



**COMMUNICATION ON TRADE IN PLASTICS, SUSTAINABILITY AND DEVELOPMENT BY
THE UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (UNCTAD)**

This document is circulated at the request of the delegations of **Fiji** and **China**.

The following communication, dated 8 June 2020, was received from the United Nations Conference on Trade and Development (UNCTAD) secretariat, represented by the Division on International Trade and Commodities.

1 INTRODUCTION

1. I have the honour to submit the following contribution to the WTO Committee on Trade and Environment (CTE), in order to provide information and analysis to Members when discussing “trade, plastic pollution and a sustainable plastics economy” and transitions to a more circular economy. This submission also seeks to complement and respond to some of the topics listed in a recent concept note by Fiji and China on “creating a sustainable plastics economy: a WTO role in reducing plastics pollution” presented in a special workshop at the margins of the WTO Committee on Trade and Environment in November 2019¹ and in other follow-up events.² This submission has been prepared within the context of paragraph 55 (f) of UNCTAD’s Maafikiano Mandate, which invites UNCTAD “to continue to address the nexus between trade, development and environment, and of UNCTAD’s ongoing work to advance Sustainable Development Goals 9 (industry, innovation and infrastructure), 12 (responsible consumption and production), 13 (climate action), 14 (life below water), 15 (life on land), and 17 (partnership for sustainable development). It addresses a number of specific aspects of ongoing discussions, including: trade in plastics and sustainability challenges; recent multilateral developments; development considerations relating to trade in plastics and sustainability challenges; a synopsis of the geography of trade and trade-related plastic policies; the case for plastic substitutes; and the current UNCTAD contribution toward reducing plastic pollution and a more circular, sustainable plastics economy.

2 TRADE IN PLASTICS AND SUSTAINABILITY CHALLENGES

2. Plastics is a term commonly used to describe a wide range of organic, synthetic and semi-synthetic materials that are used in a vast and growing range of applications. In chemical terms, all plastics, including synthetic fibres (i.e. nylon) and elastomers (i.e. rubber bands), are polymers; large molecules composed of multiple units. The production of plastic and other polymers today embraces a wide set of upstream sectors closely linked to oil and gas refining, and petrochemical industries. Plastic can also be produced from non-fossil fuel inputs, such as cellulose and other biomaterials, but such production today is marginal.

3. Plastics have become important across all industries due to characteristics including versatility; durability; diversity in density; solidity; lightweight; insulating properties; low production costs; and colourful presentations. The recent COVID-19 pandemic emergency measures have underlined the contribution and benefits of plastics used in prophylactic, testing, medical materials and devices, and in food conservation. The short-term rise in demand for plastics in the context of this medical emergency does not, however, negate the enduring need to pursue greater sustainability in the plastics economy and reduced plastic pollution.³

4. The plastics industry makes over 30 different types of plastic polymers, which have distinctive properties and applications, and are mixed with other materials in different degrees. Depending on their composition and purity – and their combination with other materials in final products – they also have different levels of potential for recycling and reuse. When linked to trade, plastics can be clustered in six main groups:⁴

- a. **Primary plastics** (e.g. resin pellets, powders, plates, sheets or strip);
- b. **Plastic-based inputs** (e.g. synthetic fibres, foils, pipes, gooses, parts of other manufactured products, etc);
- c. **Plastic-based finished goods** (e.g. toys, clothes, and furniture);
- d. **Plastic packaging materials** (e.g. bottles, bags, and boxes);
- e. **Plastic waste/scrapped plastics** (e.g. already utilised plastic goods or packaging, pure, mix recyclable or not);
- f. **Secondary plastic waste materials** (e.g., recycled plastic inputs).

¹ What role for the WTO in addressing plastics pollution? Workshop co-organized by China, Sri Lanka and Morocco, 25 November 2019. Room S1 of the WTO, Geneva, Switzerland. See: https://www.wto.org/english/tratop_e/envir_e/cte_week_251119_e/china_251119.pdf.

² Informal consultations held at the WTO on 19 February 2020, co-hosted by China, Fiji and the Graduate Institute.

³ Barrowclough, D. and C. Deere, Birkbeck (2020) “Transforming the Global Plastics Economy: The Political Economy and Governance of Plastics Production and Pollution,” Global Economic Governance Programme and SNIS Working Paper 2020, University of Oxford and Swiss Network of International Studies.

⁴ Deere Birkbeck, C (2020). *Strengthening International Cooperation to tackle plastics pollution: options for the WTO*. Graduate Institute (2020).

