The Role of Indigenous and Traditional Knowledge in Combatting Plastic Pollution

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Abstract

Plastic pollution is wreaking havoc in our societies, altering social, economic, cultural and environmental lives. The ubiquity of plastics and its low acquisition costs makes plastics permeate into every sector of our lives, a feature that presents difficulties in eradicating the crisis. From disrupting kinship systems to indigenous and local communities' lifestyles, reversing plastic pollution requires a whole of society approach tapping into all knowledge types and systems that may provide the required solutions. This paper underscores the critical role of indigenous and local communities and their knowledge systems in combating plastic pollution. It argues that indigenous and local communities must be included in the discourses on addressing plastic pollution as they are custodians of valuable indigenous and traditional knowledge critical for combatting plastic pollution. Taking cue from the increasing recognition of the role of indigenous and traditional knowledge in environmental conservation, the paper argues that the integration of indigenous and traditional knowledge with emerging scientific methodologies provides profound insights in the search for pathways to a plastic-free planet.

Keywords: Plastic pollution, indigenous and traditional knowledge, integration, custodians, environmental governance

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I. Introduction

> Circular economy is not a modern innovation; it is Indigenous intellectual property embedded in the lifestyles of First Peoples globally for millennia. Our response to human impacts is based on holistic restorative and regenerative principles, aiming to protect our environments and the health of future generations. It is imperative that the definition and practice of Circular Economy be led and safeguarded by the Indigenous Peoples Caucus, recognizing us as the original practitioners and custodians of this wisdom.[1]

Plastic pollution is a complex, relational and trans-sectoral global problem with profound social, economic, cultural and environmental repercussions.[2] It is characterized by pervasiveness and ubiquity, transcending borders and impacting even the most remote ecosystems.[3] Plastics have a 3.4% carbon footprint,[4] and are increasingly becoming a health emergency with notable plastic deposits found in the food chains and in the human blood stream and brain.[5] Of the plastic waste produced annually, only 9% is recycled, 70% ends up in landfills or the environment[6] and 80% of the marine pollution emanates from plastics.[7] Concerned by this worrying trend, the United Nations Environmental Assembly (UNEA) in 2022 resolved to develop a legally binding treaty to address plastic pollution, including in the marine environment.[8] Among the issues to be considered in developing the instrument, discussed at five sessions of the Intergovernmental Negotiating Committee (INC) with the 5th one held in Busan in November 2024, is traditional knowledge, knowledge of indigenous peoples and local knowledge systems. The incorporation of these systems in a multilateral environmental

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1 Lee J, 'An Indigenous Perspective is Essential for a Strong Global Plastic Treaty', 16 November 2023 — <https://www.greenpeace.org/aotearoa/story/an-indigenous-perspective-is-essential-for-a-strong-global-plastics-treaty/#:~:text='The%20Indigenous%20Peoples'%20Caucus%20(IPC,knowledge%20to%20use%20without%20us. > on 26 November 2024

2 Fuller S, Ngata T, Borrelle S and Farrelly T 'Plastics pollution as waste colonialism in Te Moananui' 29(1) *Journal of Political Ecology*, 2022, 534-560.

3 Bergmann M, Collard F, Fabres J, Gabrielsen G, Provencher J, Rochman C, van Sebille, E. and Tekman M, 'Plastic pollution in the Arctic' 3(5) *Nature Reviews Earth & Environment* 2022, 323-337; Peng X, Chen M, Chen, S, Dasgupta, S, Xu H, Ta K, Du M, Li J, Guo, Z, and Bai S, 2018. Microplastics contaminate the deepest part of the world's ocean. 9(1) Geochemical Perspectives Letters, 2018, 1-5.

4 OECD, *Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options*, 2022,

5 Campen M, Nihart A, Garcia M, Liu R, Olewine M, Castillo E, Bleske B, Scott J, Howard T, Gonzalez-Estrella J, and Adolphi N, 2024. Bioaccumulation of Microplastics in Decedent Human Brains Assessed by Pyrolysis Gas Chromatography-Mass Spectrometry. Research Square.

6 OECD, *Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options*, 2022.

7 UNESCO, 'Ocean Plastic Pollution An Overview: Data and Statistics' UNESCO – < https://oceanliteracy.unesco.org/plastic-pollution-ocean/> on 28 November 2024.

8 UNEA, *End Plastic Pollution: Towards an International Legally Binding Instrument*, Decision 5/14, UNEP/EA.5/Res.14 (March 2022).

agreement represents an increasing appreciation of the importance of these alternative knowledge and rules systems in environmental governance and the recognition of the limitation of state backed legal rules in innovating, providing solutions and regulating human interaction with the environment.

