Enabling Concerted Multilateral Action on Plastic Pollution and Plastics Substitutes

UNITED NATIONS

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United Nations publication issued by the United Nations Conference on Trade and Development.

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Acronyms and abbreviations

RCA   Revealed Comparative Advantage
SMEP   Sustainable Manufacturing and Environmental Pollution
UNCTAD   United Nations Conference on Trade and Development

Acknowledgements

27 January 2022

1. INTRODUCTION

Turning the tide on plastic pollution requires multiple parallel and inclusive responses within the United Nations and the multilateral trading system to succeed. Improvements in trade and domestic governance, including to promote plastic substitutes, alternatives and increased material recovery and recycling capacities, can be a sound course of action for developing countries.

This paper seeks to briefly identify the current plastic pollution challenge and the role of trade, explore options for devising a more coherent and concerted governance action within the United Nations and the multilateral trading system and to share findings on what the potential of plastics substitutes to reduce plastic pollution and enabling local sustainable manufacturing development in selected developing countries.

The paper concludes that useful, adaptable, and flexible policies are at hand to contribute to mitigate the plastic pollution globally but also in developing countries by making use of oceans and circular economy principles.

2. THE PLASTIC POLLUTION CHALLENGE AND THE ROLE OF TRADE

Plastic pollution, alongside climate change and biodiversity loss, is one of the key environmental challenges we face today. **Approximately 7,000 million of the estimated 9,200 million tons of cumulative plastic produced between 1950-2017 have become plastic waste** – about 76 per cent of total plastic ever produced. Of this plastic waste, three-quarters was discarded and placed in landfills, became part of uncontrolled and mismanaged waste streams; or was abandoned in the environment, often ending up in the ocean. Additionally, the greenhouse gas emissions from plastics in 2015 were estimated at 1.7 gigatons of carbon equivalent (GtCO2e) and are projected to increase to four-fold by 2050.[1] As governments grapple with how to tackle plastic pollution, there is increasing recognition that environment and health impacts arise across the life cycle of plastics, harming not only ocean ecosystems, coastal areas and water ways, but also causing pollution on land and in the air, including our climate.

Today, it is impossible to talk about "plastic" in the singular. Instead, we should talk about "plastics" in a comprehensive and more systemic manner. There are multiple forms of fossil fuel-based polymers, including polypropylenes, polyvinyl and Styrofoam, to mention a few. Also, a wide array of plastic inputs and packaging (so called hidden plastics) are used in vast range of agricultural, food, personal care, and other value chains globally. All these plastics have different life cycles, environmental footprints, and levels of recyclability and reusability.

Plastics are also big business and one of the most traded family of goods by all countries. The **United Nations Conference on Trade and Development (UNCTAD) estimates show that global trade in plastics reaches $1 trillion per year, or 5 per cent of total merchandise trade.**[2] **This is 40 per cent higher than previous estimates** and involves all nations in the world.

While many considered plastics as an iconic material symbolizing global progress over the 20th century, **its role is being critically re-examined today.** Concerns about growing pollution on land, water and air pollution has given impetus for multiple calls on what should and can be done within the United Nations and the multilateral trading systems to address this problem. Special momentum exists in 2021, as the issue will be highlighted through the co-sponsored Ministerial Statement on Trade and Environmental Sustainability[3] by World Trade Organization (WTO) Members,[4] to be made at the 12th Ministerial Conference of the WTO (MC12) from 30 November- 3 December 2021.

Proponents of action to deal with the plastics problem call for solutions at the source of production, at the border, at the consumer level and at disposal systems. Additionally, many consider that actions should follow the circular economy principles of **reduce, reuse, and recycle.** Further, UNCTAD has recently highlighted the opportunities to **"substitute" problematic plastics products with more natural and environmentally friendly materials (UNCTAD, 2021)** which could help enhance productive capacities in developing countries.[5]

All these actions are needed and complementary. There is not one single line of action or simple solution to this global issue.

3. DEVISING COHERENT AND CONCERTED MULTILATERAL ACTION FOR TACKLING PLASTIC POLLUTION

Tackling plastic pollution will require changes in the way we produce, trade and consume. As the international community engages in a concerted political and regulatory effort to reduce plastic pollution, a clear focus and set of actions must be identified.

