine plastic pollution. It will also spur public and private sector commitments towards that goal. The initiative targets the governance structure that needs to be put in place to secure widespread policy commitments at the national and global levels to reduce plastic use and leakage and aims to engage the major players in the private sector to encourage widespread implementation of extended producer responsibility schemes and to create scalable change at the city level, through the establishment of its "Plastic pollution-free cities" programme.

Ellen MacArthur Foundation

The Ellen MacArthur Foundation, in cooperation with the United Nations Environment Programme, has launched the "New Plastics Economy Global Commitment", whereby more than 100 companies, representing greater than 25 per cent of the plastic packaging market, have committed to eliminating unnecessary or problematic plastics, to moving from single-use to reuse models, to increasing the percentage of recycled content, and to designing all packaging to be 100 per cent reusable, recyclable or compostable, all by 2025. In addition, more than 15 Governments have agreed to create the enabling conditions for the above through policy and legislation.

Lonely Whale

Lonely Whale, through its "Next Wave" project, has committed to intercepting and permanently integrating into company products a minimum of 25,000 tons of ocean-bound plastics, with the aim of increasing demand for ocean-bound plastics by getting a minimum of 20 additional companies in 2018 and eliminating across member companies a minimum of 50 per cent of all non-essential plastics by 2025.

Global Ghost Gear Initiative

The Global Ghost Gear Initiative has committed to operationalizing 30 scaled-solutions projects to address the problems caused by lost and abandoned fishing gear in 15 countries by 2025. The initiative pledges to double the financial commitment from its members, providing $2 million in 2019 to support organizations and Governments in ensuring the effective scaling of projects aimed at preventing and solving the problem, especially in developing countries. The initiative will work with 3 market-leading certifications schemes, all 13 initiative signatory countries and the Food and Agriculture Organization of the United Nations (FAO) to implement best practice management for fishing gear by 2021, including the uptake of the FAO guidelines for the marking of fishing gear. The initiative pledges to help establish baselines and contribute to achieving a net reduction in ghost gear in the oceans each year until 2030.

Borealis

Working in partnership with Systemiq, Borealis has committed to providing €4 million to fund the "Project stop" initiative, with the aim of accelerating waste management improvements in South-East Asia in the period 2018–2019 and then expanding the best practices from Muncar, East Java, to two additional cities in Indonesia.

Oceana

Oceana will launch a new campaign to reduce the production of single-use plastics at the source. With over 200 victories in stopping overfishing, habitat destruction, pollution and the killing of threatened species such as turtles and sharks, Oceana aims to deliver results and promote efforts beyond recycling by 2020.

Think Beyond Plastic

Think Beyond Plastic will establish an innovation centre by 2019 focused on plastic reduction and waste management in Indonesia to reduce marine plastics by leveraging innovation, entrepreneurship and impact investment with a focus on circular materials, circular design and social entrepreneurship.

Volvo Ocean Race

The organizers of the Volvo Ocean Race have committed $2.5 million to a programme to engage in positive action on plastic pollution prevention and to develop action plans to help to restore ocean health in each of the future host cities that sign agreements to become stopovers for the Volvo Ocean Race. The organizers will continue to promote ocean health, sustainable operations and ensure a minimal single-use plastic footprint at all of its race events taking place before the 2021–2022 edition.

Food Industry Asia

Food Industry Asia is committed to reducing packaging waste and developing sustainable plastics initiatives by supporting and partnering with Governments and other stakeholders across Asia. In 2018, it invested $150,000 in commissioning a study to understand plastic waste leakage points in Indonesia, the Philippines, Thailand and Viet Nam (which collectively account for one quarter of global marine plastic debris every year) and to assess the impact of current efforts to tackle marine litter. The findings are being used to inform policymakers and to develop opportunities for reducing plastic and packaging waste on a large scale. Food Industry Asia is working with regulators in those countries to develop, enhance and implement guidelines for packaging to be reusable, recyclable or compostable by 2025, in line with the commitments of its member companies.