5. Each of these six groups can be traced to a certain degree through international trade statistics. However, there are important 'hidden' trade flows of plastics, such as those embedded in other highly-trade goods, used in transportation and distribution, and which form part of the packaging associated with branded products, especially for cosmetics and personal hygiene products, as well as processed, packaged foods. In such cases, the usual classifications for the purposes of generating trade statistics do not readily enable an assessment of the value or volume of associated plastic that is exported or imported.⁵

6. Globally, 8.3 billion tonnes of virgin (non-recycled) plastic has been produced to date. From this amount, 6.3 billion tonnes of plastic waste had been generated.⁶ Plastic production exceeds 300 million tonnes annually and if current trends continue, another 33 billion tonnes will have accumulated around the planet by 2050. Over two-thirds of plastic consumption comes in the form of packaging, such as containers and bags, and building inputs, such as plastic pipes and vinyl siding.⁷

7. Plastic pollution is considered one of the most pressing global environmental challenges alongside climate change and biodiversity loss. This is mainly due to the polluting effects of plastics production and disposal processes on the air, water and ecosystems, as well as on human and animal health. Plastic production, disposal and waste management are responsible for significant greenhouse gas emissions, including through open-air incineration and energy intensive recycling and incineration facilities. For example, it has been estimated that plastic-related greenhouse gas emissions may represent more than 1 per cent of the global annual carbon budget⁸ and could represent up to 15 percent of it by 2050, if no action is taken.⁹

8. About 75 per cent of all plastic ever produced has become waste.¹⁰ It is estimated that the cost of plastic waste externalities plus the cost associated with greenhouse gas emissions from plastic production is US\$40 billion annually.¹¹ Increases in the production and use of plastics plus unmanaged plastic waste disposal is generating significant concerns for developing countries, as they are large producers, consumers, exporters, and importers of different forms of plastic.

9. Main developing as well as developed countries concerns about the plastic economy relate to ecosystem pollution (air, water, and land); health and safety impacts for all living organisms; imports of hazardous and other plastic wastes without prior informed consent; lack of waste management capacity and costs of building capacity and clean-up; impacts on infrastructure (rivers, roads, sewage and water systems); participation in plastic supply chains; opportunities for diversification and more value-added in the context of demands for greater sustainability; business opportunities linked to provision of waste management services; impacts that plastic pollution policies will have on key exports; and product substitute shifting challenges, among others.

⁵ The available data are likely to significantly under-estimate the true volume of plastics produced and traded. Deere Birkbeck, C. Barrowclough D and Christen, J (forthcoming). *Global trade Flows in the Plastics Sector*, Global Economic Governance Programme and SNIS Working Paper 2020, University of Oxford and Swiss Network of International Studies. Data based on the United Nations International Trade Statistics Database (UN Comtrade), UNCTADstat's Merchandise Trade Matrix, and the Base pour l'Analyse du Commerce International (BACI database).

⁶ Geyer, Jambeck, and Law (2017). *Production, use, and fate of all plastics ever made*. Science Advances, July 2017. See <https://advances.sciencemag.org/content/3/7/e1700782>.

⁷ GRID-Arendal (2018). *Trade in Plastic Waste*.

⁸ A carbon budget refers to the tolerable quantity of greenhouse gas emissions that can be emitted in total over a specified time.

⁹ Barra, Ricardo and Sunday, Leonard (2018). *Plastics and the circular economy*. STAP, GEF and UNEP. See: <https://www.thegef.org/sites/default/files/publications/PLASTICS%20for%20posting.pdf>.

¹⁰ United Nations (2019). *Advancing Sustainable Development Goal 14: Sustainable fish, seafood value chains, trade and climate*. See: <https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2576>.

¹¹ UNEP (2014). *Valuing Plastic: The Business Case for Measuring, Managing and Disclosing Plastic Use in the Consumer Goods Industry*. See: file:///C:/Temp/-Valuing_per_cent20plastic_per_cent20the_per_cent20business_per_cent20case_per_cent20for_per_cent20measuring_per_cent20managing_per_cent20and_per_cent20disclosing_per_cent20plastic_per_cent20use_per_cent20in_per_cent20the_per_cent20consumer_per_cent20goods_per_cent20industry-2014Valuing_per_cent20plasticsF.pdf.

