

1 **Defining an effective “Plastics Treaty” through national perspectives and visions during**
2 **early negotiations**

3
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11 **Abstract**

12 With increased international concern over the pervasive plastic pollution problem, early
13 negotiations to develop a legally binding instrument to end plastic pollution (“the Plastics
14 Treaty”) was supported by 175 member countries towards a sustainable plastics future. Defining
15 features of the plastics treaty by UNEP member countries began in Punta del Este, Uruguay in
16 November 2022 during the first session of the Intergovernmental Negotiating Committee (INC-
17 1). However, INC-1 ended with many unanswered questions regarding the structure, scope, and
18 targets of the treaty. Sixty-seven member countries, including members of the High Coalition
19 Ambition (HAC), submitted their objectives, guiding principles, and expectations for the treaty
20 before the INC-2 negotiations while also suggesting measures for its effective implementation.
21 This paper compiles submissions of the 67 member countries and evidence-based policymaking
22 approaches which have been described in peer-reviewed and grey literature following INC-1, but
23 prior to the INC-2 negotiations in Paris, France in June 2023. Recommendations for developing
24 an effective plastics treaty by most member countries include incorporating the complete life
25 cycle of plastics, promotion of transparency in global trade through uniform labelling measures,
26 capping virgin plastic production, incorporating extended producer responsibility to develop a
27 circular economy, and addressing hazardous chemicals in plastics. Suggested implementation
28 measures by them include building a multilateral fund, supporting smaller countries with
29 technology transfer, improving stakeholder engagement at local levels, developing subsidiary
30 bodies, and regular national reporting. Encouragingly, many of these national plans were
31 proposed in the Zero Draft document released in September 2023 prior to INC-3 in Nairobi,
32 Kenya in November 2023 and further developed in the revised draft text which will serve as the
33 provisional agenda at INC-4 in April 2024 in Ottawa.

34

35 **Keywords:** Plastic pollution; United Nations (UN); Intergovernmental Negotiating Committee
36 (INC); High Ambition Coalition (HAC); Legally binding instrument; Member submissions.

37

38 Impact Statement

39 Unsustainable plastic production and the growing global plastic pollution crisis is now
40 indisputable. This increased international concern over the omnipresent global plastic pollution
41 problem resulted in an agreement of 175 UN member countries to develop a legally binding
42 instrument to end plastic pollution (“the Plastics Treaty”). Submissions from 67 UN member
43 countries and evidence-based policymaking approaches from the literature reviewed prior to
44 INC-2 recommend that an effective plastics treaty should include the complete life cycle of
45 plastics, transparency in global trade via uniform labelling measures, capping virgin plastic
46 production, extended producer responsibility for a circular economy, and eliminating hazardous
47 chemicals. Other measures include establishing a multilateral fund and technology transfer to
48 assist low-income or smaller countries, improving stakeholder engagement, and regular national
49 reporting to help curb this pervasive plastic pollution problem.

50

51 1. Introduction

52 The global concern for preventing plastic pollution is as pervasive as plastic pollution itself. An
53 estimated 450 million tons of plastic waste is produced annually across the globe and is expected
54 to increase fourfold by 2040 (Geyer, 2020). Existing waste disposal methods are insufficient to
55 manage plastic waste (Lau et al., 2020). Mismanaged plastic waste and resulting omnipresent
56 plastic pollution severely impacts human and ecosystem health (Deeney et al., 2022; Walker and
57 Fequet, 2023). Despite the current global plastic pollution crisis, there is currently no single
58 international convention that addresses plastics and their management (Diana et al., 2022;
59 Raubenheimer and McIlgorm, 2018).

60

61 Current international policies such as Basel Convention on the Control of Transboundary
62 Movements of Hazardous Wastes and Their Disposal, The Stockholm Convention and The
63 Honolulu Strategy lack the ability to effectively address all sources of plastic pollution, specifically
64 land-based plastic litter (UNEA, 2018; Simon et al., 2021; Baxter et al., 2022). Also, existing
65 policies tend to focus on plastic waste and little to no policies address the design, production and
66 distribution of plastics which are root causes of the issue (Simon et al., 2021). Global scientists on
67 plastic pollution propose that international organizations need to initiate steps towards a global

68 agreement to reduce plastic pollution (Raubenheimer et al., 2018). There is a need for
69 comprehensive databases and inventories that include emerging legislative, regulatory, and
70 communication-focused initiatives to promote evidence-based policymaking aimed at tackling
71 plastic pollution (Vince and Stoett, 2018; Vince et al., 2024). Evidence-based policymaking is
72 crucial to inform and guide development of effective policies. It involves the integration of
73 research evidence, expert knowledge, and stakeholder perspectives to design and implement
74 policies that address societal challenges (Head, 2013; Cairney and Oliver, 2017). Neylan (2008)
75 also emphasizes that “evidence” carries intrinsic authority and this provides policymakers a
76 broader perspective to make more informed choices when developing strategies to combat issues
77 like plastic pollution (Head, 2013).

78
79 In February 2022, at the resumed fifth session of the United Nations Environment Assembly
80 (UNEA-5.2) in Nairobi, members from 175 countries agreed to adopt a draft resolution (5/14) to
81 develop an international legally binding instrument to end plastic pollution (“the plastics treaty”,
82 including in the marine environment, with the ambition to complete the negotiations by the end of
83 2024 (United Nations Environment Programme, 2022d; Walker, 2022). United Nations
84 Environment Assembly resolutions 1/6, 2/11, 3/7, 4/6, 4/7 and 4/9 underpin this. An
85 Intergovernmental Negotiating Committee (INC) was also established to develop the framework
86 of this international legally binding agreement (UNEA, 2022a,b).

87
88 The UNEA decided to develop an instrument which includes both binding and voluntary
89 approaches and is based on a holistic approach that addresses the full life cycle of plastic as
90 reported in UNEP/EA.5/L.6 (UNEA, 2022a). The assembly also decided to incorporate all the 27
91 principles of the Rio Declaration on Environment and Development such as Principle 8- “States
92 should reduce and eliminate unsustainable patterns of production and consumption and promote
93 appropriate demographic policies”, Principle 13- “States shall develop national law regarding
94 liability and compensation for the victims of pollution and other environmental damage” and
95 Principle 16- “ the polluter should, in principle, bear the cost of pollution, with due regard to the
96 public interest and without distorting international trade and investment” (Rio Declaration, 1992;
97 UNEA, 2022a). Other objectives in the resolution included provisions to encourage sustainable

98 production and consumption of plastics through product design and environmentally sound waste
99 management, and the need for national and international cooperative measures, and to develop
100 national action plans (NAPs) (March et al., 2023, 2024). Member states also expressed interest to
101 include mandatory national reporting to assess implementation of the treaty and its effectiveness.
102 Resolution 5/14 recognizes the need to promote scientific and socio-economic assessments for
103 plastic pollution and to generate awareness regarding the issue using education and technology
104 transfers amongst states. Additionally, the assembly included the objective to encourage a multi-
105 stakeholder action agenda, and a mutual agreement to provide technical and financial assistance
106 to member states as required by their differing national circumstances (UNEA, 2022a).

107

108 *1.1 First session of the Intergovernmental Negotiating Committee (INC)*

109 According to the adopted resolution, the INC would work for development of the structure of the
110 treaty. Proposed timeline consists of five INC meetings ending in 2024 (Fig. 1; UNEP, 2022c).

111

112 **<insert Fig. 1. here>**

113

114 Accordingly, the first session of INC (INC-1) to develop the treaty, was held from 28 November
115 to 2 December, 2022 at the Punta del Este Convention and Exhibition Centre, Uruguay (UNEP,
116 2022e). Representatives of all member states, intergovernmental organizations and United
117 Nations' bodies participated in the negotiations (UNEA, 2022b). Key issues that were discussed
118 during the session had emerged from 21 submissions from member parties. These issues included
119 the need for clear definitions of the terms such as “life cycle”, “problematic plastics”, and “circular
120 economy” (UNEP, 2022c). The scope of these terms must be defined before constructing a
121 structure for the global plastics treaty. An international framework for assessment of microplastics
122 was also suggested as they comprise the greatest, yet not the most visible, portion of marine plastic
123 pollution and have not been addressed by any policy to date (Xanthos and Walker, 2017; Rognerud
124 et al., 2022; UNEP, 2022c). Another issue highlighted during the session was the reduction and
125 elimination of virgin and single-use plastics (UNEP, 2022c). These legacy plastics further degrade
126 and fragment into microplastics, and failing to curb production could lead to global dependence
127 on unsustainable and inefficient disposal technologies (Bergmann et al., 2022). Standardizing

128 materials for feedstock, the need for harmonised labelling of plastic products across the world and
129 investing in innovations for plastic substitutes were also considered for inclusion into the treaty.
130 The committee also identified the need for a just transition and equity for the waste industry
131 workers while also maintaining synergies with existing international agreements such as the Basel
132 Convention on the Control of Transboundary Movements of Hazardous Wastes and Their
133 Disposal, The Montreal Protocol and The Paris Agreement on climate change (UNEP, 2022c).