Indigenous and local communities stand at the forefront of efforts to combat plastic pollution, serving as indispensable stakeholders whose unique knowledge, lived experiences, and sustainable practices are vital to crafting effective and equitable solutions. Firstly, although indigenous and local communities contribute minimally to plastic production and consumption, they disproportionately bear the brunt of its harmful impacts.[9] Secondly, these communities maintain a deep connection with nature, having developed sustainable practices rooted in harmony with their environment, a much needed paradigm shift in rescuing the planet from environmental degradation.[10] Lastly, as custodians of nature, evidence shows that areas managed by indigenous peoples and local communities experience lower and slower rates of rise in pollution and biodiversity loss compared to other regions, making them a fertile ground for learning and exchange of knowledge.[11] Thus, any initiative aimed at addressing plastic pollution must recognize these communities as equal partners and leverage on their vast indigenous and traditional knowledge.

This paper is divided into four parts. Part I explores the nature of plastic pollution and its impact on indigenous and local communities positioning them as essential stakeholders in reversing this global crisis. Part II discusses the interaction between indigenous peoples and plastic pollution. It illuminates the disruptive nature of plastic pollution, spanning from impacts on social interactions to the loss of identity of the indigenous and local communities. Part III examines the increasing legal recognition of indigenous and traditional knowledge in addressing environmental challenges, offering a powerful alternative to state-backed legal frameworks and mainstream sciences. It argues that this recognition is not merely about inclusion, but about valuing and integrating indigenous knowledge systems alongside mainstream scientific approaches, creating a dynamic synergy. Part IV identifies the strategic entry points for these knowledge systems in tackling plastic pollution, advocating for a shift in how legal rules and policies are framed

[9] Hatfield S, 'Plastic suffocation: Climate change threatens indigenous populations and traditional ecological knowledge' 8(2) Journal of Marine and Island Cultures, 2019, 1; UNEP, Neglected: Environmental Justice Impacts of Marine Litter and Plastic Pollution, 7 April 2021.

[10] Forest Peoples Programme, Local Biodiversity Outlooks 2: The contributions of indigenous peoples and local communities to the implementation of the Strategic Plan for Biodiversity 2011–2020 and to renewing nature and cultures. A complement to the fifth edition of the Global Biodiversity Outlook.

[11] Forest Peoples Programme, Local Biodiversity Outlooks 2.

to embrace these invaluable perspectives. Through this lens, the paper calls for a transformative approach that amplifies the role of indigenous and traditional knowledge and its holders in crafting effective, sustainable solutions to plastic pollution.

II. Plastic pollution and indigenous and local communities: disruption of lifestyles and identity

Plastics have revolutionized human life and have in many ways positively impacted living conditions.[12] From healthcare, energy conservation, material preservation,[13] construction, fashion, transportation to agriculture, plastics have emerged as essential materials for human development.[14] Plastic is cheap, making it easy to integrate them into our daily lives. Plastics are also ubiquitous making them one of the greatest global environmental challenges.[15] Despite their beneficial uses, the irrational production, irresponsible use, insufficient recycling and unethical disposal of plastics is affecting the oceans, waterways, natural ecosystems, aquatic life and possess great health risks.[16] The Arctic and oceans have turned into plastic dumpsites and "plastic soup[s]".[17] Plastic clogs in urban areas cause flooding and disease breeding.[18] Accounting for nearly half of the global waste, UNEP estimates that the annual plastic pollution's social and environment costs is a conservative $600 billion while other estimates indicate $ 1.5 trillion.[19] Without a deliberate effort to reverse this trend, plastic pollution will have devastating impacts on people and the environment.

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12 Thompson RC, Moore C, Vom Saal, F, and Swan, S, 2009. 'Plastics, the environment and human health: current consensus and future trends' 364(1526) *Philosophical transactions of the royal society B: biological sciences*, 2009, 2153-2166.

13 Andrady A, and Neal, M, 'Applications and societal benefits of plastics' 364(1526) *Philosophical Transactions of the Royal Society B: Biological Sciences*, 2009, 1977-1984.

14 UNEP, Single-Use Plastics: A Roadmap for Sustainability (Rev. ed.), 2018, vi, 6; Rodrigues MO, Abrantes N, Gonçalves FJM, Nogueira H, Marques JC and Gonçalves AM, 'Impacts of plastic products used in daily life on the environment and human health: What is known?' 72 Environmental Toxicology and Pharmacology, 2019, 103239.