3 RECENT MULTILATERAL DEVELOPMENTS ON PLASTICS WASTE AND MICROPLASTICS

10. At the 14th meeting of the Conference of the Parties to the Basel Convention (COP-14, April–May 2019), Parties adopted amendments to Annexes II, VIII and IX¹² to the Convention (the so-called plastic amendments) with the objective of better regulating the transboundary movements of hazardous plastic wastes and other plastic wastes, including mixtures of such wastes, and therefore subject to its Prior Informed Consent (PIC) procedure. The plastic amendments also clarify that plastic wastes destined for recycling and almost free from contamination (e.g. certain single polymers or mixtures) remain excluded from the PIC procedure, allowing such flows to serve as inputs for the recycling business. With the entry into force of the Basel Convention Ban¹³ and Plastic Waste amendments, respectively in 2019 and 2021, it will be more difficult for Parties to the Basel Convention to trade hazardous plastics and other plastic wastes unless destined for environmentally soundly managed recycling or disposal. The amendments show that Parties' actions can allow the adaptation of existing multilateral environmental agreements (MEAs) in response to evolving sustainability challenges, including those related to trade. As the Basel Convention plastic waste amendments have not yet entered into force, it is too early to assess its impact on trade flows of plastic waste and scrap. However, it is expected that the amendments will contribute to curbing flows internationally due to PIC requirements among Parties to the convention.

11. In November 2019, the United Nations Environment Assembly (UNEA) adopted a resolution on marine plastic litter and microplastics¹⁴ that include the development of guidelines for the use and production of plastics, development and implementation of national or regional action plans, and the compilation of assessments on the effectiveness of relevant strategies and approaches to combat marine plastic litter and microplastics.

4 THE DEVELOPMENT DIMENSION OF TRADE IN PLASTICS.

12. Developing countries are key players in the global plastics economy. They are not only among the world's largest producers and consumers of plastics and plastic products, but also key suppliers of feedstocks used in plastics manufacturing, the main destination for plastic waste exports, and an important source of plastic leakage into the environment.

13. Plastic production in the developing countries grew at rates significantly above the world average in the first two decades of the 21st century.¹⁵ As a result, the Global South (including China) has surpassed the developed world in overall plastics production. The combined share of developing countries in global plastics output rose from 43.5 per cent in 2009 to 58 per cent in 2018, while the participation of developed countries contracted from 52.5 per cent to 39 per cent and the stake of transition economies remained unchanged at 3 per cent.¹⁶ Two in every three jobs in the manufacture of plastic products are now concentrated in the Global South: the industry is estimated to generate 7.7 million direct jobs in developing countries, compared to 2.9 million jobs in developed nations and 500,000 in transition economies.¹⁷ Plastics manufacturing and processing operations

¹² Amendments to Annex II (new entry Y48), annex VIII (new entry A3210), and annex IX (new entry B3011 replacing existing entry B3010). See <http://www.basel.int/Implementation/Plasticwaste/Amendments/tabid/8339/Default.aspx>.

¹³ The Basel Convention "Ban Amendment" provides for the prohibition by each Party included in the proposed new Annex VII (Parties and other States which are members of the OECD, the European Union, Liechtenstein) of all transboundary movements to States not included in Annex VII of hazardous wastes covered by the Convention that are intended for final disposal, and of all transboundary movements to States not included in Annex VII of hazardous wastes covered by paragraph 1 (a) of Article 1 of the Convention that are destined for reuse, recycling or recovery operations. Ban Amendment was a way to address challenges faced by developing countries and countries with economies in transition in controlling imports of hazardous and other wastes they were unable to manage in an environmentally sound manner but continued to receive. See: <http://www.basel.int/Implementation/LegalMatters/BanAmendment/Overview/tabid/1484/Default.aspx>.

¹⁴ UNEA (2019). UNEP/EA.4/Res.6. This is part of the UNEA resolutions on marine litter and microplastics. UNEP/AHEG/2019/3/INF/2. See: https://papersmart.unon.org/resolution/uploads/unep.aheg.2019.3.inf.2_compilation_of_resolutions.pdf.

¹⁵ PlasticsEurope (2019). *Plastics – the Facts 2019*. Figures include thermoplastics, polyurethanes, thermosets, elastomers, adhesives, coatings and sealants and PP-fibres, but exclude PET-fibres, PA-fibres and polyacrylic-fibres.

¹⁶ Ibid.