134
135 Following its identification as a key treaty aspect, the plastics life cycle was divided into three
136 phases – Upstream, Midstream and Downstream during INC-1 as reported in UNEP/PP/INC.1/11
137 to plan specific actions for each of them (United Nations Environment Programme, 2022c). The
138 ‘Upstream’ phase involves extraction of fossil fuels and production of plastics. The priority
139 segments for countries involved in the upstream phase would include measures to reduce virgin
140 plastic production, harmonised feedstock guidelines and providing incentives for encouraging
141 recycled plastic use. Key challenges such as lack of regulation for operation licenses and industrial
142 dependence were identified for the Upstream phase (United Nations Environment Programme,
143 2022c). The Midstream phase includes designing and production of plastic-containing products
144 and distribution and trade of plastic products. Priority actions for this sector would include
145 eliminating unnecessary plastic packaging and addressing the socio-economic impacts of plastic
146 trade (United Nations Environment Programme, 2022c). The Downstream phase consists of plastic
147 disposal, including controlled and uncontrolled waste management. The priority for this phase
148 includes adoption of a circular economy while challenges include lack of awareness at the
149 household level, lack of advanced technology for sustainable disposal of plastics, illegal dumping,
150 and trade of plastic litter, respectively as reported in UNEP/PP/INC.1/11 (UNEP, 2022c).

151
152 Improving waste management technologies, increasing community awareness, and capacity-
153 building were some key priorities identified for Small Island Developing States (SIDS) (Ambrose
154 and Walker, 2023). However, lack of technical resources, funding, and workers, as well as heavy
155 dependence on single-use plastic imports remain a challenge (UNEP, 2022c), which has been
156 highlighted by the global research community (Ambrose et al., 2019; Clayton et al., 2021; Walker,
157 2023). Existing national policies to treat plastic pollution using strategies such as Extended

158 Producer Responsibility (EPR), eco-designing, national zero waste plans, and carbon tax were also
159 discussed as potential tools to be integrated into the treaty (UNEP, 2022c). EPR strategies leverage
160 corporate financial and technical resources to reduce plastic waste generated by consumers and
161 allows local jurisdictions to gain greater control over their waste streams (Diggle and Walker,
162 2020, 2022; Diggle et al., 2023).

163
164 Regarding the treaty structure, opinions differed between member states favouring either a specific
165 legally binding convention or a framework convention that is based on voluntary NAPs, such as
166 is adopted by the Paris Climate Agreement through the submission of Nationally Determined
167 Contributions (IISD Earth Negotiations Bulletin, 2022; Ammendolia and Walker, 2022; March et
168 al., 2023, 2024). Some also emphasised a hybrid treaty that contains both legal obligations as well
169 as voluntary approaches by member states (IISD Earth Negotiations Bulletin, 2022). For
170 implementation, some delegates wanted common monitoring and reporting as in The Minamata
171 Convention on Mercury, while some pointed out the need for a single and stricter global framework
172 for monitoring and evaluation that holds all the stakeholders accountable throughout the plastics
173 life cycle. Many essential questions regarding the implementation of the treaty, application of
174 global measures, ambitious baselines, and scope of the treaty remained unanswered by the end of
175 the INC-1 (IISD Earth Negotiations Bulletin, 2022). This paper provides a summary and
176 compilation of all the pre-session submissions prior to the INC-2 negotiations in Paris, France in
177 June 2023 by member countries and global expert opinions ahead of INC-2 on the framework of
178 the treaty, to support policy makers in decision making.

179

180 **2. Methods**

181 A literature review was performed using the TOPIC search (Title, Abstract and Keyword) in
182 Scopus database to look for articles related to the plastics treaty. The keywords used were “United
183 Nations”, “plastic treaty”, “plastics treaty” and “resolution to end plastic pollution”. The search
184 was limited to only peer-reviewed articles and grey literature published until January 2023. Papers
185 not published in English were excluded from the search. Of the total ‘24’ potential articles
186 discovered, only nine mentioned evidence-based suggestions for the plastics treaty structure. These

187 articles were shortlisted and included in this paper. Based on these articles, eight most mentioned
188 criteria were identified and used for further analysis (Table 1.)

189

190 <insert Table. 1. here>

191

192 All the pre-session submissions to INC-2 made only by member states were considered (n=67).
193 The literature review was completed in February 2023, so only member state submissions made
194 by February 24, 2023, were considered. In addition to submissions from member states, Norway,
195 and Rwanda as co-chairs of the High Ambition Coalition (HAC) also submitted a document. All
196 these submission documents included opinions for potential guiding principles and
197 implementation measures for the treaty (Table 2). The official United Nations documents were
198 also retrieved from the UN Official Documents System using the following search, Symbol:
199 UNEP/EA.5; Keyword: “plastic”. These documents were used to get official information about
200 the process of negotiations for the plastics treaty.

201

202 <insert Table. 2. here>

203

204 **3. International submissions for the Second session of the Intergovernmental** 205 **Negotiating Committee (INC-2)**

206 All member states and stakeholder organizations of UNEA were invited to submit their inputs on
207 guiding principles and objectives of the plastics treaty and methods that could be used for its
208 effective implementation prior to the INC-2 from 29 May to 2 June 2023 at the United Nations
209 Educational, Scientific and Cultural Organization (UNESCO) Headquarters in Paris, France
210 (UNEP, 2023). The secretariat was also asked to draft a document outlining the potential elements
211 of the treaty (UNEP, 2023). These submissions served as the basis for negotiations at INC-2.
212 Submission documents revealed varying opinions due to differing national circumstances, yet
213 multiple objectives were seemingly agreed upon.

214

215 3.1. *Status of Coalitions formed by member countries on an international legally binding*
216 *agreement to end plastic pollution*

217 Following the historic UN Environment Assembly resolution 5/14 passed in March 2022, Norway
218 and Rwanda launched the “High Ambition Coalition to end Plastic Pollution (HAC)” with 18 like-
219 minded countries that included Canada, Peru, Germany, Senegal, Georgia, Republic of Korea, UK,
220 Switzerland, Portugal, Chile, Denmark, Finland, Sweden, Costa Rica, Iceland, Ecuador, France
221 and the Dominican Republic (High Ambition Coalition to End Plastic Pollution, 2024; TRT World,
222 2022). The HAC aims to develop a legally binding instrument with strict obligations for
223 environmentally sound disposal of plastic and to end plastic pollution by 2040. They have listed
224 seven key deliverables to ensure success that include elimination of problematic plastics through
225 bans, global sustainability standards for plastic products, establishing sustainability targets
226 throughout the plastics life cycle, ensuring transparency in the plastics value chain, strengthening
227 commitments, better monitoring and reporting at every stage of plastic life cycle, and providing
228 technical and financial assistance for effective implementation of the treaty (High Ambition
229 Coalition to End Plastic Pollution, 2024). Many other member countries joined this coalition after
230 INC-1, forming a total of 51 countries, to show their support towards a strict legally binding treaty
231 and the number is still growing with 65 member countries (Fig. 2) as of March 2024 (High
232 Ambition Coalition to End Plastic Pollution, 2024). In contrast, before the meeting in Nairobi, a
233 group of countries including Saudi Arabia, Iran, Cuba, Russia, and others came together to
234 establish the "Global Coalition for Plastics Sustainability," informally known as the "low ambition
235 coalition" (Fillion, 2023; Bruggers, 2023).

236
237 This U.S.-led coalition includes countries like China, and Saudi Arabia, whose economy is
238 dependent on fossil fuel and plastic production and who advocate for a treaty that includes
239 voluntary approaches and individual NAPs (Ammendolia and Walker, 2022; March et al., 2023,
240 2024; Geedie and Volcovici, 2022). The U.S. proposes promoting national plans that allow
241 individual governments to prioritize sources and types of plastic pollution, while China believes it
242 is difficult to effectively reduce global plastic pollution with one or even many global agreements.
243 Saudi Arabia also agreed to let countries determine their own action plan without standardization
244 or obligations (TRT World, 2022).