15 UNEP, Single-Use Plastics, 6.

16 Bidashimwa D, Hoke T, Huynh TB, Narkpitaks N, Priyonugroho K, Ha TT, Burns A and Weissman A, 'Plastic pollution: How can the global health community fight the growing problem?' 8 BMJ Global Health, Suppl 3, 2023, e012140.

17 UNEP, Single-Use Plastics, 6.

18 UNEP, Single-Use Plastics, 6.

19 UNEP, Turning off the Tap: How the World Can End Plastic Pollution and Create a Circular Economy, 2023. Beaumont NJ, Aanesen M, Austen MC, Börger T, Clark JR, Cole M, Hooper T, Lindeque PK, Pascoe C and Wyles KJ, 'Global ecological, social and economic impacts of marine plastic' 142 *Marine Pollution Bulletin*, 2019, 189-195.

It is well settled that indigenous and local communities are in many ways on the frontlines of environmental pollution.[20] They have close connection and relationship with nature and are heavily dependent on it for their livelihoods. In turn, their social, cultural, economic and political lives are intricately connected to nature and this relationship also dictates their rules of engagement with the environment.[21] They are often marginalized, poor and live in vulnerable geographical areas and ecosystems, presenting a unique combination of threats.[22] These unique characteristics puts their survival, knowledge systems, health, social and cultural way of life directly threatened by environmental degradation.[23]

Plastic pollution is already having a devastating impact on indigenous and local communities. In a study on the impact of plastic suffocation on traditional knowledge, Samantha notes that indigenous peoples' "culture and sovereignty lifeways" are negatively impacted.[24] She notes that indigenous peoples had observed and noted impacts of climate change, to which plastic pollution is inextricably linked, long before academic scientists documented these impacts. This knowledge, she notes is now under threat of extinction as indigenous peoples' adapt their lives to the new environmental realities. Whyte states that plastic pollution "disrupt[s] the ability of communities [indigenous communities] to maintain kinship and obligations to land, food, and nonhumans" resulting, in turn, of the challenging of Indigenous communities to "maintain 'collective continuance".[25] McGregor in yet another study observes that the plastic pollution is not only about nature, but has a spiritual, cultural disruption effect including on the indigenous peoples responsibility to protect the environment thus "First Nations are not simply concerned about water [quality], but have specific responsibilities to protect water. Aboriginal peoples' responsibilities and obligations to water extend to all of Creation, the spirit world, the ancestors and those yet to come; and all must be considered when contemplating actions that will affect water".[26]

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[20] UNEP, 'Indigenous Peoples and the Nature They Protect' —<https://www.unep.org/news-and-stories/story/indigenous-peoples-and-nature-they-protect#:~:text=Due%20to%20their%20subsistence%20economies,biodiversity%2C%20food%20and%20water%20security.> on 28 November 2024.

[21] UN,

[22] ILO (International Labour Office), Indigenous Peoples and Climate Change: From Victims to Change Agents Through Decent Work, 2017.

[23] UNEP, 'Indigenous Peoples and the Nature They Protect'.

[24] Hatfield SC, 'Plastic suffocation: Climate change threatens indigenous populations and traditional ecological knowledge' 8(2) *Journal of Marine and Island Cultures*, 2019, 1.

[25] Liboiron M and Cotter R, 'Review of participation of Indigenous peoples in plastics pollution governance' 1 *Cambridge Prisms: Plastics*, 2023, e16.

[26] Liboiron and Cotter, 'Review of participation of Indigenous peoples in plastics pollution governance', e16.

Plastic pollution disruptions are not limited to social life. Ngata, for instance, highlights the contaminating effect of plastics on wild food relied on by indigenous communities noting that it affects food sovereignty. It not only impacts access to traditional food but also the disruption of "complex set of relationships and obligations to families, the community, non-humans, land, language, and the food itself."[27] Further, by disrupting fishing by these communities, they have abandoned their culture associate with fishing.[28] Similar impacts are observed among the Badjao people of Philippines whose seafaring activities have been impacted, disrupting their economic, historical and cultural connection with the oceans.[29]

Indigenous people see plastic pollution as disruptive of their identity. For instance, a Māori researcher describes the problem among the Māori thus "when I re-indigenize the framing of plastic pollution, it leads me to understanding plastic as a disruptor of *whakapapa* (genealogical relationships)".[30] It is also taken to be a disruptor of *mahinga kai* (natural food systems) and *maanaki* (hosting) visitors.[31] The conceptualization of plastic pollution in this holistic understanding of environment, which is prevalent in most indigenous communities points to possible violations of the rights of indigenous peoples under the United Nations Declaration on the Rights of Indigenous Peoples[32] and the commitments of the world.