Danone-Aqua

Danone-Aqua has announced a pioneering commitment to addressing plastic waste in Indonesia by recovering more plastic waste from the environment. It has committed to leading a nationwide campaign on recycling education and to increasing consumer awareness of recycling programmes in 20 major cities by 2020, with a view to reaching 5 million children and 100 million consumers by 2025. It has also committed to making all plastic packaging 100 per cent recyclable and to increasing the proportion of recycled plastic in its bottles to 50 per cent by 2025.

Indonesian Plastic Recycling Association

The Indonesian Plastic Recycling Association and its partners have committed to processing up to 5 million tons of plastic waste per year by 2025.

Indonesia Plastic Bag Diet Movement

The Indonesia Plastic Bag Diet Movement, together with Alliance for Zero Waste Indonesia, has pledged to prevent the leakage of 3,000 tons of plastic bags into the environment through the implementation of plastic bag bans in 5 cities by 2019. It plans to work in 10 additional cities per year to prevent 11,000 tons of plastic per year from entering into the oceans, with a target of up to 58,000 tons for the period 2020–2025.

Municipal Waste Recycling Programme

The Municipal Waste Recycling Programme, a five-year (2016–2021) initiative funded by the United States Agency for International Development, is designed to reduce land-based sources of marine plastics pollution in Indonesia, the Philippines, Sri Lanka and Viet Nam. With proximity to two oceans, effective solid waste management in those countries is critical to reducing marine plastics waste. The programme provides grants and technical assistance for promising solid waste management and waste recycling efforts in urban areas, enhances their effectiveness and makes recommendations for future investments in mitigating marine debris. The programme ensures that its activities are responsive to gender considerations through evidence-based analysis and that the assistance provided and the results achieved are beneficial to women and men. After two years of implementation, the programme, with the Development Innovations Group as its prime implementer, is prepared to share important gender-related best practices.

Nestlé

Nestlé announced its ambition to make 100 per cent of its packaging recyclable or reusable by 2025, with the goal that none of its packaging, including plastics, ends up in a landfill or as litter and the belief that there is an urgent need to minimize the impact of packaging on the environment and that tackling it requires a collective approach.

Coca-Cola

Coca-Cola has set the goal of helping to collect and recycle the equivalent of every bottle that they sell globally by 2030. The effort will contribute to a circular economy through a multi-year, multi-million dollar investment that includes ongoing work to make all its packaging 100 per cent recyclable by the year 2025 and to include 50 per cent recycled content across all its primary packaging globally by 2030.

Bye Bye Plastic Bags

Bye Bye Plastic Bags will expand the number of businesses joining the commitment campaign led by One Island One Voice. One Island One Voice aims to gather 1,000 commitments by the end of 2018. In the long term, One Island One Voice plans to spread the commitment campaign nationally across 3 locations by end of 2019 and to 25 locations globally, in conjunction with teams from Bye Bye Plastic Bags, by 2020.

Surfrider Foundation

Through its Kauai chapter, the Surfrider Foundation, funded in part by a grant from the National Oceanic and Atmospheric Administration of the United States of America, committed to performing four beach clean ups, 50 net patrols and collecting 50 metric tons from over 40 km of coastline per year. The programme will be completed in September 2021.

Gringgo Trash Tech

Gringgo Trash Tech has committed to building a waste network that will help to reduce ocean plastic pollution by 25 per cent by 2020 in South-East Asia and increase recycling rates by 50 per cent by 2022. It will create a platform for school recycling programmes and marine pollution education in at least 5,000 schools across Indonesia.

Project Aware

Project Aware announced its commitment to removing another 1 million pieces of plastic waste by the end of 2020. Project Aware is continuing to mobilize a global community of citizen scientists – dive leaders and debris activists – and, by the end of 2020, aims to increase the number of surveys submitted as part of its “Dive against Debris” programme by 50 per cent and to increase the number of dive sites monitored on a monthly basis by 30 per cent. Project Aware has also announced the removal of all

single-use plastics from its operations, products and supply chains with immediate effect by the end of 2020.

4Ocean

4Ocean has committed to removing 3 million kg of marine litter from the ocean by 2019.

Unilever

Unilever has pledged to work with its partners on the collection of plastic sachet waste from approximately 5,000 waste banks by 2020 to be recycled using its CreaSolv process.