245

246 <insert Fig. 2. here>

247

248 *3.2. Suggestions for guiding principles and objectives*

249 Most submissions prior to INC-2 aimed to have a legally binding international instrument to end
250 plastic pollution that addressed the complete life cycle of plastics and considered impacts of plastic
251 pollution on human health as a primary concern (Table 2; Table 3). However, countries like the
252 U.S., Japan, China, and Bahrain emphasised the benefits and non-hazardous nature of plastics.
253 They mentioned the need to develop a criterion for environmentally safe and sound disposal of
254 plastics. Bahrain wanted the treaty to focus on solving plastic pollution through sustainable design
255 and production of plastic products, without eliminating them (Bahrain, 2023; China, 2023; Japan,
256 2023; US, 2023). Malaysia also called for the negotiations to include potential economic benefits
257 of plastics (Malaysia, 2023). The Syrian Arab Republic and the U.S. recommended making the
258 treaty a “country-driven” instrument. Each country should be obligated to create their own national
259 plan as per its national circumstances and implement it (Syrian Arab Republic, 2023; US, 2023).
260 Australia and New Zealand both favoured a hybrid approach involving a few legal international
261 obligations as well as national coordination of treaty parties (Australia, 2023; NZ, 2023).

262

263 <insert Table. 3. here>

264

265 Thailand preferred the format of a specific convention and annexes over a framework convention
266 for the structure of the accord, while The Alliance of Small Island States (AOSIS) strongly
267 confirmed that any structure similar to the existing Paris agreement would be unacceptable
268 (Thailand, 2023; AOSIS, 2023). Morocco suggested that the treaty have smaller and clear
269 objectives with realistic targets (Morocco, 2023). Countries such as Argentina, Peru, Russian
270 Federation, Canada, Australia, and the United Kingdom expressed that the objectives and
271 principles of this global plastics treaty must be linked and guided by the existing Multilateral
272 Environmental Agreements such as the Basel, Stockholm, Rotterdam and Minamata Conventions
273 (Argentina, 2023; Australia, 2023; Canada, 2023; Peru, 2023; Russian Federation, 2023; UK,
274 2023). The Group of African States and Indonesia urged that the principles of the Rio Declaration

275 must also be considered (Indonesia, 2023; The Group of African States, 2023). However, Japan
276 conveyed that there should not be any overlap among agreements (Japan, 2023).

277
278 Sierra Leone and African states wanted the implementation of the treaty without any adverse
279 effects on biodiversity, climate or food security (Sierra Leone, 2023; The Group of African States,
280 2023). Considerations to national circumstances must also be given as situations for developing
281 and developed countries may differ. Hence, Argentina, Ecuador, and AOSIS wanted the treaty to
282 include the principle of equity and encourage participation from small countries as well
283 (Argentina, 2023; Ecuador, 2023, AOSIS, 2023). AOSIS even mentioned the involvement of SIDS
284 in promoting sustainable production technologies for plastics. Other important inclusions
285 mentioned were of “marine litter management” by Bosnia and Herzegovina as well as the
286 Federated States of Micronesia and “microplastics management” by countries such as Ecuador,
287 Monaco, and Japan (Bosnia and Herzegovina, 2023; Ecuador, 2023; Federated States of
288 Micronesia, 2023; Japan, 2023; Monaco, 2023). Along with these, the countries demanded a clear
289 and broader scope of definitions for the terms like “lifecycle”, “problematic plastics”,
290 “environmentally sound management”, and “bioplastics” (Egypt, 2023; Japan, 2023; Sierra Leone,
291 2023). Inconsistently applied definitions and the general lack of regulation for bioplastics remains
292 a hurdle for the successful development and implementation of the Global Plastics Treaty
293 (Ammendolia and Walker, 2024).

294
295 Nearly two thirds (65.6%) of the 67 submissions prior to INC-2 agreed to put a cap on virgin
296 plastic production (Table 2). Norway, Sri Lanka, Singapore, and many others mentioned the need
297 to phase out problematic and single-use plastics from the environment (Norway and Rwanda as
298 co-chairs of the High Ambition Coalition to End Plastic Pollution, 2023; Norway, 2023;
299 Singapore, 2023; Sri Lanka, 2023). Monaco stressed the urgent need to keep the production rates
300 of both fossil based and bio-based plastic polymers under sustainable limits. Secondary or recycled
301 plastics should be encouraged, while there should be a complete global ban on single –use plastics
302 (Monaco, 2023). To this, the United Kingdom added an exception for medical plastics that might
303 be necessary under certain circumstances (UK, 2023). New Zealand suggested the introduction of

304 fossil fuel subsidy reforms to curb production (NZ, 2023). The Cook Islands also stated that
305 priority must be given to dealing with legacy plastic waste and pollution (Cook Islands, 2023).

306
307 New Zealand, Ecuador, and the Syrian Arab Republic supported the consideration of waste
308 hierarchy in the treaty that involves reduction in plastics ending up in landfills or incinerators
309 (Ecuador, 2023; NZ, 2023; Syrian Arab Republic, 2023). The principles of reuse and recycling
310 were advocated for (China, 2023; Mauritius, 2023). More than 75% of member state submissions
311 prior to INC-2 supported the inclusion of measures that promote development of a circular
312 economy globally. The European Union along with many other members suggested the application
313 of economic incentives such as landfill taxes and incineration taxes to help shift the plastic waste
314 up in the hierarchy (EU, 2023). Tunisia also suggested plastic taxes as control measures (Tunisia,
315 2023). Other members suggested standardizing product designs internationally that encourage
316 sustainability (Canada, 2023; Colombia, 2023; Georgia, 2023; Morocco, 2023). Designs must
317 extend product lifespan, and ensure durability, recyclability, and safety. Nigeria also supported the
318 “buy-back model” through incentives as a control measure that targets improved sorting-at-source
319 strategies (Nigeria, 2023). In contrast, the U.S. believed that the treaty should not directly establish
320 standards as it would duplicate work of existing international standard-setting bodies like ISO and
321 ASTM (US, 2023). Morocco also supported the inclusion of product stewardship models like the
322 polluter pays principle to extend circularity in the industry (Morocco, 2023). A total of 35 out of
323 67-member state submissions prior to INC-2 called for mandatory inclusion of EPR into the legal
324 instrument (Table 2; Table 3). However, Russia stated that the limits of such responsibilities should
325 be left on parties to determine (Russian Federation, 2023).

326
327 Another recommendation was harmonised labelling of plastic products and polymers. Producers
328 should be made to incorporate transparent labelling of plastic materials that can allow informed
329 consumer decisions and facilitate reuse and recycling (US, 2023). Along with this, 34 member
330 states have shown increasing concern over the chemicals used in plastic production along with the
331 growing body of knowledge on toxic effects of chemicals used in plastics (Dey et al., 2022).
332 Countries including African States, Peru, Ecuador, Canada, Uruguay, and Monaco suggested to
333 enlist all the toxic and hazardous chemicals such as tris(2-chloroethyl) phosphate, phthalates, and

334 brominated flame retardants, all used in plastic production, in an annex as prohibited materials
335 (Canada, 2023; Ecuador, 2023; Monaco, 2023; Peru, 2023; The Group of African States, 2023;
336 Uruguay, 2023). Further, Cook Islands expressed that these annexes should be easily updated with
337 time while the European Union urged these listings to be clearly defined and science-based (Cook
338 Islands, 2023; European Union, 2023). The treaty should also be able to specify if chemical
339 restrictions apply to certain sectors only (EU, 2023). Peru suggests that all parties should be
340 obligated to phase out the use of chemicals, polymers, and plastic products listed in the annex
341 (Peru, 2023). Moreover, each member party should ensure the transparent disclosure of these
342 chemicals or polymers in the composition of products along the value chain for manufacturers,
343 importers, users, consumers, and recyclers through marking or labelling (Monaco, 2023). Monaco
344 also suggested that the secretariat establish a “central data exchange registry” where information
345 is accessible to all member states. This would help with sustainable global trading (Monaco, 2023).

346
347 Another important input for inclusion of a specific annex was from Switzerland: an annex of source
348 categories for plastic chemical releases into water, soil and air. Including sewage, industrial
349 facilities, aquaculture, agriculture, fishing, and unintentional microplastics releases from textiles,
350 all member parties must implement certain regulations and to regularly monitor these sectors
351 (Switzerland, 2023). An annex that lists all the substitutes for plastic products and criteria for
352 determining their sustainability must be added as well (Colombia, 2023). Countries like Sri Lanka,
353 Mauritius, and China expressed their concern to address the transboundary movement of hazardous
354 plastic waste and its illegal dumping into countries through the treaty, preferring the plastic waste
355 trade to be transparent and regulated internationally (China, 2023; Mauritius, 2023; Sri Lanka,
356 2023). Over 65% of member states’ submissions agreed to make regular government monitoring
357 and reporting mandatory at the national level (Table 2; Table 3).