Plastics' disruption of indigenous and local communities' way of life presents a grave threat to their existence. The impacts of plastic on the environment based on science, adaptations and policy responses are intertwined with indigenous and local communities' systems. Therefore, in developing solutions, these communities are critical stakeholders whose traditional knowledge systems may present indigenous led solutions that are not currently known or used.

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27 Liboiron and Cotter, 'Review of participation of Indigenous peoples in plastics pollution governance', e16.

28 Liboiron and Cotter, 'Review of participation of Indigenous peoples in plastics pollution governance', e16.

29 Ledesma M, 'The Scourge of Plastics on Indigenous People' —<https://www.greenpeace.org/philippines/press/60973/the-scourge-of-plastic-on-indigenous-people/> on 16 November 2024.

30 Ngata T and Liboiron M, 'A Māori approach to starting research from where you are' 7(2) *Catalyst: Feminism, Theory, Technoscience*, 2021.

31 Ngata T and Liboiron M, 'A Māori approach to starting research from where you are'.

32 UNGA, United Nations declaration on the rights of indigenous peoples, UN, Washington, 2007, 12.

III. Legal protection and recognition indigenous and traditional knowledge in environmental protection

The terms "indigenous" and "traditional" knowledge while widely used have no universally accepted definition.[33] For this paper, we use the term 'indigenous knowledge' to mean the "knowledge that is held and used by a people who identify themselves as indigenous of a place based on combination of cultural distinctiveness and prior territorial occupancy" while traditional knowledge means "knowledge held by members of a distinct culture and/or sometimes acquired by means of inquiry peculiar to that culture, and concerning the culture itself or the local environment in which it exists".[34] Collectively, the term 'indigenous knowledge' is taken to mean the knowledge, practices, values and institutions of the indigenous and local communities in the utilization, conservation, and restoration of nature.

Indigenous communities live in harmony with nature, deeply relying on the environment for their sustenance, cultural practices, and way of life. Thus, the indigenous peoples' laws, social norms, customs and practices draw from and reflect a close connection with nature and their conservation efforts form part of an inherent responsibility to protect nature, which is intricately woven into their existence and that of the future generations.[35] These practices and knowledge systems are socialized into the lives of members of the distinctive communities, accumulated over time, passed down across generations and enforced through socially agreed methods. They are majorly "derived from natural resource use – some practices and beliefs acquire the force of law".[36] Although various practices encourage adherence, rarely do they hold formal legal authority and are enforced by community institutions and may have attendant sanctions.[37] Strong belief in

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33 Mugabe J, Kameri-Mbote P and Mutta D, Traditional knowledge, genetic resources and intellectual property protection: towards a new international regime, International Environmental Law Research Centre, Geneva, 2001.

34 Mugabe J, Kameri-Mbote P and Mutta D, Traditional knowledge, genetic resources and intellectual property protection, 2001.

35 OHCHR, Leaflet No. 10: Indigenous Peoples and the Environment — <https://www.ohchr.org/Documents/Publications/GuideIPleaflet10en.pdf> on 28 November 2024.

36 IIED, Protecting Community Rights over Traditional Knowledge: Implications of Customary Laws and Practices — <https://www.iied.org/sites/default/files/pdfs/migrate/14591IIED.pdf> on 20 November 2024.

37 IIED, Protecting Community Rights over Traditional Knowledge — <https://www.iied.org/sites/default/files/pdfs/migrate/14591IIED.pdf>.

supernatural powers often underpins compliance, with many customary and conservation practices driven by fear of these powers.[38]

The protection and recognition of indigenous and traditional knowledge systems have been hard-fought victories, achieved through relentless advocacy against the sweeping forces of modernity and the related persistent drive to assimilate them.[39] However, these efforts have born fruits overtime, especially in environmental protection where they have been increasingly recognized, protected and co-opted into the mainstream scientific knowledge.

Within the United Nations system, the first attempt to recognize and protect indigenous knowledge systems was in 1923 when Haudenosaunee's, Chief Deskaheh sought to address the League of Nations to defend his people's right to maintain their own lands and lifestyles.[40] A similar effort was made by T.W. Ratana, religious leader of the Maori people to protest breach of the 1840 Treaty of Waitangi.[41] While both of these attempts were unsuccessful, they sowed the seeds for the ultimate recognition and protection of the indigenous people and their knowledge systems. The remainder of this section highlights some international initiatives and agreements that have recognized and protected indigenous and traditional knowledge systems.

a) Our common future, Brutland Commission Report

The World Commission on Environment and Development, popularly known as Brundtland Commission, was appointed in 1983 to explore issues relating to sustainability, the environment and development.[42] In its report, the Brundtland Commission noted the isolation of indigenous peoples from development. However, this isolation, the Commission noted had preserved their "traditional way of life in close harmony with the natural environment"[43] that their "very survival has depended on their ecological awareness and adaptation"[44]

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38 IIED, Protecting Community Rights over Traditional Knowledge —<https://www.iied.org/sites/default/files/pdfs/migrate/14591IIED.pdf>.