¹⁷ UNCTAD (forthcoming). *The Development Dimension of Trade in Plastics*.

are unevenly distributed among developing regions, with developing Asia¹⁸ alone accounting for 53 per cent of the industry's global employment in 2018.¹⁹

14. Developing countries accounted for half of the world's plastics consumption in 2016, closely followed by developed nations (44 per cent) and transition economies (6 per cent).²⁰ The prominent role of developing countries as plastics consumers is due mainly to their large populations, as annual per capita plastic consumption in the Global South (27 kg) is low compared to the levels observed in North America (139 kg), Western Europe (136 kg) and Japan (108 kg).²¹ Nevertheless, per capita consumption is growing rapidly in many developing countries due to rising incomes, increased urbanization and shifts in consumption patterns.

15. Developing countries are key suppliers of raw materials to the global plastics industry. This is especially true for countries with large crude oil and natural gas sectors, as 99.5 per cent of plastics are derived from petrochemical feedstocks.²² As demand for fossil fuels for energy is expected to decline in the future, the industry forecasts that petrochemicals will become a key driver of demand for oil and gas, largely in the form of feedstocks for the manufacture of plastics.²³ Notably, 27 developing countries and 5 transition economies derived more than a third of total merchandise export revenues from fossil fuels in 2017.²⁴ In particular, five developing countries (Algeria, Angola, Brunei Darussalam, Iraq and Nigeria) derived over 90 per cent of total merchandise export revenues from oil and gas alone. Now more than ever before, fossil fuel dependent countries face the urgent challenge of diversifying their economies towards more sustainable and inclusive sectors due to historically low oil prices, less travel demand due to the COVID-19 pandemic, and national policies to curb greenhouse gas emissions.

16. Industrialised nations and emerging economies both play a key role in global plastics trade. Total exports in primary plastics are preliminarily estimated to amount to US\$343.5 billion in 2018.²⁵ The United States of America and Saudi Arabia each represented approximately a tenth of the global export market.²⁶ The main importers of primary plastics were China, Germany and the United States. Total exports of synthetic fibres, the biggest component of the plastic-based inputs group, was estimated at US\$475 billion in 2018. China was the main exporter, with a 40 per cent share, followed by Germany and Viet Nam, and the United States was the main importer.²⁷ Exports of 'empty' plastic packaging materials (as products in their own right) were dominated by China with US\$52 billion exported in 2018 (19 per cent of total exports) and Germany (10 per cent).²⁸ In addition to this trade in empty plastic packaging, tens of millions of tonnes of additional plastic packaging are integral in thousands of products traded internationally.

17. Exports of plastic waste, parings and scrap were estimated at US\$4.3 billion in 2017 (excluding re-exports), with 71 per cent originating in developed countries, most notably in the European Union (40 per cent), the United States (15 per cent) and Japan (12 per cent).²⁹ Imports were concentrated in the developing world (75 per cent), particularly in China (64 per cent). As imported waste plastics can cause serious and irreversible environmental pollution, China banned the import of non-industrial plastic waste in 2018. Later other trading partners in developing Asia, including Indonesia, Malaysia, the Republic of Korea, Thailand, Viet Nam, and Taiwan Province of China also imposed

¹⁸ Developing Asia excludes Japan, the Caucasus, Central Asia and Western Asia.

¹⁹ PlasticsEurope (2019) and UNCTAD (forthcoming). Latin America and the Caribbean come at a distant second place (10 per cent), followed by the Middle East and Northern Africa (5 per cent) and sub-Saharan Africa (1 per cent).

²⁰ UN Environment (2018). *Mapping of global plastics value chain and plastics losses to the environment (with a particular focus on marine environment)*.

²¹ Ibid. Substantial variance exists among developing regions, with Latin America and the Caribbean and China having the highest rates (56 kg and 45 kg, respectively), and Africa and India the lowest (both at 13 kg).

²² European Bioplastics (2017). *Bioplastics market data*.

²³ BP (2018). *BP Energy Outlook 2018*.

²⁴ UNCTAD (2019). *Commodities and Development Report 2019: Commodity Dependence, Climate Change and the Paris Agreement*.

²⁵ Deere Birkbeck, C. Barrowclough D and Christen, J (forthcoming). *Global trade Flows in the Plastics Sector*, Global Economic Governance Programme and SNIS Working Paper 2020, University of Oxford and Swiss Network of International Studies.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid. This is an under-estimation as packaging can be used in other applications.

²⁹ UNCTAD calculations based on UN Comtrade.

their import restrictions due to the limited capacity of local waste management systems and following public outcry, when some incoming shipments were also revealed to contain hazardous plastic waste. In 2019, global trade in plastic waste was 46 per cent lower than before the introduction of those import bans³⁰.