A start could be to target hazardous plastics wastes, single use plastics, and to toxic, non-recyclable forms of plastics. The Basel Plastic Waste Amendments[6] for instance, aims to better regulate trade in plastic waste. There is also an increasing number of trade and production regulations limiting and phasing out single plastics use at the national level, particularly in SIDS (Barrowclough and Vivas Eugui, 2021). Waste management, including material recovery and recycling, should also be high in the agenda as a post-consumption action, alongside efforts to promote reuse, reduction, and substitution, particularly in developing countries where material recovery and recycling capacities are limited.

At the multilateral level, a growing number of countries are calling at the United Nations for a new global agreement on plastic pollution, with the goal of securing a new mandate under the United Nations Environment Assembly (UNEA) in 2022.[7] The importance of a United Nations agreement on plastic pollution rests on its potential to induce orchestrated and broader national action, which could be complemented by efforts from the multilateral trade system.

UNCTAD has been recently mandated *to "address the discharge of plastic litter and other waste in oceans and significantly reducing marine pollution of all kinds and ensuring sustainable consumption and production patterns"*[8] under the recently adopted **Bridgetown Covenant**.[9] At the WTO, a growing group of WTO Members support an **Informal Dialogue on Plastic Pollution (IDP)**,[10] **has over 53 Members** already co-sponsoring the Ministerial Declaration on plastic pollution and environmentally sustainable plastic trade at the MC12 this year.

To support action toward a coherent plastic pollution governance framework, Table 1 offers some of the actions that could be taken in parallel under the United Nations and within the multilateral trading system to address plastic pollution in the near and medium term:

Table 1. Actions to address plastic pollution in the near and medium term

United Nations (United Nations General Assembly, United Nations Environment Programme, UNCTAD, United Nations Industrial Development Organization and Food and Agriculture Organization, et al.)	Multilateral trading system (UNCTAD, WTO, World Customs Organization and International Trade Centre)
1. Forge a United Nations agreement with core overarching goals, targets, and commitments, by for example: • Setting a global goal for incrementally phasing out unnecessary, harmful, hazardous, and problematic plastics and hazardous plastics wastes. • Setting a global goal for increasing level of solid waste management and recycling linked to GHG emission reduction objectives under National Determined Contributions (NDCs).	1. Actively participate at: • WTO's Informal Dialogue on Plastic Pollution, as well as the Trade and Environmental Sustainability Structured Discussions; and the fossil fuel reform initiative. • UNCTAD's Trade, Oceans and Circular Economy fora.[11]
2. Create an international scientific advisory body on plastics pollution, effects and solutions (an International Panel on the plastics pollution).	2. Increase transparency and incrementally phase out fuel and petrochemical industry subsidies.
3. Increase understanding, scientific base and create capacities on the environmental and health impacts across the life cycle of different types of plastics and waste, how to manage associated risks and policy options.	3. Disaggregate Harmonized System (HS) codes for plastics, increasing the visibility of plastic polymers used along the value chain and their presence in international trade flows, including packaging and scrap, as well as for plastic substitutes and alternatives at the World Customs Organization (WCO) in cooperation with UNCTAD and WTO.
4. Explore the value and use of national bans/quotas/taxes on certain virgin and single use plastics under a fair, non-discriminatory, and transparent manner.	4. Increase the use and trade of environmentally preferable material substitutes (non-plastics) and alternatives (sustainable plastics) (UNCTAD, 2021).
5. Develop, require and national strategies to prevent, monitor and clean up plastic pollution in marine and terrestrial ecosystems as an implementation and monitoring tool.	5. Incrementally reduce tariffs and address non tariffs measures for environmentally sustainable and effective plastics substitutes and alternatives under: • the Generalised System of Preferences.[12] • the Global System for Trade Preferences[13] among Developing countries; and • through voluntary efforts at the WTO or through the potential launch of targeted post-Doha WTO negotiations. • In regional or bilateral trade arrangements.
6. Consider including in an eventual United Nations agreement on plastics pollution a set of minimum harmonized standards applicable at the national level - complementing trade action – focusing on production, consumption, and recycling of plastics.	6. Facilitate access to and promote incremental liberalization of preferable environmental services and minimum regulatory harmonisation, including for solid waste management and recycling at the WTO but also in relevant Regional Trade Agreements (e.g., in the African Continental Free Trade Area (AfCFTA)).
7. Increase Official Development Assistance (ODA), technical cooperation, and capacity building for solid waste and plastic management, covering up-mid-and downstream actions.	7. Enable ex ante policy coherence and mutual supportiveness between a potential plastic pollution treaty and future WTO and UNCTAD agreements.
8. Enable increased coordination of national and municipal entities - create economies of scale & scope for interested businesses in improved environmentally sound waste collection and management capacities.	8. Incorporate plastic pollution related challenges and opportunities in national green,[14] oceans economy[15] and sustainable manufacturing[16] strategies enabled by UNCTAD, UNEP, UN Global Compact and the ITC.
9. Define common metrics and methodologies for implementation and monitoring of goals, potentially through the creation of a digital platform for data transparency in plastic waste and scrap trade, including flows and notifications of prior informed consent covered by the Basel Plastic Amendments.	9. Make use and enable access and transfer of new or mature, low cost and effective technologies, including new and innovative technologies.