39 Mugabe J, Kameri-Mbote P and Mutta D, Traditional knowledge, genetic resources and intellectual property protection, 2001

40 UNEP, 'Indigenous Peoples and the Nature They Protect'.

41 UNEP, 'Indigenous Peoples and the Nature They Protect'.

42 Manulak MW, 'The Brundtland Commission and the Seeds of Change' in Change in Global Environmental Politics: Temporal Focal Points and the Reform of International Institutions, Cambridge University Press, 2022, 139-175.

43 WCED, Our common future: Report of the World Commission on Environment and Development, G.H. Brundtland (ed), Oxford University Press, Oxford, 1987.

44 WCED, Our common future, 1987.

and these "communities are the repositories of vast accumulations of traditional knowledge and experience that links humanity with its ancient origins."[45] In addition, "these groups' own institutions to regulate rights and obligations are crucial for maintaining harmony with nature and the environmental awareness characteristic of the traditional way of life."[46] The report warned that the disappearance of indigenous communities would be a lost opportunity for society to learn the 'traditional skills in sustainably managing very complex ecological systems'.[47]

b) Rio declaration on environment and development

The acknowledgement in Brundtland Commission above paved way for the initial stages of inclusion of indigenous and traditional knowledge systems into multilateral environmental agreements. The Earth Summit of 1992 adopted the Rio Declaration on Environment and Development.[48] Principle 22 of Rio Declaration provides that the "indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices." The declaration requires states to recognize, support and enable the indigenous peoples to effectively participate in the achievement of sustainable development. In the same conference, the indigenous communities converged as the World Conference of Indigenous Peoples on Territory, Environment and Development and adopted the Kari-oca Declaration which among other things asserted their connection to the environment and their responsibility to pass nature on to future generations.[49]

c) Convention on biological diversity

The Convention Biological Diversity[50] (CBD) was also adopted at the Earth Summit in 1992. The Convention recognizes the critical role of indigenous and traditional knowledge in conservation of biodiversity. Article 8(j) of the CBD requires states, subject to their national laws and as far as possible, respect, preserve

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45 WCED, Our common future, 1987.

46 WCED, Our common future, 1987.

47 WCED, Our common future, 1987.

48 UNGA, *Report of the United Nations Conference on Environment and Development*, A/CONF.151/26 (Vol. I)

49 World Conference of Indigenous Peoples on Territory, Environment and Development, Declaration of Kari-oca — <https://www.forestpeoples.org/sites/default/files/documents/Declaration%20of%20KariOca%201992.pdf> on 28 November 2024.

50 UN, Convention on Biological Diversity, Treaty Collection, 1992.

and maintain the knowledge, innovations, and practices of indigenous and local communities that align with conserving and sustainably using biodiversity. This should be done with the consent and participation of the knowledge holders and aim to encourage its broader application.[51] States should also encourage and develop cooperation including on indigenous and technologies (indigenous and traditional knowledge technologies) and exchange in the training of personnel and experts for the conservation of biodiversity.

In order to implement the provisions related to indigenous knowledge and systems under the CBD, the conference of parties in 2000 adopted the Programme of Work on Traditional Knowledge and the Working Group to consider and develop Article 8(j) of the Convention with a mandate lasting for 20 years. This institutionalization of indigenous peoples into the CBD saw an increased participation and influence of indigenous and traditional knowledge with the following critical programmes being implemented: establishment of the International Indigenous Forum for Diversity,[52] Plan of Action for the retention of Traditional Knowledge, innovations and practices,[53] the creation of the Voluntary Fund for Indigenous Peoples to finance their participation in the CBD activities,[54] and development of various guidelines.

