GESAMP
Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection

49th session
Agenda item 4

GESAMP 49/4/6
22 Aug 2022
ENGLISH ONLY

PLANNING OF GESAMP ACTIVITIES:

Sources, fate and effects of marine plastics and microplastics

Report of the co-Chairs of Working Group 40

1 Working Group 40 (WG 40) was formed in 2012, with the remit to produce a first global assessment of the sources, fate and effects of microplastics on the marine environment. Microplastics had been recognised as an emerging issue by GESAMP in 2008, leading to the production of a scoping report and the organisation of an international workshop on 'Micro-plastic particles as a vector in transporting persistent, bio-accumulating and toxic substances in the oceans' in 2010. The proceedings were published in the GESAMP Reports and Studies Series (GESAMP 2020, R&S No. 82), as have four subsequent reports produced by WG_ 40 (GESAMP 2015, 2016, 2019, 2010).

2 The work programme and terms of reference (ToRs) of WG 40 have evolved as a consequence of increasing knowledge and the developing policy and governance landscape (Table 1). The scope was increased to include all forms of marine plastic litter and this was reflected in the 2019 report on monitoring and assessment methods. The current ToRs represent the fourth phase of WG 40's activities with a focus on risk assessment. The current co-chairs are Peter Kershaw (since 2012, independent, United Kingdom) and Bethanie Carney-Almroth (since 2021, University of Göteborg, Sweden). The membership of WG 40 has varied since 2012, reflecting the changing ToRs and expertise required. In addition, greater attention has been paid in recent years to improve geographical representation and ensure a balance of gender and participation from countries at different stages of economic development, including SIDS. This should help in making sure the assessment and recommendations from WG 40 are relevant to the widest audience.

Table 1. A brief history of Working Group 40, showing how the main objectives have developed in response to a changing policy landscape and Member State needs.

Year	GESAMP	Science-based policy	Support to Member States
2008 -	Microplastics as an emerging issue: – Scoping paper – International workshop	Emerging concern	Minimal concern
2012 -	WG40 Phase 1: Global assessment – sources, fate & effects	Increasing concern UNEA-1 resolution (2014)	Emerging concern
2016 -	Phase 2: Global assessment – sources, fate & effects	UNEP 2016 report to UNEA-2 (2016) AHEG UNEA-3 (2017)	Increasing concern Request for advice & support

2018 -	Phase 3: Guidelines for monitoring & assessment of marine litter & microplastics	Need for harmonised monitoring & assessment - SDG 14.1.1, UNEA 4 (2019)	Utilisation of Guidelines: – FAO Nansen – 31 MS – IAEA Tech. Coop. – Asia-Pacific & Americas – Regional Seas (UNEP)
2021 -	Phase 4: Risk assessment framework (social, economic & ecological risks from marine litter & microplastics	Global plastics agreement - negotiation (UNEA-5, 2022 - ongoing) GPML Action Track 1 Science-policy (2021 - ongoing)	Risk-based interventions

3 WG 40 is co-sponsored by IOC-UNESCO and UNEP. Initial financial support was provided by Plastics Europe and the American Chemistry Council, but this was superseded by funding from a number of national government sources (e.g. United States, China, Japan in addition to IOC and UNEP). Providing continuing support for WG 40 remains a challenge but this needs to be resolved in order to complete the current ToRs.

4 There have been two significant developments since the GESAMP 48. The first was the successful completion of an on-line kick-off workshop for the 4th phase. This took place over three days on 10 to 12 November 2021. The workshop was limited to three hours per day, to take account of the wide variation in time zones (18) covered by the participants. The main purpose was to introduce the membership, briefly describe the history of WG 40, provide a summary of some of the critical issues that will need to be addressed and explore ideas for how these can be tackled.

5 The November workshop was divided into plenary and group sessions, with each group being allocated a lead and a note taker. A series of brief presentations provided an introduction to the main topics to illustrate the scope of the programme and bring everyone up to speed on the current status of areas of expertise they were unfamiliar with. The topics included:

.1 Summary of the outcome of the 2019 risk workshop in Geneva;

.2 Abandoned Lost or otherwise Discarded Fishing Gear;

.3 Social impacts and communication;

.4 Ecotoxicological risks;

.5 Waste generation and trends;

.6 Source terms (spills, releases, shipping incidents, natural disasters);

.7 Human health; and

.8 Environmental economics.

6 The other significant development has been the organisation of the first face-to-face workshop of the 4th phase. This is due to take place from 26 to 30 September 2022 in Busan, Republic of Korea. The main purpose is to develop a methodology or framework, for assessing

the social, economic and ecological impacts of marine plastic litter and microplastics in all its forms. This is intended to build upon the discussions and conclusions of the Geneva workshop and the topics covered in the virtual November workshop that initiated the 4th phase. The outcomes of the workshop will contribute to Action Track 1 of the GPML[1]. The framework is intended to help identify priorities for taking action to mitigate the impact on marine litter and microplastics, from whatever the source and by whatever the leakage route to the environment.