Source: Authors' compilation, 2021.

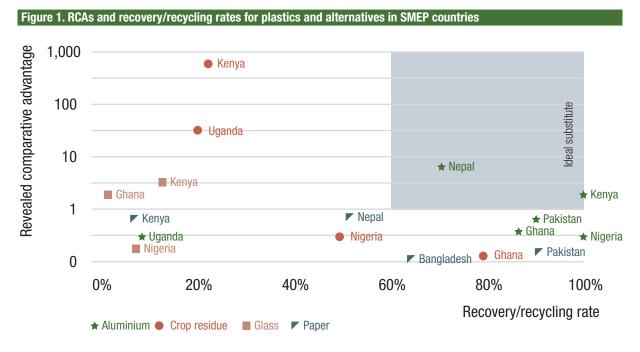# 4. PROMOTING PLASTICS SUBSTITUTES THAT ARE COMPETITIVE AND MANAGEABLE

We overconsume plastic packaging, synthetic textiles, and short-lived, fast-moving consumer goods. At the same time, we fall short of properly managing plastic and other wastes, hindering human, animal, and ecosystems health, as well as economic growth.[17] With only 9 per cent of plastic waste stock, as of 2015, being recycled (UNIDO, 2019), the long-term sustainability of the status quo is highly dubious and requires the exploration of viable solutions to the plastic waste challenge. This is especially critical for countries in Africa, Asia (Lebreton and Andrady, 2019), Latin America and the Pacific, **as they are expected to generate the majority of future mismanaged plastic waste** due to the combination of population, economic growth and unintended transboundary movement of plastic wastes through waterways and the ocean.

Circular economy solutions, which prevent waste across value chains, offers a pathway to reduce the harm caused by linear plastics consumption. To complement solutions at the post-consumption stage, it is essential to tackle the problem at source. Hence,

as part of UNCTAD's Sustainable Manufacturing and Environmental Pollution (SMEP)[18] and Oceans Economy[19] programmes, the development of material substitution is seen a necessary and complementary step towards addressing plastic pollution within a set of trade and wider response measures to market failures.

Alternatives to plastic materials and products include natural fibres, crop residues and associated products, as well as mineral based products such as aluminium, glass and clay. While these alternative materials and products could be ideal substitutes, policymakers need to assess the viability of pursuing these transitions, as material substitution ideally should be supported by competitive industries and be mindful of material recovery, environmental impact and recycling capacities for the envisioned substitute material.

As means of illustration, two indicators that can help understand the economic viability of material substitutes are **revealed comparative advantage (RCA)**[20] and **recovery/recycling rates**. RCA is an index system used to measure the relative differences in productivity between countries and is used as an approximation of a country's competitive export strength for a good. Hence, it is used as a tool for assessing the relative ability of a country to produce a good vis-`a-vis its trading partners (French, 2014). Due to these features, RCA can be a useful tool

Figure 1. RCAs and recovery/recycling rates for plastics and alternatives in SMEP countries

Source: (UNCTAD, 2021), based on COMTRADE and national sources.

for making educated assumptions on the potential industrial capacity of a country to supply alternative materials for local markets. RCA indexes greater than 1 are an indication that a product is competitive, compared to the world average. Additionally, the recovery or recycling rate for a specific material waste stream provides an indication of the effectiveness of the allocated infrastructure and capital for reuse and recycling in a particular market.