Upon expiry of the working group tenure in 2020, the International Indigenous Forum for Diversity and the parties to the CBD underscored the importance of creating a permanent body to advise on Article 8(j) requirements. This transition was inspired by the desire to have a permanently recognized body and provide international support including resources to the indigenous peoples and their knowledge systems. After years of negotiations, 2024 marked a historic milestone for indigenous peoples and local communities as the parties took a groundbreaking decision. In a landmark move, they recognized the critical need for the full and effective participation of these communities and established a permanent Subsidiary Body on Article 8(j) and Related Provisions.[55] This decision stands as a powerful testament to the global acknowledgment of the invaluable role indigenous peoples and local communities play in biodiversity conservation and represents a transformative step toward inclusive, equitable, and sustainable environmental governance. The subsidiary body is mandated to

51 UN, Convention on Biological Diversity, 1992.

52 UNEP, Decision adopted by the COP in its 8th meeting: Mechanisms to promote the effective participation of indigenous and local communities in matters related to the objectives of Article 8(j) and related provisions, UNEP/CBD/COP/3/38.

53 UNEP, Decision adopted by the COP in its 8th meeting, UNEP/CBD/COP/3/38.

54 UNEP, Decision adopted by the COP in its 8th meeting, UNEP/CBD/COP/3/38.

55 UNEP, Decision adopted by the COP in its 8th meeting, UNEP/CBD/COP/3/38.

advise the parties to the CBD on matters related to indigenous peoples and local communities. Additionally, it may provide advice to other subsidiary bodies and the Meetings of Parties (MOPs) of the Cartagena Protocol on Biosafety and the Nagoya Protocol on Access and Benefit-Sharing, upon request.[56]

d) UNESCO universal declaration on cultural diversity

The UNESCO Universal Declaration on Cultural Diversity recognizes that cultural diversity is a source of exchange, innovation and creativity and is as necessary for humankind as biodiversity is for nature.[57] In its Policy on Engaging with Indigenous Peoples, UNESCO acknowledges that inclusion of indigenous peoples in scientific endeavor is beneficial to the sciences and could enhance the understanding of the global environmental problems.[58] In addition, the policy states that acknowledging and valuing diverse knowledge systems can provide fresh perspectives for advancements in science, technology, engineering, water management, and sustainable development.[59] Through the policy, UNESCO seeks to foster collaboration between indigenous communities and scientists to address global challenges, including environmental, cultural, economic, and societal issues,[60] and advocates for integration of indigenous knowledge with scientific methods in disaster risk reduction, and the development of context-specific strategies and policies.[61] It also promotes the use of indigenous knowledge, innovations and practices-based climate change mitigation and adaptation solutions,[62] and the inclusion of indigenous ocean and marine knowledge in science-based approaches to sustainably manage ecosystems and protect marine resources, ensuring indigenous perspectives are integral to global sustainability efforts.[63]

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56 UNEP, Decision of the COP: Institutional arrangements for the full and effective participation of indigenous peoples and local communities in the work undertaken under the Convention on Biological Diversity, CBD/COP/DEC/16/5 (Preamble).

57 UNESCO, *Universal Declaration on Cultural Diversity*, 2001

58 UNESCO *Policy on Engaging with Indigenous Peoples* (202 EX/9; 202 EX/50).

59 UNESCO, Policy on Engaging with Indigenous Peoples (202 EX/9; 202 EX/50), para. 32.

60 UNESCO *Policy on Engaging with Indigenous Peoples* (202 EX/9; 202 EX/50), para 34.

61 UNESCO *Policy on Engaging with Indigenous Peoples* (202 EX/9; 202 EX/50), para 30.

62 *UNESCO Policy on Engaging with Indigenous Peoples* (202 EX/9; 202 EX/50), para 46.

63 UNESCO *Policy on Engaging with Indigenous Peoples* (202 EX/9; 202 EX/50), para 56

e) United Nations Declaration on the Rights of Indigenous Peoples

The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)[64] was adopted in 2007 and provides a comprehensive set of rights and minimum standards for the survival and well-being of the indigenous peoples. It affirms the contribution of all peoples to the diversity and richness of civilizations and cultures that constitute the common heritage. The declaration also recognizes that respect for the indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and environmental stewardship.[65] It guarantees among others the right to health, including traditional medicines and to maintain health practices including conservation of vital medical plants, animals and minerals,[66] maintain and strengthen their distinctive spiritual relationship with their and to uphold their responsibilities to future generations,[67] and to conserve and protect the environment.[68] It additionally provides for the right to maintain and control traditional knowledge and manifest the sciences and technologies including protection through intellectual property regimes. These rights protects both the acquisition, passing down and manifestation of these knowledge systems, including in providing solutions to environmental degradation.

f) The Paris Agreement and the United Nations Framework Convention on Climate Change

The Paris Agreement and the United Nations Framework Convention on Climate Change acknowledge the importance of indigenous, local and traditional knowledge systems in combatting negative impacts of climate change. Under the Paris Agreement, adaptation should be based on and guided by the best available science and as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems.[69] The Intergovernmental Panel on Climate Change's (IPCC) Working Group II Sixth Assessment Report noted that these

64 UNGA, United Nations Declaration on the Rights of Indigenous Peoples, General Assembly Resolution A/RES/61/295.

65 UNGA, United Nations Declaration on the Rights of Indigenous Peoples, General Assembly Resolution A/RES/61/295, the Preamble.