18. Development-related constraints on the capacity of developing countries to manage waste are a major source of plastic pollution. Nearly 93 per cent of global macroplastic leakage into the environment is estimated to originate in developing countries, mostly through the mismanagement of solid waste (open dumping and inadequate landfilling) and littering.³¹ In addition, developing countries are estimated to be the source of 62 per cent of global microplastic leakage, from sources as varied as laundry, cosmetics, personal care products, tyres and city dust.³² Improved solid waste management and wastewater treatment coverage could help prevent the leakage of macroplastics and microplastics into inland waterways and oceans.

19. SDG 12 on sustainable consumption and production is of particular relevance to the plastics economy. A change of paradigm away from linear production models and towards a circular economy entails both reduced production and increased reuse and recycling of plastics and plastic products. To promote international circular supply chains and prevent developing countries from becoming a dumping ground for undesirable wastes, challenges at hand include greater transparency on the treatment of waste exports, improved measures to prevent illegal or unsustainable waste shipments, and international agreement on definitions of key terms, such as "recyclable" and "biodegradable" products.

20. The proliferation of restrictions on the sale and consumption of certain types of plastics also affects trade in downstream industries that use or incorporate plastics and that are of importance to developing countries. For example, restrictions on plastic use could make it more burdensome and expensive for exporters to ensure product freshness and meet sanitary and phytosanitary requirements, and also for recycling companies to find reliable sources for inputs.

5 THE GEOGRAPHY OF TRADE AND TRADE-RELATED PLASTIC POLICIES

21. Awareness of and policy action on plastic pollution as a systemic issue linked to global trade is increasing. Over the past decade, the number of WTO notifications of trade measures involving plastics increased at a rate of 28 per cent annually.³³ From 2015 onwards, members have progressively shifted to plastic-selective policies as opposed to horizontal measures including plastics, for which notifications have been diminishing (figure 1). Plastic-selective policies made up 86 per cent of plastic-related measures notified to the WTO in the biennium 2017-18 compared to 56 per cent in 2015-16. This trend may have further accelerated in recent times following international and national policy developments, including the recent Basel Convention's amendments related to plastic waste and the implementation of extraordinary measures in response to the COVID-19 pandemic, especially when related to medical materials and devices.³⁴

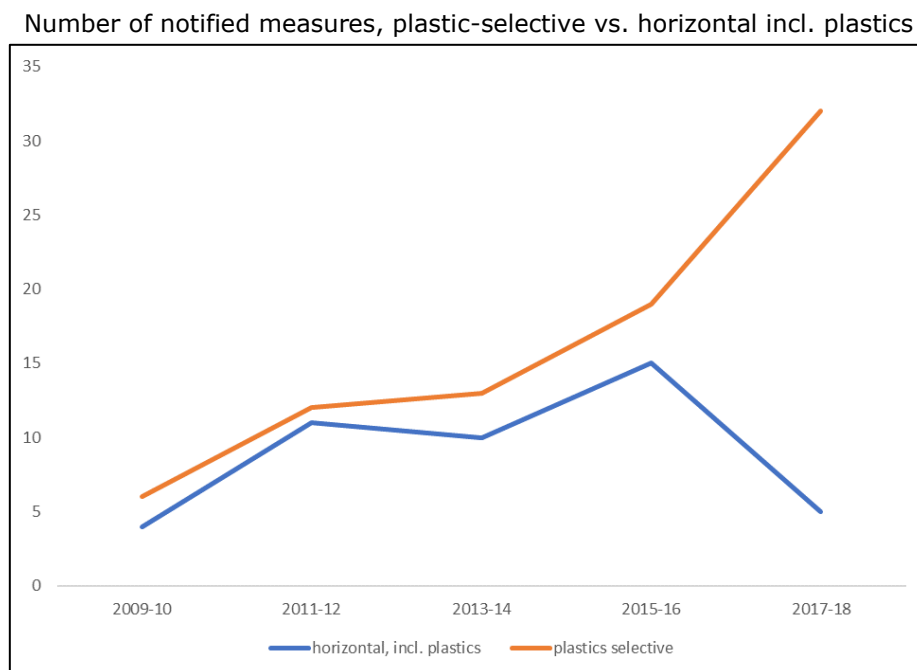
³⁰ Ibid.

³¹ UN Environment (2018).

³² Ibid.

³³ Compound annual growth rate (CAGR).

³⁴ At the time of writing, some trade restrictions in the form of import and export bans and controls were starting to emerge on certain vital medical materials and devices (among which a number of plastic products such as personal protective equipment (PPE), animal trade and certain food stocks in order to avoid shortages or further transmission vectors by some countries. See WTO notifications on COVID-19 at https://www.wto.org/english/tratop_e/Covid19_e/Covid19_e.htm.