7 Financial support for the workshop is being provided by the Ministry of Oceans and Fisheries Korea (MOF Korea). Colleagues from KIOST are helping with the local arrangements and will contribute to the workshop. The venue is the Shilla Stay hotel in the Haeundae district, selected for logistical reasons. The 7th International Marine Debris Conference (7IMDC)[2] is taking place in Busan from 18 to 23 September. The meeting is attracting many of those involved in addressing marine litter and microplastics from academia, NGOs, industry and government. About half the workshop participants are using the institutional/grant funding allowing attendance at 7IMDC to cover their costs to attend the workshop. Without this 'self-funding' element the workshop would not have been viable. The co-chairs of WG 40 are very grateful both for the self-funders, with their ingenuity and enthusiasm, as well as IOC, UNEP and IMO for funding the remaining attendees. Most of the workshop participants will be giving presentations at 7IMDC, and there will be presentations on WG 40 and WG 43 in a technical session on sea-based sources. This represents an ideal opportunity both for advertising the work of GESAMP and making sure that the work of WG 40 is informed with the latest science and policy developments.

8 Fifteen WG 40 members are due to participate in the workshop in person. In addition, a number of Observers are expected to attend, representing KIOST and the PICES[3] Marine Environmental Quality Committee. PICES Annual Science Conference is taking place at the same time in a nearby venue where Peter Kershaw will be representing GESAMP together with some attendees from 7IMDC, including the organiser of a planned SETAC Pelston Workshop[4] on microplastic impacts. A virtual workspace is being planned, in addition to Basecamp (used for storing documents), to allow remote active participation (e.g. online whiteboard using the Miro platform) both before and during the workshop, to encourage maximum participation by the whole membership.

Action requested by GESAMP

9 GESAMP is invited to note the information provided, and in particular:

.1 consider progress made in meeting the current ToRs, noting the forthcoming face-to-face workshop in Busan, and comment on the aims and approach; and

.2 Note the continuing need to establish adequate funding to allow WG40 to conduct a second face-to-face workshop, complete the 4th phase work plan and publish the report.

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1 GPML Global Partnership on Marine Litter https://www.gpmarinelitter.org/what-we-do
2 https://7imdc.org/main
3 PICES North Pacific Marine Science Association https://www.pices.int/?dd
4 https://www.setac.org/page/PTWorkshops

ANNEX 1

GESAMP WG 40 – 4th Phase Membership – August 2022

Name	Country	Affiliation	F/ M	Expertise	Regional experience
Peter Kershaw* Co-chair	United Kingdom	Independent consultant	M	GESAMP Member Science-policy exchange	N Atlantic Global
Bethanie Carney Almroth* Co-chair	Sweden	Univ. Gothenburg	F	MPs, chemistry, ecotox	N. Atlantic, Europe, Global
Daoji Li	China	East China Normal University	M	MPs, chemistry, Ecology, Biological oceanography	Coastal China Sea West Pacific East Indian Global
Dick Vethaak	NL	Independent	M	MPs, ecotoxicology, human health impacts	N Sea, global
Francois Galgani*	France	IFREMER	M	MPs, ML, EU-MSFD Tech Group, monitoring, ecotoxicology	Med, global
Sabine Pahl	Austria	Univ. Vienna	F	Behavioural science and ML	SE Asia, global
Martin Thiel*	Chile	Facultad Ciencias del Mar Universidad Catolica del Norte	M	MPs, ML, marine biology, citizen science	Pacific
Denise Mitrano	Switzerland	ETH Zurich	F	Risk-based regulation for MPs, analytics, nano, freshwater, soil	Atlantic, global
Hrissi Karapanagioti*	Greece	Univ. Patras	F	MPs, chemistry	Med
Saly Thomas*	India	ICAR-Central Institute of Fisheries Technology	F	Fishing gear materials, ALDFG, ecosystem impact of fishing	Indian Ocean, BoB
Suchan Apple Chavanich*	Thailand	Chulalongkorn University	F	microplastics	BoB,
Peter Ryan	South Africa	FitzPatrick Institute University of Cape Town	M	Identifying macrolitter sources; biological impacts	Southern & Indian Oceans, Arctic
Allan Krelling*	Brazil	Instituto Federal do Paraná	M	Social/economic risk (tourism)	S Atlantic
Eric Gilman	United States	Pelagic Ecosystems Research Group, The Safina Center	M	Fisheries science; ALDFG risk assessment	Pacific, global
Chelsea Rochman	Canada	Univ. Toronto	F	Ecotox, microplastics	global