358
359 New Zealand, Australia, and Cook Islands desired the treaty to have a provision for the inclusion
360 of traditional and indigenous knowledge. The prior and informed consent of indigenous people
361 and their nature-based solutions could be an asset when dealing with increasing plastic pollution
362 (Australia, 2023; Cook Islands, 2023; NZ, 2023). Egypt advocated including the principle of
363 common but differentiated responsibilities from the Rio Declaration, the principle of just

364 transition, and clear differentiation in implementation between developed and developing
365 countries, while Uruguay suggested that an intersessional working group which is expected to be
366 established during INC-2 should focus its work in developing prioritization criteria to support the
367 decision-making process related polymers, chemicals, and plastic products of concern measures
368 to be included in the international legally binding instrument (Egypt, 2023; Uruguay, 2023).
369 Additionally, Monaco, Japan, and other countries wanted the treaty to include non-party trade
370 measures as well (Japan, 2023; Monaco, 2023). Lastly, the U.S. wanted a withdrawal provision
371 that could be invoked after being a party to the treaty for at least three years, expressing that
372 there is no benefit in keeping parties tied into the instrument if they do not wish to be bound (US,
373 2023).

374

375 *3.3 Recommendations for implementation of the accord*

376 *3.3.1 Funding*

377 Funding plays an integral part for the implementation of any accord and all member countries
378 expressed various strategies to manage funding for the treaty. Thailand, Libya, the Group of
379 African states, Malaysia, Sierra Leone, the Federated States of Micronesia, and many others found
380 that the successful multilateral fund model of the Montreal Protocol should be adopted for this
381 treaty (Thailand, 2023; Libya, 2023; The Group of African states, 2023; Malaysia, 2023; Sierra
382 Leone, 2023; Federated States of Micronesia, 2023). Financial mechanisms need to provide
383 adequate and timely finances to the deserved member parties (The Group of African States, 2023).

384

385 The Syrian Arab Republic expressed that developed nations could be donors and the Secretariat
386 must facilitate funding from these donor countries to the ones with limited financial capacity
387 (Syrian Arab Republic, 2023). The U.S., along with Canada, supported a blended financial
388 mechanism that involved both private sectors and international financing institutions (Canada,
389 2023; US, 2023). A suggestion by the AOSIS involved a country-driven financing system where
390 each country would be obligated to determine its needs and manage its funds through EPR and by
391 undertaking the National Budget Implication calculations (AOSIS, 2023). Ghana's suggestions
392 around treaty funding focused mainly on developing Global Plastic Pollution Fee through this
393 treaty. This would not only help control plastic pollution and consumption but would also generate

394 annual revenues worth USD \$300 billion, which would be sufficient for the full implementation
395 of the obligations of this treaty (Ghana, 2023). Funding from the Global Environment Facility was
396 another option included in member state submissions prior to INC-2 for funding (Japan, 2023).

397

398 *3.3.2 Technology expansion*

399 Nearly 77% of submissions from member parties prior to INC-2 wanted a global instrument for
400 plastics that has provisions for countries to promote advancement in product designing and
401 developing circularity in their economy (Table 2). Sri Lanka, Bangladesh, and other developing
402 countries encouraged cooperation amongst members in sharing new innovations that can help end
403 plastic pollution (Bangladesh, 2023; Sri Lanka, 2023). In support, AOSIS mentioned the
404 importance of SIDS for technology development due to their small geographical and population
405 advantages (AOSIS, 2023). The AOSIS also stated that the need for technology transfer to non-
406 SIDS would be essential for them to meet their targets and obligations. Egypt also mentioned the
407 need to develop a plastic technology centre that could supervise research and innovation projects
408 for developing sustainable plastic substitutes. This instrument should also ask private sectors and
409 international technical and scientific bodies to contribute towards building green technology to
410 end plastic pollution (Egypt, 2023).

411

412 *3.3.3 National reporting*

413 Member state submissions prior to INC-2 emphasised making national reporting mandatory on the
414 domestic implementation of the treaty obligations. Russia stated the submission of these periodic
415 reports should be every three years for adaptive management, while Egypt suggested adopting
416 harmonised formats and definitions for reporting to make the assessment of implementation easy
417 through comparable statistical data (Egypt, 2023; Russian Federation, 2023). Developed countries
418 must also report their support to developing countries during that period (Egypt, 2023). The U.S.
419 stated the national reporting should be binding, precise, and relevant to obligations of the treaty. It
420 should be able to promote transparency and accountability. Simultaneously, the U.S. suggested
421 that the reporting should not be “too burdensome”, and that the governing body should try to avoid
422 duplicate reporting through other agreements (US, 2023).

423

424 3.3.4 *National Action Plans (NAPs)*

425 Another important implementation measure that was included in every member state submission
426 prior to INC-2 was the development of NAPs that cover the entire plastic life cycle (March et al.,
427 2023, 2024). Implementation must be at the national level and should include timelines and targets
428 for nations according to their national circumstances (EU, 2023). Certain requirements must be
429 decided during the negotiations, for example, the inclusion of awareness-raising activities,
430 strengthening the economy through circularity, and stakeholder engagement at local levels (EU,
431 2023). Effective policies could thereafter be shared and promoted across other countries. Japan
432 recommended a Plan Do Check Action mechanism for assessing the actions of member parties,
433 urging peer reviews and global assessments in five-year cycles (Japan, 2023).

434

435 3.3.5 *Establishment of bodies*

436 The U.S. suggested establishing a governing body such as conference of the parties that acts as the
437 main decision-making authority under the treaty (Ammendolia and Walker, 2022; US, 2023). This
438 body should be made to convene meetings, review, and evaluate implementation success, and
439 establish further subsidiary bodies within it (US, 2023). Malaysia put forward the idea of
440 establishing a scientific advisory panel and a socio-economic advisory panel to facilitate the
441 negotiations as well as the effective implementation of the agreement (Malaysia, 2023). Libya,
442 Monaco, New Zealand, and Malaysia also supported the idea of developing dedicated subsidiary
443 bodies under the main governing body for effective implementation of the goals as in the Montreal
444 Protocol model (Libya, 2023; Malaysia, 2023; Monaco, 2023; NZ, 2023). The AOSIS
445 recommended developing scientific, technical, and economic panels that comprise global experts
446 on plastic pollution and can guide countries over their NAPs (AOSIS, 2023). Similarly, the United
447 Kingdom suggested forming an Evidence and Technical Body that would be responsible for
448 regular testing of polymers, chemical additives, and the presence of microplastics in humans as
449 well as assessing the key sources for the countries to plan their actions accordingly (UK, 2023).

450

451 3.3.6 *Stakeholder engagement and capacity building*

452 Morocco believed that the treaty must ensure adequate capacity building to each country
453 (Morocco, 2023). Similarly, Indonesia wanted the treaty to acknowledge that all member states

454 are at different capacities when it comes to material processing. Hence, capacity building in
455 developing countries must be prioritized. It should be focused on technicalities of implementing
456 obligations regarding the full plastic life cycle and a circular economy, and of providing technical
457 assistance on evaluating plastic pollution (Indonesia, 2023). Some countries expressed that
458 stakeholder engagement should be encouraged and targeted more locally to solve concerns at the
459 local level of plastic pollution. The U.S. suggested adopting a multi-stakeholder action agenda that
460 promotes high-level stakeholder engagement and encourages stakeholders to act (US, 2023). This
461 agenda should promote cooperation at the global, regional, and local levels, and raise awareness
462 amongst large and diverse groups of audiences (US, 2023). According to the European Union, the
463 model for stakeholder engagement could be learnt and adopted from other conventions “such as
464 CBD, SAICM and UNFCCC, including voluntary initiatives such as the Global Partnership on
465 Marine Litter, and the ‘New Plastics Economy Global Commitment’ from EMF and UNEP” (EU,
466 2023, p. 13).

467

468 *3.3.7 Compliance*

469 Canada, the United Kingdom, and Monaco expressed that a compliance mechanism must be
470 created to ensure all the countries are meeting the objectives set by the treaty (Canada, 2023;
471 Monaco, 2023; UK, 2023). The European Union expressed that the compliance mechanism in the
472 treaty should be like that of the Minamata Convention and must be set in the text of the agreement
473 itself. Moreover, it should be created in a way that it interlinks all accountability processes for the
474 progress of the implementation (EU, 2023). Additionally, the U.S. added that it should be based
475 on the national circumstances of each country, rather than the treaty obligations. The final decision
476 should be left in the hands of member states (US, 2023).

477

478 *3.3.8 Reverse compensation system*

479 Egypt recommended establishing a digital system that could be referred to as a “reverse
480 compensation system.” This database could be used by waste collectors, intermediaries, and plastic
481 processing facilities to “document and record the quantities of recycled plastic and get a financial
482 return upon reaching their monthly goals” (Egypt, 2023).

483

484 **4. Plastics treaty suggestions from global scientists**

485 Plastic pollution has remained a topic of concern for global scientists for decades (Simon et al.,
486 2021). Scientists have reported about the detrimental effects of plastic on ecosystem and human
487 health since the early 1980s (Wang, 2023). Accordingly, scientists have published widely about
488 evidence-based options for the structure of this instrument and what should be included to end the
489 plastic problem effectively which are summarised in Table 1.