66 UNGA, United Nations Declaration on the Rights of Indigenous Peoples, General Assembly Resolution A/RES/61/295, art 24.

67 UNGA, United Nations Declaration on the Rights of Indigenous Peoples, General Assembly Resolution A/RES/61/295, art 25.

68 UNGA, United Nations Declaration on the Rights of Indigenous Peoples, General Assembly Resolution A/RES/61/295, art 29.

69 Article 7, Paris Agreement, 12 December 2015, 3156 UN.

knowledge systems are "useful climate change information, observations and solutions" in catalyzing climate adaptation.[70]

In order to strengthen the traditional knowledge, indigenous peoples' and local knowledge systems in climate change responses, the parties to UNFCCC have established the Local Communities and Indigenous Peoples Platform.[71] This platform has three important mandates: promote the exchange of experiences and best practices to apply, strengthen, and protect traditional, indigenous, and local knowledge systems, technologies, and practices for addressing climate change; ensure the free, prior, and informed consent of knowledge holders; and enhance the capacity of indigenous peoples and local communities to engage in the UNFCCC process.[72] This platform provides an important voice for the co-knowledge development, use and protection of indigenous knowledge systems in climate change responses.

g) African Convention on the Conservation of Nature and Natural Resources

The Convention is a comprehensive African Union instrument for environmental protection, conservation and sustainable use of natural resources. Article 4 of the Convention requires state parties to have due regard for ethical and traditional values as well as scientific knowledge in the interests of present and future generations.[73] In preserving vegetation cover, the Convention requires member states to adopt among others the sound traditional conservation.[74] The Convention also envisages the utility of indigenous knowledge in environmental protection and requires protection, recognition and prior informed consent in accessing indigenous knowledge and to active involvement of these communities in environmental planning and resources management.[75]

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[70] IPCC, Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H-O Pörtner, DC Roberts, M Tignor, ES Poloczanska, K Mintenbeck, A Alegría, M Craig, S Langsdorf, S Löschke, V Möller, A Okem, B Rama (eds)], Cambridge University Press, Cambridge, UK and New York, NY, USA, 2022, 3056 pp., doi:10.1017/9781009325844.

[71] UNFCCC, Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015, FCCC/CP/2015/10/Add.1; UNFCCC, Report of the Conference of the Parties on its twenty-third session, held in Bonn from 6 to 18 November 2017, FCCC/CP/2017/11/Add.1, Decision 2/CP.23.

[72] UNFCCC, Report of COP23, FCCC/CP/2017/11/Add.1, Decision 2/CP.23.

[73] Article 4, *African Convention on the Conservation of Nature and Natural Resources*, 15 September 1968.

[74] Article 8, *African Convention on the Conservation of Nature and Natural Resources*, 15 September 1968.

[75] Article 17, *African Convention on the Conservation of Nature and Natural Resources*, 15 September 1968.

Indigenous and local community systems have played an important role in environmental protection. While initially sidelined, the world has now realized their importance and are increasing protecting these knowledge systems and incorporating them in environmental protection. In plastic pollution, these knowledge systems are critical, in not only understanding the impacts of plastic pollution but also providing important solutions.

IV. Entry point for indigenous and traditional knowledge in plastic pollution: lessons from other Multilateral Environmental Agreements

(i) Citizen science initiatives

Indigenous and local sciences and epistemologies have increasingly been co-opted in ecological sciences as sources of knowledge to complement the mainstream sciences.[76] This co-option spans from beliefs, practices and values of harmonious living with nature, impacts of human activities to the environment as well as in-depth understanding of nature's functioning, pollution status and unique adaptation solutions. Incorporation of indigenous knowledge systems into mainstream sciences not only recognizes these knowledge systems as legitimate sources of knowledge but also allows scientific solutions that integrates the cultural, social and economic lives, providing an important buy-in for scientific solutions.

The inclusion of citizen science in plastic pollution provides enormous benefits. Firstly, indigenous and traditional knowledge systems provide first-hand experience in sustainable environmental management and impacts of plastic pollution. Secondly, over-reliance on non-indigenous and non-traditional knowledge may well exclude and limit plastic science and policy actions essential to combatting plastic pollution. Thirdly, engagement with community science allows alternative thinking in building up the body of knowledge on understanding plastic pollution, providing solutions and its impacts. These contributions are invaluable.