In other words, RCA indexes can suggest how competitive a country is in each material or product, and recovery/recycle rates can serve as an indicator of the efficiency of downstream management for the same material. Hence, the ideal substitute to plastics should ideally be - at the same time - competitive and have a good downstream management of wastes where it is adopted.

Using trade statistics and reported recovery and recycling rates, Figure 1 illustrates the relationship between RCA and downstream management for plastic substitutes, considering data for eight developing country examples based on the UNCTAD-FCDO SMEP programme.[21]

Except for aluminium, most plastic substitutes lie outside the ideal zone for a substitute (of high competitiveness and material recoveries). This reinforces the importance of improvements to reverse logistics, recovery, and recycling capacities for materials beyond plastics (Pacini and Golbeck, 2020) in order to ensure environmentally sound transitions. The graph also highlights the following insights on the prospects to plastics' substitutes in the country examples examined:

- Aluminium in Kenya and Nepal were identified as the best prospective alternatives to plastics today, as in both countries the material had RCAs greater than 1 and recycling rates greater than 60 per cent. These trends suggest that aluminium producers in Kenya and Nepal likely have a good starting point to partially substitute for the local demand for plastics. Attention should be given to the capacity of those countries to add value and process aluminium metal, transforming it into the end-products which substitute for plastic-equivalents.
- Kenya was found to have RCAs greater than 1 for glass (2.7), aluminium (1.5), and crop residue (490.8). Crop residues, with a high RCA index, are an interesting alternative feedstock for substitution

of plastic products in Kenya, particularly plastic food containers and single use accessories and packaging. A similar perception can be drawn based on RCA values for crop residues in Uganda. Yet, the low recovery rates for crop residues in both Kenya and Uganda (23 per cent and 20 per cent, respectively) pose challenges to this alternative. Recovery rates would need to increase significantly if crop residues are to reach scale and become a competitive feedstock to challenge plastic products in both East African countries. Doing, so will also increase resource circularity in the agricultural sector of these countries.

- Nigeria was found to have RCAs for glass, crop residue, and aluminium greater than that for plastics, even as none of these alternatives had an RCA greater than 1. This may suggest that Nigeria cannot sustainably rely on its current productive capacities for producing alternatives, to effectively replace demand for plastic products. This challenge is further compounded by the low or subpar recovery rates for glass (9 per cent) and crop residue (48 per cent).
- With an RCA of 1.6, glass in Ghana shows signs of potential usefulness as a substitute to plastics. However, as the glass recovery rate in Ghana was estimated at only 1 per cent across surveyed literature, putting a viable transition from plastics to glass in doubt. Still, with a relatively high recovery rate for aluminium (85 per cent), Ghana could sustainably replace plastics with aluminium for local bottling, especially if it succeeds to increase the industry's competitiveness vis-à-vis other countries.

The insights above show the importance of an intimate understanding of the dynamics of feedstock availability, productive capacities and value chain circularity when exploring viable alternatives to plastic products. The high recovery/recyclability rate for aluminium is probably linked to the intrinsic value of the material and to the fact that aluminium was one of the first materials to be recycled jointly with glass and certain plastics. To facilitate transitions away from plastic, policymakers, and relevant stakeholders should consider improvements in resource recovery, recycling, and industrial substitutes development in their agenda. If such mid-and downstream improvements are pursued, materials such as aluminium, crop residues, and glass could more easily displace plastics, resulting in more sustainable material transitions, particularly in developing countries.

5. THE WAY FORWARD

Turning the tide on plastic pollution requires multiple and parallel responses within the United Nations and the multilateral trade system to succeed.