490

491 *4.1 Legally binding instrument*

492 There is currently no international treaty that addresses plastics and their waste management
493 (Diana et al., 2022; Xanthos and Walker, 2017). There are a few conventions that address plastic
494 waste disposal such as the Basel and the Stockholm Convention on Persistent Organic Pollutants
495 and The International Convention for the Prevention of from Ships (MARPOL). Other recently
496 developed policies such as the Pollution Convention on Biological Diversity (CBD) Aichi Target
497 8 and the UN Sustainable Development Goal 14 ‘Life below water’ address plastics but lack
498 effectiveness due to their non-binding nature (Walker, 2021; Diana et al., 2022). Therefore, to
499 effectively target surging plastic pollution, there is an urgent need to fill existing policy gaps. Thus,
500 experts demand for an international agreement that legally binds all countries to take necessary
501 actions to end plastic pollution (Raubenheimer and McIlgorm, 2018).

502

503 *4.2 Full life-cycle assessment of plastics*

504 Plastic pollution is ubiquitous and is generated throughout the entire plastics life cycle (Wang,
505 2023). Hence, to curb plastic pollution the complete life cycle of plastics from raw extraction to
506 end of life management needs to be addressed. Wang (2023) explains that the main challenge
507 would be to decide the division of the plastic life cycle. The instrument should cover all the stages
508 as well as stakeholders involved in each stage (Raubenheimer and McIlgorm, 2018; Raubenheimer
509 et al., 2018). These stakeholders include governments, producers, distributors, and consumers. The
510 INC must develop a harmonised approach for implementation of obligations at different stages of
511 the plastic life cycle (Wang, 2023), which was also as acknowledged in the Zero Draft and revised
512 the Zero Draft of the Plastics Treaty (United Nations Environment Programme, 2023a,b).

513

514 *4.3 Widening the scope of definitions*

515 Definitions are crucial in determining the scope for any policy. Analyzing existing conventions,
516 Raubenheimer et al. (2018) found that the gaps in their effectiveness were mainly due to the lack
517 of necessary and clear definitions. The UN Watercourses Convention defines pollution as “any
518 detrimental alteration in the composition or quality of the waters of an international watercourse
519 which results directly or indirectly from human conduct” (Raubenheimer et al., 2018, p. 212). This
520 definition is too vague and does not mention microplastics or marine plastic litter, making the
521 scope ambiguous and, thus, debatable. Similarly, MARPOL defines “all plastics” to mean “all
522 garbage that consists of or includes plastic in any form, including synthetic ropes, synthetic fishing
523 nets, plastic garbage bags and incinerator ashes from plastic products” but does not give any exact
524 definition for pollution (Raubenheimer et al., 2018, p. 212). The CBD Aichi Target 8 also fails to
525 include an exact definition of pollution, whereas the Stockholm Convention, while not providing
526 a definition for pollution, mentions certain criteria for chemicals to be listed as persistent organic
527 pollutants (Raubenheimer et al., 2018). Thus, the instrument needs to include proper definitions
528 for terms like “pollution”, “marine litter”, “problematic plastics”, “environmentally sound
529 management”, “life cycle” and “microplastics” to ensure the scope of this instrument is clear but
530 broad enough to deal with the complete life cycle and different kinds of plastics. Apart from the
531 basic definitions, criteria, and standards for plastic products, the treaty text should clarify the
532 guidelines for EPR schemes for all sectors, harmonised labelling standards, and details of national
533 reporting strategies (Simon et al., 2021; Wang, 2023).

534

535 *4.4 Extended producer responsibility (EPR)*

536 The primary concern addressed through the treaty should be to prioritize and act according to the
537 waste hierarchy that would lead to a reduction in plastic waste (Raubenheimer and McIlgorm,
538 2018). One of the most common suggestions to reduce plastic waste is to implement an EPR
539 approach. Raubenheimer and McIlgorm (2018) suggested adapting an obligation such as the
540 Norwegian amended waste regulation (No. 1289/2017) that addresses EPR and has shown positive
541 results in waste reduction. However, the polluter pays principle could be much broader and
542 acceptable in the plastics context, especially as just 56 companies are responsible for more than
543 50% of global branded plastic pollution found in the environment (Cowger et al., 2024). EPR

544 places the financial burden for recycling plastics on the producers even if they are not directly
545 polluting the environment (Diggle and Walker, 2020, 2022; Diggle et al., 2023). Additionally, lack
546 of adequate technology could be a major challenge for successful implementation of this approach.
547 Hence, negotiations need to plan an effective capacity building programs before implementing
548 EPR through the treaty (Wang, 2023), which was also as acknowledged in the Zero Draft and
549 revised the Zero Draft of the Plastics Treaty (United Nations Environment Programme, 2023a,b).

550

551 *4.5 Transparency in global trade of plastics*

552 Despite low production rates, Asian developing countries account for most of the plastic pollution
553 in the world (United Nations Environment Programme, 2022b). This is due to the illegal dumping
554 and exports of hazardous plastic waste to these countries, where it ultimately gets burned or
555 dumped in landfills (Walker, 2023). Until recently, China was reported as the world's largest
556 importer of plastic waste intended for recycling. However, the recent import ban, or the National
557 Sword Policy, by China in 2018 turned global plastic waste disposal and plastic waste trade into
558 large-scale issues as the large quantities of plastic waste previously received by China were now
559 distributed to developing countries with critically smaller recycling capacities (Walker, 2018;
560 Raubenheimer and McIlgorm, 2018). Therefore, the treaty must include a focus on regulating the
561 global plastic waste trade and making distribution within the plastic life cycle more transparent
562 (Diana et al., 2022). This could be achieved by setting guidelines and adopting common labelling
563 measures across the world. It should also work on preventing such sudden actions such as China's
564 National Sword policy from happening without prior agreement between parties (Liu et al., 2018;
565 Raubenheimer et al., 2018).

566

567 *4.6 Cap on production*

568 Bergmann et al. (2022) state that the treaty must make provisions to curb virgin plastic production.
569 The current rate of plastic production is about 450 million tons annually and is expected to double
570 by 2040 (Bergmann et al., 2022). These legacy plastics, if not properly managed, will degrade into
571 microplastics in the environment and become even harder to manage (Walker and Fequet, 2023).
572 Legacy plastic and subsequent microplastic pollution can cause irreversible damage to the
573 environment. Hence, there is an urgent need to completely phase out virgin and non-essential

574 single-use plastics from our environment by 2040 (Bergmann et al., 2022; Baztan et al., 2024).
575 Thus, the treaty must address this issue through established timelines, as acknowledged in the Zero
576 Draft and revised the Zero Draft of the Plastics Treaty (United Nations Environment Programme,
577 2023a,b).

578

579 *4.7 Regular monitoring*

580 To track proper implementation of the obligations of the treaty, national reporting should be
581 mandatory (Raubenheimer and McIlgorm, 2018; Diana et al., 2022). The reporting should include
582 details regarding production, consumption, disposal, and trade of plastics. Apart from this,
583 operating certain national monitoring programmes could also be included (Raubenheimer et al.,
584 2018). Diana et al. (2022) suggested incorporating corporate reporting that is also made available
585 to researchers and governments for analyzing policy effectiveness through implementation of this
586 treaty.

587

588 *4.8 Addressing chemicals of concern*

589 During early negotiations, >10,000 chemicals had been identified that are added to the plastics
590 during their production as additives, stabilizers, and processing aids (Dey et al., 2022; Wang and
591 Praetorius, 2022). However, this number has been revised twice since the Plastics Treaty
592 negotiations began. For example, in May 2023, it was reported that >13,000 chemicals, of which
593 >3,200 were classified as hazardous (United Nations Environment Programme and Secretariat of
594 the Basel, Rotterdam and Stockholm Conventions, 2023), and in March 2024, another report stated
595 that >16,000 plastic chemicals, with >4,200 of those considered to be highly hazardous (Wagner
596 et al., 2024). These chemicals include bisphenols, phthalates, alkylphenols, toxic metals, and flame
597 retardants and are released from plastic products throughout their life cycle and can cause harmful
598 effects to both environment and human health (Walker et al., 2022). To reduce this, Wang and
599 Praetorius (2022) suggested reducing chemical complexity of plastics through standardised
600 formulations. Also, there should be transparency in chemical compositions and quantities
601 throughout the supply chain to be better managed. Lastly, they recommend using economic
602 incentives such as taxes and levies to promote information transparency of chemicals used in
603 plastics. Producers could be charged fees based on their level of transparency of chemical

604 compositions and use of certain chemicals during manufacturing. Fees could be used to implement
605 the treaty (Wang and Praetorius, 2022). Moreover, this important issue was highlighted in the Zero
606 Draft and revised the Zero Draft of the Plastics Treaty (United Nations Environment Programme,
607 2023a,b).