Fourth Element

Fourth Element has pledged to engage scuba diving gear manufacturers and brands worldwide to join its quest to reduce plastic pollution by making a commitment to reducing their plastic packaging output. It will create a digital platform that will highlight the brands joining the mission and designate a focal point to engage with and encourage all companies in the diving industry to take part and reduce their output of single-use plastic waste. It has the goal of 60 per cent of the major dive manufacturers participating in the initiative, with the objective of 1,000 dive centres signed up to support its mission and to reduce their output of single-use plastics. A total of 300 staff hours will be dedicated to promoting and managing this commitment and $6,500 will be used to cover the set up and running costs of the digital platform ad supporting activities.

Evoware

Evoware has committed to the target of replacing 21,714 tons of plastic waste, reducing CO_2 from seaweed cultivation by 110,216 tons, doubling the income of 364 seaweed farmers and providing jobs for an additional 728 people by 2020. Through innovation, the applications of flexible packaging will continuously be broadened to include packaging for cooking oil, seasoning oil, margarine, polybags and other single-use plastic. There will also be some innovation with respect to semi-rigid disposable plastic, such as that used in making cups, bowls and straws .

International Nitrogen Initiative

The International Nitrogen Initiative has committed to supporting a global goal to halve nitrogen waste by 2030, offering a resource savings totalling $100 billion per year, by reducing pollution by 100 million tons per year, with quantifiable co-benefits for water quality, air quality, biodiversity, climate resilience, food and livelihoods. It is fulfilling that commitment in the period 2018–2022 through a global science-policy support process for better nitrogen management, the International Nitrogen Management System, in partnership with the United Nations Environment Programme and a global network of over 80 partners from the scientific community, government, agencies and civil society. Over that period, the partnership has committed to a $60 million effort, including $6 million through the Global Environment Facility.

Wildlife Conservation Society

The Wildlife Conservation Society has announced the allocation of $102 million over five years to efforts to raise awareness and reduce plastic use in New York City.

Algalita Marine Research and Education

The Algalita Marine Research and Education has committed to directly and indirectly educating 80,000 young people about plastic pollution prevention by 2019 through its youth education and leadership programme on solutions to plastic ocean pollution.

Plastic Recyclers Europe

Plastic Recyclers Europe has announced the commitment of its members to putting 10 million tons of recycled plastics on the European Union market each year by 2025 provided that certain conditions and legislative measures are put in place.

Misool Foundation

The Misool Foundation, through its Bank Sampah programme, has committed to intercepting and recycling 200 tons of plastic that would otherwise enter the waters of Raja Ampat in 2019. The programme has engaged more than 7,000 community members in recycling and injected $50,000 into the community in payments for recyclables.

Bawah Anambas Foundation

The Bawah Anambas Foundation has committed to allocating $200,000 to aid in the management of plastic waste by supporting the Government of Indonesia and working directly with the community. It aims to prevent up to 8 tons of solid waste from going into the ocean by the end of 2019 and to collect marine debris around the Anambas archipelago.

Kaneka

Kaneka has announced its investment of 2.5 billion yen to increase the production capacity of its biodegradable polymer from 1,000 tons to 5,000 tons a year. In addition, Kaneka will start a feasibility study for operating a production plant with a capacity of 20,000 tons per year. Through the investment, Kaneka will be able to supply the global market through 2025 with about 80,000 tons of the biodegradable polymer, which can be used for industrial and consumer products. Related applications can contribute to the reduction of marine pollution by being: (a) fully recoverable as organic fertilizer products through recycling; and (b) biodegradable in the marine environment in case of accidental leakage.

A1.3 Examples of voluntary commitments from the Clean Seas campaign relating to marine litter, marine plastics including microplastics and microbeads

Australia has pledged to recycle or compost 70 per cent of all plastic packaging by 2025.

Belgium, Brazil, the Dominican Republic, Panama and the Philippines are drawing up or adopting national plans and legislation to combat marine litter.

Canada, which has the world's longest coastline, is funding community-based programmes, including beach clean ups, and continuing critical research into the impact of microplastics. It is also drawing up regulations to ban the manufacture and sale of toiletries containing microbeads.