In biodiversity for instance, in addition to institutionalization of indigenous and traditional knowledge, the United Nations Environmental Programme among other UN organizations have long encouraged and recognized indigenous and traditional knowledge systems through promotion of diversity, sustained

[76] Forest Peoples Programme, Local Biodiversity Outlooks 2.

interaction with the sciences.[77] Indigenous knowledge systems present a new pathway for achieving long-term holistic solutions. For instance, among the Jalai Daya of Indonesia, an ideal life envisages sustainability, collectivity, naturality (organic), spirituality and holistic processes as opposed to results. Failure to achieve this ideal life is taken to be a *barau* (instance where nature is not functioning properly), representing a broken relationship with nature.[78] Tapping into these knowledge systems requires participatory research and greater appreciation and inclusion of indigenous knowledge as complementary to scientific knowledge.

(ii) Sustainable plastic management

A cardinal characteristic of most indigenous and local peoples is their relationship with nature. They imbue holistic approaches to the meaning, function and services of nature to human beings, of which they have a good understanding.[79] In addition, these approaches place a higher responsibility in human beings to protect and conserve nature with spiritual, economic, cultural and social justifications. This understanding of nature not only guides the indigenous and local communities but is also manifested in their epistemologies, ontologies, values, challenges, needs, and worldviews through which life is understood. With increasing costs of enforcing sustainable solutions, tapping into these socialization of human life and environment provides a great opportunity for environmental conservation.

Indigenous and local communities are on the frontline of plastic pollution, actively experiencing its impacts and providing innovative solutions to combat it. For instance the *igorot* practice of *ayyew* (not wasting anything) -an indigenous concept that encourages waste re-use and recycling provides an important solution that efforts to reverse plastic pollution could benefit from.[80] This principle, deeply embedded in the traditional lifestyles and practices, underscores the importance of sustainable consumption. The community has recycled waste for generations including using it for making indigenous baskets such as *pasiking*.[81] This example

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77 Forest Peoples Programme, Local Biodiversity Outlooks 2.

78 Forest Peoples Programme, Local Biodiversity Outlooks 2.

79 Lee J, 'An Indigenous Perspective is Essential for a Strong Global Plastic Treaty' — <https://www.greenpeace.org/aotearoa/story/an-indigenous-perspective-is-essential-for-a-strong-global-plastics-treaty>

80 Ledesma M, 'The Scourge of Plastics on Indigenous People' — <https://www.greenpeace.org/philippines/press/60973/the-scourge-of-plastic-on-indigenous-people/ >.

81 BESNet, Addressing Plastic Pollution while Harnessing Traditions in the Philippines — <https://www.besnet.world/addressing-plastic-pollution-while-harnessing-traditions-in-the-philippines/> on 2 December 2024

provides an opportunity to leapfrog from indigenous and local communities' knowledge and practices to reverse plastic pollution.

(iii) Alternative solutions

In addition to sustainable practices, indigenous and traditional knowledge systems may provide alternatives to plastics, effectively phasing them out. Reducing or replacing plastics with environmentally friendly indigenous alternatives not only maintains the integrity of the environment for the indigenous communities but also recognizes these systems as equal partners in providing environmental solutions. For instance, use of indigenous plants to replace plastics is now widely accepted among some communities instead of single-plastic bags and scientific research on these alternatives are ongoing.[82] With the prior, informed consent of indigenous communities, these alternatives complement efforts to combat plastic pollution. *Bilums*- used to make alternative packaging bags in Vanuatu, the packaging of *taumafautaga* using *ma'ilo* among the Samoa people and the use of *waka* in collection of marine microplastics among the *Māori* presents viable alternatives to combat plastic pollution.

V. Conclusion

Reversing plastic pollution requires a collective, global effort. It calls for marshalling of the efforts of everybody and rallying all knowledge systems. While governments are taking steps to address plastic pollution, indigenous and traditional people and their knowledge systems offer crucial complementary and alternative solutions. These systems, deeply embedded in the cultural practices of indigenous and local communities, can be integrated into mainstream efforts to create a self-sustaining and self-enforcing framework, significantly reducing implementation and enforcement costs. Leveraging these knowledge systems provides a powerful catalyst for combating plastic pollution effectively.

[82] Khan SM, Haq ZU, Khalid N, Ahmad Z and Ejaz U, 'Utilization of three indigenous plant species as alternative to plastic can reduce pollution and bring sustainability in the environment' in Natural Resources Conservation and Advances for Sustainability, Elsevier, 2022, 533-544.