Figure 1. Plastics trade and trade-related measures notified to the WTO, 2009-18

Source: UNCTAD analysis on data from the WTO Environmental Database (2020).

Note: Analysis conducted on a sample of 127 measures listed in 104 notifications by 43 Members. The sample was derived from a bulk extraction of notifications containing the keyword "plastic" (n=128). Measures regulating non-plastic goods whose notification only incidentally mentions plastics, or whose primary objective is not to address plastic pollution or plastic-related environmental and health concerns were excluded. Selective measures are policies with a clear and unequivocal focus on plastics in terms of object (product) or purpose, while horizontal measures are policies that apply to a basket of goods or material inputs, including but not limited to plastics.

22. The mix of plastics trade and trade-related environmental measures notified by members changes with development status. At the global level, technical barriers to trade (TBTs) - in the form of technical regulations and specifications (45 per cent) or conformity assessment procedures (12 per cent) - make up the bulk of notifications (57 per cent) (table 1). Import licenses, notified as licensing procedures (17 per cent) or quantitative restrictions (3 per cent), are also widely used trade measures, as is the case for import bans and prohibitions (10 per cent). Developed economies rely to a larger extent on technical regulations or specifications (67 per cent of notified measures), provide subsidies to private firms in the form of direct transfers (14 per cent) and have public procurement schemes in place (14 per cent). By contrast, policy tools such as import licenses and bans/prohibitions are commonly used by developing countries and they account for 27 per cent and 10 per cent of notified measures respectively. One out of four measures notified by least developed countries (LDCs) is a conformity assessment procedure.

Table 1. Plastics trade and trade-related measures notified to the WTO, 2009-18

Number and share of notified measures, by type of measure and development status of reporter

| WTO Agreement | Harmonized types of measures | World | | Developed economies | | Developing and transition economies | | Least developed countries (LDCs) | |
|--|--|--------|-------|---------------------|-------|-------------------------------------|-------|----------------------------------|-------|
| | | Number | Share | Number | Share | Number | Share | Number | Share |
| Government Procurement | Public procurement | 3 | 2% | 3 | 14% | - | - | - | - |
| Import Licensing Procedures | Import licences | 21 | 17% | - | - | 21 | 23% | - | - |
| | Import quotas | 3 | 2% | - | - | 3 | 3% | - | - |
| | Export licences | 1 | 1% | - | - | 1 | 1% | - | - |
| Quantitative Restrictions | Ban/Prohibition | 7 | 6% | - | - | 6 | 7% | 1 | 6% |
| | Import licences | 4 | 3% | - | - | 4 | 4% | - | - |
| | Export licences | 1 | 1% | - | - | 1 | 1% | - | - |
| Sanitary and Phytosanitary Measures | Ban/Prohibition | 1 | 1% | - | - | 1 | 1% | - | - |
| | Technical regulation or specifications | 1 | 1% | - | - | 1 | 1% | - | - |
| Subsidies and Countervailing Measures | Grants and direct payments | 4 | 3% | 3 | 14% | 1 | 1% | - | - |
| | Tax concessions | 3 | 2% | - | - | 3 | 3% | - | - |
| Technical Barriers to Trade | Ban/Prohibition | 5 | 4% | 1 | 5% | 2 | 2% | 2 | 13% |
| | Conformity assessment procedures | 15 | 12% | - | - | 11 | 12% | 4 | 25% |
| | Technical regulation or specifications | 57 | 45% | 14 | 67% | 34 | 38% | 9 | 56% |
| | Risk assessment | 1 | 1% | - | - | 1 | 1% | - | - |
| Total | <i>Country group</i> | 127 | 100% | 21 | 100% | 90 | 100% | 16 | 100% |
| | <i>All sample</i> | | 100% | | 17% | | 71% | | 13% |

Source: UNCTAD analysis based on data from WTO Environmental Database (2020)

Note: See note to figure 1. Totals may not sum up to 100 due to rounding.

23. The policy spectrum of trade-related environmental measures notified to the WTO is diverse and reflects the comparative advantage of developed vs. developing economies in the production and export of different plastic goods. Measures range from product standards for limiting leakage of microplastics into the environment (e.g. cosmetics, textiles and toys) to bans on imports of single-use plastic bags. In general, developing countries tend to rely more on “defensive” policies with a strong import focus. Prohibitions on import of certain types of plastic waste are a case in point. On the other hand, policies by developed economies tend to focus on regulating or supporting economic activities in a way that encourages shift to green or circular business models. These include, for example, schemes for public procurement of eco-friendly products and incentives for the use of plastic waste as inputs.