It also requires bottom-up, detailed analysis and action at the domestic level, redesigning incentives towards less overall resource usage. A greater cohesion between decarbonization commitments, such as countries National Determined Contributions (NDCs), and material governance should also be pursued, to reinforce the push for more sustainable materials which reduce our dependency on fossil-based plastics. Discussions around a United Nations agreement on plastic pollution attest to the importance to induce broad and orchestrated national action, as a complement to ongoing initiatives at the multilateral trading system.

Action by Members within the multilateral trading system will be essential **to shift incentives from plastic trade and consumption towards increased trade of substitutes and higher provision of environmentally sound waste management services.**

Tools such as addressing tariff and non-tariff measures to promote trade in plastic substitutes, phasing out subsidies to fossil fuels and polymer production, promoting investment in waste management services, rechannelling ODA towards waste management and recycling, updated international standards in related to plastic pollution can support more sustainable trade, and facilitated transfer of innovative technologies could provide the right market signals for a faster transition.

Assisting developing countries in this material transition is fundamental, given high growth rates especially in Africa and South Asia. Enabling private entrepreneurs to m**ore circular resource use patterns and enabling private entrepreneurs to roll out productive capacities is at the heart of the challenge.**

These and other innovative ideas need to be seriously discussed **to find the right policy mix, align efforts, and promote mutually supporting action.** The Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade (IDP) in the WTO and UNCTAD consensus-building efforts have open the doors for a serious and collective response under the umbrella of the multilateral trading system. Under its new mandate set by the Bridgetown Covenant, UNCTAD stands ready to keep helping member states to address this challenge.

While plastic owns its name and success to its special physical properties, the response by the United Nations and the multilateral trading system to the plastic pollution challenge must have equivalent properties by being **malleable, useful, adaptable, and lightweight.**

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1   United Nations, "Plastic pollution on course to double by 2030", 21 October 2021.

2   UNCTAD, "Global plastic trade 40% bigger than previously thought, study finds" 3 March 2021.

3   World Trade Organization, document INF/TE/IDP/W/3.

4   As of 16 November 2021, there are 53 countries co-sponsoring the Ministerial Statement on Trade and Environmental Sustainability for the 12th Ministerial Conference of the World Trade Organization It is expected that this number will increase before these dates.

5   World Trade Organization, document JOB/TE/63.

6   For more information, see Basel Convention Plastic Waste Amendments (2019).

7   See for example: International Institute for Sustainable Development, "Ministerial Calls for Global Agreement on Marine Litter, Plastic Pollution" 7 September 2021; and U.S. Department of State, "Secretary Antony J. Blinken at an Ocean Plastics Event" 18 November 2021.

8   TD/L.435; see para.76 of the Bridgetown Covenant of the 15th Session of the United Nations Conference on Trade and Development, 3-7 October 2021 (GE.21-14321(E)).

9   United Nations Conference on Trade and Development, The Bridgetown Covenant (From inequality and vulnerability to prosperity for all) document TD/L.435.

10 World Trade Organization, "Plastics pollution dialogue advances discussions, eyeing MC12 outcome" 21 June 2021.

11 For more information, see UNCTAD Trade and Environment.

12 For more information, see UNCTAD Generalized System of Preferences.

13 For more information, see UNCTAD Global System of Trade Preferences.

14 For more information, see Supporting Member States in developing and launching sustainable product export strategies through National Sustainable Product Export Reviews.

15 For more information, see UNCTAD Evidence-based and policy coherent Oceans Economy and Trade Strategies (OETS).

16 For more information, see UNCTAD Sustainable Manufacturing and Environmental Pollution (SMEP).

17 World Bank, "Plastic waste is a growing menace, and a wasted opportunity", blog, 6 April 2021.

18 Supra note 16.

19 For more information, see UNCTAD Oceans Economy and Fisheries programme.

20 Revealed comparative advantage (RCA) is based on Ricardian trade theory, which posits that patterns of trade among countries are governed by their relative differences in productivity. Although such productivity differences are difficult to observe, an RCA metric can be readily calculated using trade data to «reveal» such differences. While the metric can be used to provide a general indication and first approximation of a country's competitive export strengths, it should be noted that applied national measures which affect competitiveness such as tariffs, non-tariff measures, subsidies and others are not taken into account in the RCA metric. For more information, see https://unctadstat.unctad.org/en/RcaRadar.html.

21 Supra note 16.