Maartje Folbert*	Curaçao	Independent consultant, Open Universiteit	F	Risk assessment in shipping	Caribbean, Europe, global
Antony Andrady	United States	North Carolina State Univ.	M	Polymer chemistry, materials science	Sri Lanka, Atlantic, global
Atsuhiko Isobe*	Japan	Research Institute for Applied Mechanics (Centre for Ocean Plastic Studies), Kyushu University	M	Modelling future trends	Sea of Japan, N Pacific
Todd Gouin	United Kingdom	Independent consultant	M	MPs, chemistry, risk assessment	global
Andres Arias*	Argentina	Argentinean Institute of Oceanography (IADO-CONICET), National South University	M	Trace pollutants, MPs, Ecotox	South Atlantic
Eric Okuku*	Kenya	Kenya Marine & Fisheries Res. Inst.	M	Biogeochemistry, macroplastics mesoplastics and MPs	Indian Ocean
Daniela Honorato-Zimmer*	Chile	Facultad Ciencias del Mar Universidad Catolica del Norte	F	ML, international collaborations and coordination, citizen science,	SE Pacific, W Indian Ocean
Kristal Ambrose*	Bahamas	Bahamas Plastic Movement; WMU, Malmo	F	Advocacy, communications, PhD student at WMU	Caribbean
Stephanie Wright	United Kingdom	Imperial College	F	MPs, human health impacts	global
Francisco Alpizar	Costa Rica/ Netherlands	Univ. Wageningen	M	Academia, environmental economics	Global, developing countries
Amy Brooks	USA	Oregan State Univ.	F	Plastics waste management	Global, developing countries
Patricia Villarrubia-Gómez*	Spain/ Sweden	Stockholm Resilience Centre, Stockholm University	F	Planetary boundaries, Science-Policy-citizen interface, PhD Candidate	Global
Won Joon Shim*	Korea	KIOST	M	MP chemistry & ecotox.	North Pacific, global

* - attending Busan workshop in person

ANNEX 2

GESAMP WG 40 Busan Workshop - Provisional agenda

GESAMP WG 40 Busan Workshop
26 -30 September 2022, Shillastay Hotel, Busan, Republic of Korea

Provisional Agenda - V1

Day/date	Time	Agenda item	Lead
Monday 26			
	9 am	Welcome Housekeeping Introductions – WG40 members – Observers	BCA/PK
		Introduction to WG40 – Terms of Reference – Context and scope – Workshop organisation – Expected outcomes	PK/BCA
	End 12:00	Re-cap of on-line start-up workshop (November 2021) elements of a risk assessment framework	BCA + others
		LUNCH	
	13:00	Formation of initial groups - topics and contributors - Identify Sectors/categories (see below)	BCA/PK
	16	Groups discussions - scope, expertise, information sources	group leads
	End 17:00	Plenary – feedback on group discussions – identify inputs needed from absent WG members	group leads
Tuesday 27			
	9-12	Continue group work and re-form groups as necessary Contact external members as required	group leads
		LUNCH	
		Continue group work and re-form groups as necessary	group leads BCA/PK
	End 17:00	Plenary feedback session - progress and plans	
Wednesday 28			

	9 -12	Continue group work and re-form groups as necessary Arrange on-line inputs from external members as required	group leads
		LUNCH	
	End 17:00	Continue group work and re-form groups as necessary Plenary feedback session - progress and plans	group leads BCA/PK
Thursday 29			
9-12	9-12	Draft workshop report writing	group leads
		LUNCH	
	End 17:00	Draft workshop report writing Plenary feedback session - progress and plans	group leads BCA/PK
Friday 30			
	9-12	Complete draft workshop report	group leads
	End ??	Next steps - actions, deadlines, leads, timeline	BCA/PK
		Workshop closes	

PK - Dr Peter Kershaw, co-chair WG 40, independent scientist, UK
BCA - Dr Bethanie Carney-Almroth, co-chair WG 40, Göteborg Univ., Sweden

Possible topics for group work - under development:

- economic risks due to marine litter - mechanisms, sectors
- social aspects of risk - risk perception & communication, education, behaviour change
- ecotoxicology of micro- and nano-plastics
- species transfer - micro and macro organisms
- human health impacts
- risk assessment methods
- waste generation and future trends
- environmental response to leakage under different stages of plastic life cycle, waste management scenarios
- governance context - risk assessment and the proposed Global Plastics Agreement, Basel Convention .....
- GPML Science-Policy Action Plan
- additional risks for lower income countries
- strategy to identify risks in different social/political contexts?