6 A CASE FOR PLASTIC SUBSTITUTES: OPPORTUNITIES AND CHALLENGES FOR DEVELOPING COUNTRIES

24. A key area of interest for promoting a more sustainable plastic economy is to make use of existing substitutes that can perform the same or similar functions than plastic but without its negative health or environmental impacts. Here, when referring to plastic substitutes, the focus is on non-fossil fuels based plastic materials from mineral or organic/biomass origins. Such non-plastic substitutes could allow the reduction and/or phase out chemically based polymers used in certain value chains, if sufficient incentives and demand emerge, and/or if the imposition of restrictions on plastics and requirements for use of non-plastic substitutes continue to increase.

25. Developing countries are key suppliers of materials that may substitute plastics in some of their functions, while reducing negative impacts on the environment and human health, including materials such as jute, cotton, natural rubber, milk protein, and paper and cardboard. Increased demand for these products could create trade and investment opportunities and promote sustainable development in the Global South. For example, jute production is concentrated in developing countries, which accounted for 92 per cent of exports in 2019, with Bangladesh (74 per cent) and

India (9 per cent) being the main suppliers.³⁵ Likewise, developing countries accounted for 94 per cent of natural rubber exports in 2019, with Thailand (31.5 per cent), Indonesia (30 per cent) and Côte d'Ivoire (8.5 per cent) being the principal suppliers.

Table 2 below presents an illustrative list of some of the top potential plastic substitutes that could be identified for analysis and further research.

| Table 2: Illustrative list of potential top plastic substitutes | | | | | |
|--|--|--|--|--|--|
| Product | Origin | Main uses | Properties | Health impact | Environmental impact |
| Glass | Sand based | Food and pharmaceutical products containers, and construction material | Solid, fragile, flexible, insulating, microwavable, heavy but tradable | Very good insulating material and non-toxic ³⁶ | It does not contain chemicals or carbon (only minerals), reusable, 100 per cent biodegradable and recyclable |
| Pottery and ceramics | Mineral and water based | Tableware, container and ornamental uses | Solid, fragile, flexible, supports heat, heavy but tradable | Non-toxic material | Reusable, 100 per cent biodegradable and recyclable |
| Natural fibres | Plant-based (e.g. jute, cotton, coconut, palm) | Textiles, packaging, ropes, clothes, furniture, etc | Strong, flexible, light, and fully tradable | Non-toxic. Production can allow carbon stocks | Reusable, 100 per cent biodegradable and recyclable. |
| Paper and cardboard | Cellulose based | Bags, boxes, packaging, decoration, inputs industrial products | Flexible, light, and fully tradable | Non-toxic | Reusable, 100 per cent biodegradable and recyclable. Increase in use may generate pressure on timber extraction, unless from managed or certified forests or from recycling. |
| Rice husks & other organic wastes | Organic wastes | Cups, cutlery, dishes, construction components and inputs for composite materials | Flexible and light, and tradable. | Non-toxic with insulation properties | 100 per cent biodegradable |
| Milk protein | Casein-based | Furniture cushions, jewels, and packaging | Flexible and light, and tradable. | Non-toxic with insulation properties | 100 per cent biodegradable |
| Natural rubber | Plant based latex (a natural polymer) | Used before plastics as the main elastomer. ³⁷ Shoes, toys, containers, tubes, auto | Strong, flexible, light, insulating, microwavable, and fully tradable | Natural rubber is not toxic. Toxicity comes from chemical additives applied in manufacture | Pollution effects after disposal. It can be reused, recovered and recycled with certain limitations (e.g. after vulcanisation ³⁸ and use but some polluting effects). Level of recyclability depends on process used and chemical |

³⁵ UNCTAD calculations based on UN Comtrade.

³⁶ Of the material itself. It is assumed it not mixed with toxic chemicals.

³⁷ A polymer with viscoelasticity.

³⁸ Vulcanization refers to a range of processes for hardening rubbers.

| Table 2: Illustrative list of potential top plastic substitutes | | | | | |
|---|--------|----------------------|------------|-----------------|--|
| Product | Origin | Main uses | Properties | Health impact | Environmental impact |
| | | parts, and clothing. | | of by-products. | additives applied. Slow biodegradability. Rebuilding caoutchouc tree farms can increase carbon stocks. |

Source: UNCTAD compilation (2020) based on literature review. Additional research would be needed to better understand current trade flows of these baskets of nature based plastic substitutes and how demand and production could be scale up in order to reduce plastic use in relevant value chains.