Indonesia has committed to reducing plastic waste by 70 per cent by 2030.

Chile, France, Jordan, Kenya and Madagascar have banned or pledged to ban single-use or non-biodegradable plastic bags.

Israel aims to have 70 per cent of its beaches clean 70 per cent of the time by 2018 and is implementing a ban on certain types of plastic bags.

Denmark, Finland, Iceland and Sweden have committed to implementing the "Nordic programme" on a sustainable approach to plastics by preventing plastic waste, encouraging recycling and promoting a circular economy.

New Zealand has committed to banning products containing plastic microbeads beginning in June 2018 and is developing options to get rid of single-use plastic bags.

Volvo has pledged to remove single-use plastic from all its offices, restaurants and events by the end of 2019. The company estimates that it will replace more than 1 million plastic items with more sustainable alternatives.

Nestlé has pledged to make all its plastic packaging 100 per cent recyclable or reusable by 2025.

Unilever has pledged to ensure that all its plastic packaging is fully reusable, recyclable or compostable by 2025.

Ellen MacArthur Foundation, through its New Plastic Economy Initiative, aims to publish the full palette of the plastic materials used in its packaging by 2020 to help in creating a protocol for the industry.

Coca-Cola, which uses around 120 billion bottles a year, launched its World Without Waste campaign in January 2018, at which point it indicated that it would recycle one used bottle or can for every new one sold by 2030. It has also pledged to increase the amount of recycled content in plastic bottles to 50 per cent by 2030 and is experimenting with different collection techniques for recycling its products, including by backing government and industry efforts.

McDonald's will make all its packaging from renewable and recyclable sources by 2025.

Dell aims to make its packaging 100 per cent waste-free by 2020, using materials from sustainable sources. It already uses recycled ocean plastics collected from beaches, waterways and coastal areas, as well as other sustainable materials such as bamboo. Ultimately, it wants all packaging to be suitable for home composting or household collection. It has teamed up with the advocacy foundation Lonely Whale and others to form an open-source initiative to look into developing the first commercial-scale, ocean-bound plastics supply chain.

Danone-Evian will make all its plastic bottles from recycled plastic by 2025.

Iceland Food Ltd. has promised to eliminate plastic packaging from its own-brand products by the end of 2023.

Procter & Gamble produced the first recycled shampoo bottle, made with up to 25 per cent recycled beach plastic, in 2017 It has pledged to make all its packaging recyclable or reusable by 2030. For its Fairy Liquid brand, it has already produced a new plastic bottle, made with 100 per cent recycled plastic, including 10 per cent ocean plastic. The bottles were developed in partnership with TerraCycle.

IKEA has pledged to phase out single-use plastic products from its stores and restaurants by 2020.

A1.4 Global Partnership on Marine Litter

The Global Partnership on Marine Litter is acknowledged as a key partnership mechanism for marine litter stakeholders. Members webinars were initiated in 2015 to facilitate collaboration and information-sharing within the partnership. UNEP, through the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, provides secretariat services, including updates on activities, and partners are invited to make short presentations on their work. The webinars are recorded and made available online to allow partners in different time zones to view the presentations.

Partners were invited to contribute case studies and expertise for a massive open online courses on marine litter (which had 12,000 registered participants), with many of them also contributing expertise to furthering the study of marine plastic debris and microplastics.

It May 2016, the partnership launched the publication *Marine Plastics Debris and Microplastics: Global Lessons and Research to Inspire Action and Guide Policy Change*. Regional nodes of the partnership have so far been established in the Caribbean, the Mediterranean and the Pacific, providing an opportunity to better meet regional and national needs and identify priority areas for intervention. A new node will be established in South Asia.

By scaling up member initiatives and showcasing national or regional initiatives at a global level, the partnership has promoted the strengthening and replication of those initiatives.

A waste minimization demonstration project was supported in Samoa to demonstrate best practice measures for effective waste management and minimization of marine debris. The project was implemented by the Global Partnership on Marine Litter along with the Government of Samoa, the secretariat of the Pacific Regional Environment Programme and in collaboration with the private sector. A spin-off project has since been established in the Solomon Islands utilizing litter booms to monitor riverine input.