608

609 *4.9 Other recommendations*

610 According to Deeney et al. (2022), the treaty must address impacts of plastics on human health
611 and plan necessary actions accordingly. At present, there is no sufficient scientific evidence readily
612 available to inform the agreement. Although there have been many submissions by various non-
613 governmental organizations to the UNEP presenting current evidence for neurotoxicity, endocrine
614 disruption, reproductive issues, respiratory problems, inflammation, increased cancer risk, and
615 damages to mental health because of pollutants released throughout the plastic life cycle, yet their
616 quantification rarely occurs at a larger or global scale as that of the treaty (Deeney et al., 2022).
617 Therefore, the negotiating committee must encourage research in product design and exposure to
618 plastic polymers and chemicals. Also, better stakeholder engagement with the health research
619 community can deliver better results (Deeney et al., 2022).

620

621 Another study by Diana et al. (2022) found that plastic bag bans and bag taxes or fees were
622 commonly applied, and on average, regulatory and economic instruments reduced plastic bag
623 consumption by 66% following policy introduction and reductions were between 40% and 90% in
624 high-income and low-income countries after adopting a fee (Diana et al., 2022). Hence, these
625 evidence-based measures could be adopted by the treaty to bring effectiveness at a global level.
626 Wang (2023) also mentions to adopt the principle of Common but Differentiated Responsibilities
627 (CBDR) that originates from the Principle 7 of the 1992 Rio Declaration, which emphasizes
628 different responsibilities based on different socio-economic considerations. This would help to
629 balance different interests between developed and developing countries during the implementation
630 of the plastics treaty.

631

632 Whilst the analysis for this study was conducted ahead of the INC-2 meeting in Paris, the authors
633 reflect on the deliberations during the five-day meeting. INC-2 was attended by delegates from

634 180 nations and dozens of stakeholders including civil society groups, waste pickers and scientists
635 from the Scientists' Coalition (<https://ikhapp.org/scientistscoalition/>). INC-2 represented the
636 second of five meetings to deliberate over nuances of text, definitions, voting, square brackets and
637 wording for the new treaty, which could come into force in 2025. The five-day INC-2 meeting was
638 marked by early exclusions of key stakeholders including independent scientists and industrial
639 lobbying (Rognerud and Walker, 2023). Delegates were able to broadly agree on key elements that
640 the plastics treaty should contain, laying the groundwork for the future legally binding agreement.
641 By the end of the five-day INC-2 meeting, nation-state representatives had taken the first steps
642 toward a legally binding plastics treaty to end plastic pollution.

643

644 **5. Conclusions**

645 The Plastics Treaty negotiations are lengthy, complex and include many stakeholders (too
646 numerous to mention), with opposing views and ambitions, making any article on this topic dated
647 even before it's reviewed, let alone revised or published which is a limitation of this study.
648 However, this study aimed to document the evolving nature of the Plastics Treaty negotiations in
649 this Perspective submitted to the 'Perspectives on the Global Plastics Treaty vol 1' of Cambridge
650 Prisms: Plastics. It is also acknowledged that the Plastics Treaty negotiations are ongoing, yet this
651 assessment was conducted after INC-1, but prior to INC-2, so another limitation of this study may
652 be that it becomes out of date as country positions change, as they have already done so.

653

654 Existing policies for managing plastics are flawed and a legally binding international instrument
655 that includes all stages of the plastic life cycle is crucial to curb plastic pollution. Of the 76
656 documents (67-member state submissions and nine peer-reviewed articles) analysed in this paper,
657 68 support formation of a global legally binding plastic treaty (Table 3). Submissions indicated
658 that, apart from being legally binding, the treaty must also include voluntary approaches such as
659 community awareness, public-private partnerships, and low carbon economy alternatives, that
660 would help balance funding for implementation. Additionally, the structure needs to have an annex
661 that includes information on regulated or banned plastic chemicals, polymers and major sources
662 of plastic waste generation. The instrument must address microplastics and both land- and marine-

663 based plastic litter, while giving proper clarification for necessary definitions to widen the scope
664 of the instrument.

665
666 Submissions from member countries were comparable to ones recommended by global peer-
667 reviewed articles. Given the limited availability of peer-reviewed literature on this topic during the
668 early stages of negotiations, our study included articles and suggestions from multiple disciplines.
669 There is an overlap between different sciences and policy recommendations for addressing
670 complex environmental challenges like plastic pollution. By integrating insights from multiple
671 disciplines, including natural sciences, economics, and policy analysis, we can develop more
672 robust and effective strategies for achieving environmental sustainability and advancing global
673 cooperation on critical issues such as plastics regulation.

674
675 The key foci of different member submissions included regulating the trade of plastics in a
676 transparent manner (44 out of 76), addressing hazardous nature of chemicals used in the plastic
677 production (38 out of 76), curbing production of virgin plastic (52 out of 76), and developing a
678 circular economy by making EPR approaches mandatory (38 out of 76). In addition, a harmonised
679 approach for designing and labelling products was generally supported by member states. For
680 implementing this treaty, many funding alternatives were suggested. A balanced approach that
681 includes funding from international institutions and involves the private sector, or establishing a
682 multilateral fund like the one in Montreal Protocol could be beneficial. National reporting, multi-
683 stakeholder agenda, establishing compliance measures and capacity building by giving special
684 emphasis to developing countries and SIDS must also be included in the treaty. These suggestions
685 were negotiated during INC-2, many were captured in the Zero Draft prior to INC-3 (United
686 Nations Environment Programme, 2023a), and subsequently expanded upon in greater detail in
687 the revised draft text of the international legally binding instrument on plastic pollution, including
688 in the marine environment (United Nations Environment Programme, 2023b). The latter document
689 will serve as the provisional agenda at the fourth session of the intergovernmental negotiating
690 committee (INC-4) in April 2024 in Ottawa, Canada in preparation to form an effective treaty by
691 2024.

692

693 **Declaration of competing interest**

694 The authors declare that they have no known competing financial interests or personal
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696

697 **Author Contributions**

698 **Hunar Arora:** Methodology, Formal analysis, Validation, Writing – Original draft preparation.

699 **Tony R. Walker:** Conceptualization, Methodology, Formal analysis, Writing – Reviewing and

700 Editing, Supervision. **Antaya March:** Writing - Reviewing and Editing. **Laura K. Nieminen:**

701 Writing - Reviewing and Editing. **Sayda M. Shejuti:** Writing - Reviewing and Editing.

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1217 **Table 1.** Summary of reports and peer-reviewed articles by global experts proposing objectives and guiding principles prior to the
 1218 INC-2 negotiations in Paris, France in June 2023.

Contributors	Legally binding treaty	Life Cycle Assessment	Clear and Broader definitions	Extended Producer Responsibility	Transparency in global trade	Cap on production	Regular monitoring	Addressing Chemicals of concern	Comments
Bergmann et al. (2022)	✓					✓		✓	Virgin plastic production should be completely banned.
Deeney et al. (2022)	✓	✓							Fossil fuel industry should be regulated. Human health impacts must be taken into account.
Diana et al. (2022)	✓	✓			✓		✓		Research that yields evidences for policymaking must be promoted. Single-use plastics must be controlled.
Raubenheimer and McIlgorm (2018)	✓	✓	✓	✓	✓	✓	✓	✓	Promotion of circular economy and protection of human health should be the focus for the treaty. Inter-organizational collaboration should be encouraged for better implementation.
Raubenheimer et al. (2018)	✓	✓	✓	✓	✓	✓	✓		The agreement should fill the gaps in the existing governance frameworks. Honolulu strategy should act as foundation for the treaty. Indicators should be used to measure effectiveness.
Simon et al. (2021)	✓	✓			✓	✓			Global value chain should be calculated. Incorporating a circular economy should be promoted using financial incentives.
Walker (2022)	✓				✓	✓	✓		Multi-stakeholder involvement can be beneficial. Measurable indicators should be used to evaluate effectiveness. Plastic production should be regulated.
Wang (2023)	✓	✓		✓		✓	✓	✓	Marine plastics and microplastics should be included in the scope of the treaty. Biodiversity conservation could be used as

									an instrument. Principle of common but differentiated responsibilities must be integrated.
Wang and Praetorius (2022)	✓		✓			✓		✓	Chemical composition in plastic manufacturing should be made transparent.