26. Table 2 clearly shows that these types of substitutes do not generate health risks and can directly assist in the creation circular economy circuits by reducing plastic use and by enabling the reuse and recyclability of materials. Importantly, each of these are environmentally friendlier or preferable if compared to the plastic alternative (perhaps apart from by-products of natural rubber). Many additional plastic substitutes exist, but the ones listed above are among those environment friendly products and commodities that are highly traded and where production within existing value chains could be expanded. Many of these products are also key exports from developing countries that could play a larger role in shifting from a less plastic intensive or non-plastic economy. Further, it is also important to note that plastic substitutes offer important employment and livelihood opportunities with developing countries, and likely more than in plastic value chains as the former are labour intensive. Also, production and processing of natural fibres can have positive employment opportunities for women. The value of global jute exports stood at above US\$210 billion in 2018,³⁹ for instance, with considerable further opportunity for growth, value addition and innovation. Bangladesh recently presented to the WTO on the importance of trade in jute for sustainable development as a versatile and complementary response the impacts of plastic pollution both on the terrestrial and marine environment.⁴⁰ Currently, the Bangladesh jute industry employs about 500,000 people and earns annual revenue of US\$620 million.⁴¹ Exploring the production and commercial of non-fossil fuel plastics substitutes could allow substitutability, emergence of new business, local employment and opportunities for development in many cases with existing technologies.

7 UNCTAD'S CONTRIBUTION TO THE TRADE IN PLASTIC AND SUSTAINABILITY DEBATE

27. At UNCTAD, plastic pollution and waste management have been identified as challenges to be addressed when promoting sustainable manufacturing, circular economy, and sustainable blue economy approaches. Research and policy dialogue on plastic pollution and waste have been developed within the context of UNCTAD's work streams on oceans economy,⁴² circular economy,⁴³ financing a global green deal, and statistics. Efforts are also being deployed to analyse trends on trade in plastics and identify plastic substitutes that can reduce plastic use and support the growth of related industries in developing countries. In addition, UNCTAD is partnering with the United Kingdom's Department for International Development (DFID) to deliver some aspects of the Sustainable Manufacturing and Environmental Pollution (SMEP) programme,⁴⁴ which will generate evidence and identify practical solutions for reducing plastic pollution.

28. UNCTAD is also contributing to initiatives on the transformation of the global plastic economy in partnership with the Graduate Institute of International and Development Studies, on the role of financial, institutional and industrial policies and synergies with efforts to promote a Global Green

³⁹ Global Trade (2019). *Global Jute Market 2019 – Bangladesh Continues to Dominate Exports, Despite Decline in the Past Few Years*. See: <https://www.globaltrademaq.com/global-jute-market-2019-bangladesh-continues-to-dominate-exports-despite-decline-in-the-past-few-years/>.

⁴⁰ Presentation by the Permanent Mission of Bangladesh to the WTO, 27 November 2019.

⁴¹ ILO (2016). *Jute means jobs in Bangladesh*. See: https://www.ilo.org/dhaka/Informationresources/Publicinformation/features/WCMS_511710/lang--en/index.htm.

⁴² See <https://unctad.org/en/Pages/DITC/Trade-and-Environment/Oceans-Economy.aspx>.

⁴³ See <https://unctad.org/en/Pages/DITC/Trade-and-Environment/Circular-Economy.aspx>.

⁴⁴ See <https://unctad.org/en/Pages/DITC/Trade-and-Environment/Sustainable-Manufacturing-Environmental-Pollution.aspx>.

New Deal to address the climate crisis,⁴⁵ and on the impacts of marine plastic pollution with the International Oceans Institute.

29. UNCTAD stands ready to support Member States under its traditional pillars of policy research, technical cooperation and consensus building in the trade in plastics realm. At the request of Member States, a more precise mandate could be given to the UNCTAD secretariat at the forthcoming UNCTAD 15 Ministerial Conference to cooperate with the WTO, UNEP, the Basel, Rotterdam and Stockholm Conventions Secretariats, FAO and UNECE in supporting Member's actions on trade in plastics and sustainability, including on plastic substitutes.

⁴⁵ See UNCTAD (2019). Trade and Development Report: Financing a Global Green New Deal. Geneva and New York. ISBN:978-92-1-112953-3.