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1221 **Table 2.** Pre-session submissions (prior to the INC-2 negotiations in Paris, France in June 2023) by all member parties of UNEP
 1222 representing proposed objectives and guiding principles. Countries highlighted in green represent High Coalition Ambition members
 1223 and the other member parties are highlighted in red.
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Contributors	Legally binding treaty	Life Cycle Assessment	Clear and Broader definitions	Extended Producer Responsibility	Transparency in global trade	Cap on production	Regular government monitoring	Addressing chemicals of concern	Comments
Norway & Rwanda as Co-Chairs of High Ambition Coalition to end plastic pollution	✓	✓	✓	✓	✓	✓	✓	✓	Negative fiscal incentives supporting plastic production should be removed and treaty should ensure a coordinated global action for sound disposal of microplastics.
Armenia	✓					✓			Redesigning and recycling of plastics must be given attention.
Australia	✓	✓	✓		✓		✓	✓	Treaty should be able to control human health impacts of plastic. Circular economy must be supported through promotion of market-based instruments.
Azerbaijan	✓		✓	✓		✓		✓	Plastic waste collection and recycling technologies must be improved and biodegradable substitutes to plastic must be addressed through the treaty.
Burkina Faso	✓	✓				✓	✓		Alternatives for plastics must be promoted.
Canada	✓	✓		✓		✓	✓	✓	Incorporating circularity in the production industry through harmonised standards for product designs and labelling must be included.
Colombia	✓	✓	✓	✓	✓		✓		Financial incentives for producers to promote EPR can be adopted. Eco-labelling for plastics and quality

									standards for substitute products must also be listed in an annex.	
Cook Islands	✓	✓		✓	✓	✓	✓	✓	Control measures to avoid green washing should be decided. The treaty must adopt a rights-based approach and subsidies on fossil fuels should be eliminated.	
Ecuador	✓	✓						✓	Set criteria for identifying polymers, chemicals of concern, and plastic products to be listed in an annex.	
European union	✓	✓	✓	✓	✓	✓	✓	✓	Reduction in supply of primary plastic polymers must be ensured. A ban on microplastics which are intentionally added into consumer products should be mandatory. The treaty should also introducing non-party trade measures.	
Federated States of Micronesia	✓	✓		✓		✓		✓	Extraction, refinement and use of fossil fuels for plastics should be regulated.	
Georgia	✓					✓		✓	Special conditions to allow plastic production and provision of incentives to support circular economy must be enlisted.	
Ghana	✓			✓		✓	✓		Adoption of Global Plastic Pollution Fee (GPPF) could be an answer to all the implementation and production challenges. Investing in environmentally safe and sound global waste management infrastructure should be promoted.	
Guinea	✓	✓	✓	✓	✓		✓	✓	Establishing international standards for waste exports and determination of plastic waste export quotas after prior consent should be considered.	
Monaco	✓	✓	✓	✓	✓	✓	✓	✓	Set criteria for identifying hazardous polymers must be listed in an annex. Non-party trade measures should be addressed.	
New Zealand	✓	✓	✓				✓	✓	✓	The treaty should have time-bound and measurable targets. Traditional Indigenous knowledge should be considered. Product Stewardship models can be encouraged countries should invest into finding alternatives to plastic.

Norway	✓	✓	✓	✓	✓	✓	✓	✓	The scope of treaty should include microplastics. Non-party trade measures and introduction of incentives, fee, and tariffs at national level must be included.
Peru	✓	✓		✓	✓	✓		✓	Single-use plastic products should be eliminated across the globe and a circular economy must be promoted.
Rwanda	✓	✓	✓	✓	✓	✓	✓	✓	Global cooperation regarding product designing and use is expected. Targeted development programs must be organised for specific sectors acting as plastic waste source. National Reporting can be a useful tool.
Switzerland	✓	✓	✓		✓	✓	✓	✓	Waste hierarchy should be taken into account. Improved remediation and management of legacy plastic waste must be included.
United Kingdom of Great Britain and Northern Ireland	✓	✓	✓	✓	✓	✓	✓	✓	The scope should include microplastic management. Harmonised labelling of plastic products and providing economic incentives for businesses can promote circularity. Illegal waste dumping must be tracked.
Uruguay	✓	✓			✓	✓	✓	✓	The focus of treaty should be complete phase-out of microplastics and nanoplastics. A list of alternatives to plastics that should not be promoted due to their impact on human health or the environment must be added. An intersessional working group should be established for negotiations.
Argentina	✓	✓	✓		✓				The focus of this treaty should be on protection of human health while linking objectives with other existing international policies. The principle of common but differentiated responsibilities must be adopted.
Bahrain	✓						✓		Treaty should make shifting towards a circular economy mandatory while addressing the socio-economic impacts of plastic production.

Bangladesh	✓	✓			✓	✓	✓		A special fund for developing countries to combat plastic pollution must be introduced. Microplastic management must be given priority. Strengthening institutional capacities and integrating national and international organizations should be done. A yearly reward system can be initiated for encouragement and recognition.
Bosnia and Herzegovina	✓	✓		✓	✓	✓	✓		Management and regulation of marine litter and microplastics must be addressed. Introduction of penalties for countries who fail to manage plastic pollution and strengthening science and policy interfaces would be beneficial.
Brazil	✓	✓			✓		✓	✓	Addressing health and social impacts of plastics should be the priority and assessment of microplastics must be done.
Cambodia		✓		✓	✓	✓	✓		Financial support to low and middle income countries must be given for better plastic management. Increasing green jobs can create opportunities for development.
China		✓			✓				Improving the system to reuse of plastics must be addressed. Indicators of plastic recycling must be set and control on transboundary movements of plastic should be regulated.
Egypt	✓	✓	✓	✓				✓	Treaty should support just transition to sustainable livelihoods for waste recyclers and workers and adopt the principle of Common but differentiated responsibilities. Eco-labelling and support to green initiatives can promote circular economy.
Equatorial Guinea	✓				✓				Taxes must be put on use of disposable plastics and circular economy should be adopted.
Gabon	✓	✓		✓	✓	✓		✓	Remediation system for ocean plastic litter and positive credit mechanisms for producers must be adopted.
Group of Latin America and the	✓					✓			Traditional Indigenous knowledge and socioeconomic assessment of plastic pollution must be considered.

Caribbean Countries (GRULAC)									Research and Development projects related to plastic alternatives should be increased.
Indonesia	✓	✓		✓	✓	✓	✓		Balance between environmental protection and economic development must be maintained. The principles under Rio declaration 1992 and Principle of common but differentiated responsibility must be added.
Islamic Republic of Iran	✓	✓				✓	✓		New laws and policies to reduce hazardous plastic production should be developed nationally. Provisions for enforcing capacity-building programs for waste management and providing financial and technological support, considering national circumstances must be included.
Japan		✓				✓	✓		Overlapping with other international agreements must be avoided and a global common goal to reduce plastic should be set. Demand side management should be dealt in addition to supply side alternatives. Development of nation-wide environmentally sound waste management infrastructure should be promoted.
Kenya	✓	✓	✓		✓	✓	✓	✓	Tracking the use of plastic polymers and feed stocks should be done transparently. Definition of Environmental Sound Management (ESM) for resource efficiency should be made clear.
Kuwait	✓	✓		✓					A risk framework should be developed.
Libya	✓	✓			✓	✓			High-risk and leakage-prone plastic products must be eliminated completely. Technological and financial support should be provided for developing circular alternatives.
Malaysia	✓	✓	✓				✓		Potential economic benefits in ending plastic pollution must be included in the negotiations.
Mauritius		✓	✓		✓		✓		3Rs concept should be promoted and a No trans-boundary plastics waste dumping policy must be created. National Action Plans and capacity building to be included as well.

Morocco	✓			✓	✓	✓	✓	✓	Promoting research and development to encourage circularity in economy should be done at each level. The polluter pays principle can also be integrated with it.
Nepal	✓					✓	✓		Community based regulatory plastic waste disposal mechanism should be adopted with mandatory segregation of plastic wastes at source. A pollution control fund could be established.
Nigeria	✓	✓		✓		✓	✓	✓	Just transition for waste recyclers and frontline workers should be ensured. Buy-back model through incentives targeting improved sorting-at-source strategy can be a good approach.
Oman	✓	✓	✓		✓		✓	✓	Addressing worker safety in waste management sector and developing uniform structure for analysing and sampling marine plastic litter should be prioritised.
Palau	✓	✓	✓	✓	✓	✓		✓	Clear downstream measures for waste sorting, recycling and export of plastic waste should be identified and island nations must be promoted to participate in circular economy. Marking and tracking of fishing gears to incentivize retrieval of lost gears should be mandatory.
Papua New Guinea	✓	✓					✓		A robust financial mechanism like the Multi-Lateral Fund of the Montreal Protocol should be developed.
Philippines	✓	✓		✓	✓	✓	✓	✓	Establishment of alternatives to plastic packaging and an international compliance of plastic pollution free products must be done.
Qatar	✓	✓	✓			✓	✓		Harmonised labelling of plastic polymers should be done. Nationally determined baselines and targets for plastic production reduction must be promoted.

Republic of Moldova	✓	✓			✓	✓	✓		Socioeconomic assessments must be made through subsidiary bodies and global sustainability standards should be listed for plastics.
Russian Federation	✓	✓		✓	✓				Marine plastic litter must be addressed. Implementation of innovative wastewater treatment facilities must be done. Technical and financial assistance should be provided to developing countries.
Saudi Arabia		✓		✓		✓	✓	✓	Open and transparent communication channels should be encouraged throughout the supply chain and cross-parties collaboration is encouraged
Sierra Leone	✓	✓	✓	✓	✓	✓	✓	✓	Just transition for workers and avoiding adverse consequences of treaty implementation to biodiversity, climate or food security must be ensured. Regulations for plastic packaging across brands should be harmonised.
Singapore	✓	✓		✓		✓	✓	✓	Prevention of leakage of plastic pollution into marine environment should be ensured. Use of market-based incentives to promote circularity can be included.
Sri Lanka ₁	✓	✓	✓	✓	✓	✓		✓	There should be a control on transboundary movement of plastic waste. Standards for recycled plastic products should be developed.
State of Palestine	✓	✓			✓		✓		Prevention of marine litter and plastic chip discharge should be addressed. Strict regulations on illegal waste export should be made.
Syrian Arab Republic		✓					✓		Countries should have the independence to create their own action plan. Capacity building and introduction of modern technology to analyze and address the plastic waste should be encouraged.

Thailand	✓	✓	✓	✓		✓		✓	Reduction in plastic packaging from e-commerce should be immediately addressed. Harmonised plastic product standards must be developed.
The Alliance of Small Island States (AOSIS)	✓	✓		✓	✓	✓		✓	A structure similar to the Paris Agreement would not be acceptable and the scope must include microplastic management. Elimination of ghost-gear pollution should also be addressed.
The Group of African States	✓	✓	✓	✓	✓			✓	Principle of just transition for all the waste workers & common but differentiated responsibility should be adopted. Harmonised product design standards and labelling approach should be included in the treaty.
Tonga ¹	✓	✓			✓	✓	✓		Targets and reporting similar to Montreal protocol should be established.
Tunisia	✓	✓		✓				✓	Economic instruments like tariffs and taxes should be used. Establishing minimum recycled content requirements for plastic products should be one of the objectives.
Turkiye	✓	✓							Developing zero waste hierarchy, encouraging research and creation of green jobs should be addressed. Interactions with other multilateral environment agreements must be considered while deciding obligations of the treaty.
Uganda	✓	✓		✓				✓	Approach for providing financial incentives to promote circularity can be used. Single-use plastics must be strictly banned.
United Republic of Tanzania		✓			✓	✓	✓		The treaty should be in synergy with the Basel convention and Bamako convention. Tracking of the ingredients of plastics, plastic feedstock and polymers

									must be done. Biodegradable technologies for industries must be promoted.
United States of America _j		✓	✓	✓			✓		Treaty should be a country-driven instrument with a provision for withdrawal. Public procurement policies to reduce plastic waste must be developed. Measures for transparent labelling of plastic products and to strengthen demand for secondary plastics should be taken. National reporting should be made mandatory.
Yemen	✓	✓			✓	✓	✓		Prevention of illegal dumping and burning of plastic waste must be looked into. A pilot model to promote waste segregation at source should be developed.

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1227 **Table 3.** Summary of the number and percentage of pre-session submissions (prior to the INC-2
 1228 negotiations in Paris, France in June 2023) by category by member countries including guiding
 1229 principles proposed by global experts.

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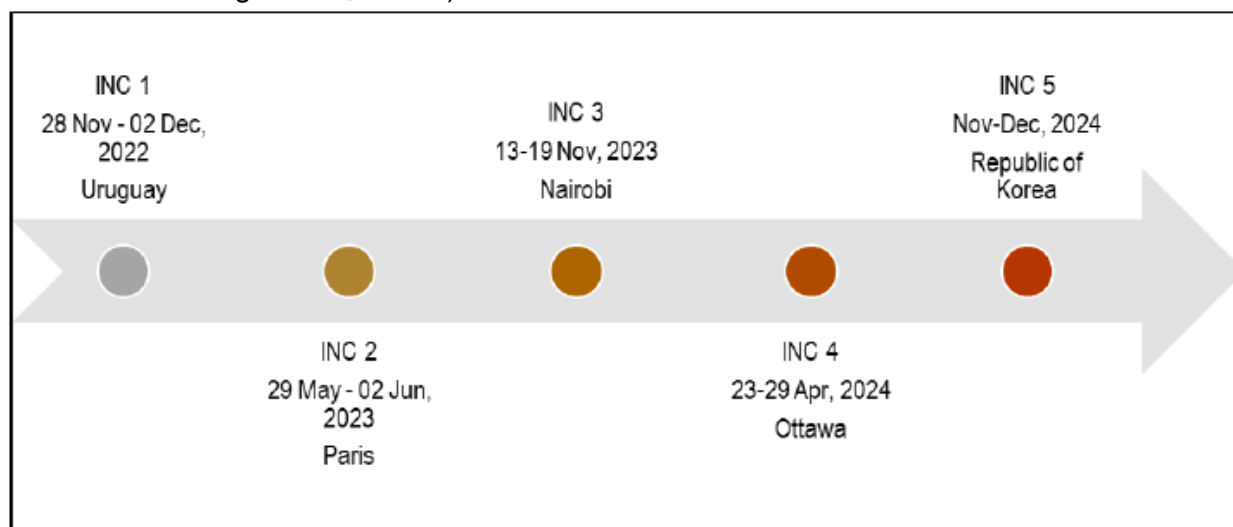
Contributors	Legally binding treaty	Life cycle assessment (LCA)	Clear and broader definitions	Extended producer responsibility (EPR)	Transparency in global trade	Cap on production	Regular monitoring	Addressing chemicals of concern
High Ambition Coalition Members (n=22)	22 (100%)	18 (81.8%)	12 (54.5%)	14(63.6%)	13(59%)	18(81.8%)	16(72.7%)	18(81.8%)
Other Countries (n=45)	37(82.2%)	40(88.8%)	13(28.8%)	21(46.6%)	26(57.7%)	27(60%)	29(64.4%)	16(35.5%)
Global Experts (n=9)	9 (100%)	6 (66%)	3 (33%)	3(33%)	5(55.5%)	7(77.7%)	5(55.5%)	4(44.4%)

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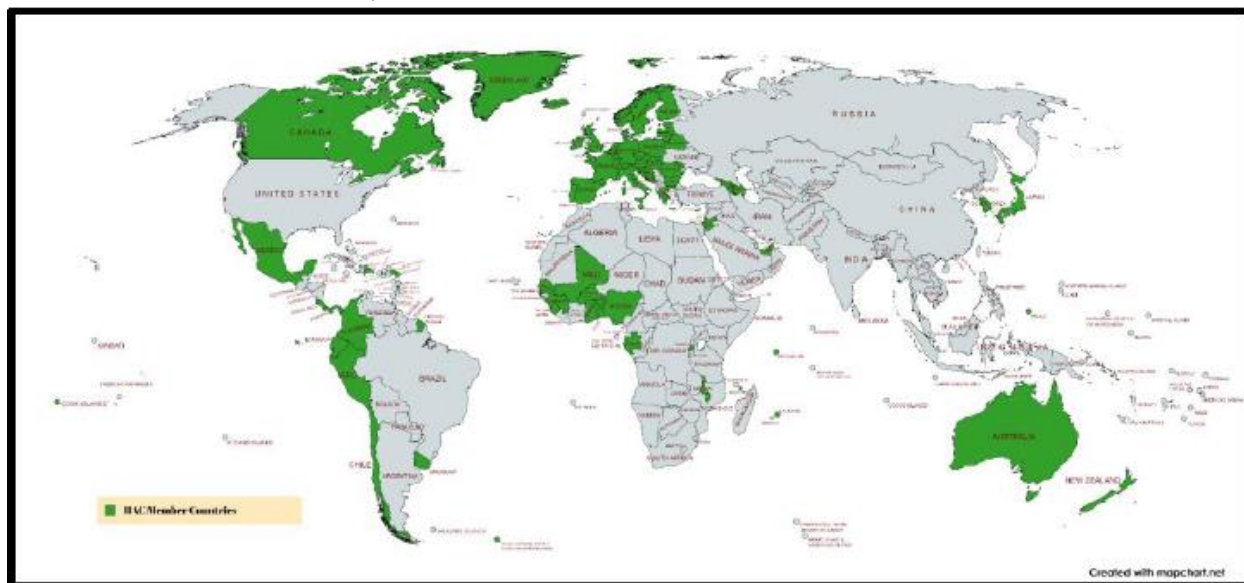
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1235 **Fig. 1.** Timeline for INC sessions (United Nations Environment Assembly of United Nations
1236 Environment Programme, 2022c).



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1239 **Fig. 2.** Countries forming the High Ambition Coalition (Data from: High Ambition Coalition to
1240 End Plastic Pollution, 2024).



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