UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

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Plastic Pollution Background, context and INC negotiations

Zanzibar Circular Economy Training Workshop
11 March 2025

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Trade, Environment, Climate Change and Sustainable Development Branch

SMEP | Sustainable Manufacturing and Environmental Pollution Programme

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UK International Development
Partnership | Progress | Prosperity

Plastics – a blessing, then a curse?

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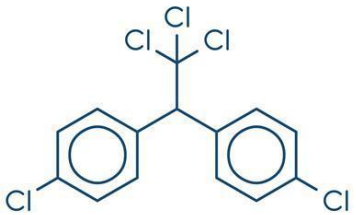
A bit of history: https://www.nexojornal.com.br/grafico/2021/07/26/a-historia-ilustrada-de-um-saber-plasticos

An innovation that came as a Blessing…. And then a curse?



DDT

Controlling Action only came … after a health argument was made.

Estimated life years gained per 1,000 tonnes of plastic waste recycled/upcycled

Country	Project	Final Product	Life gained per 1 thousand tonnes of waste plastic recycled	
			Total (days)	*Total (DALY)*
Ghana	Ghana Clean-up Project	Plastic board	**1 year**	1.076E+00
Kenya	Flipflopi Project	Plastic boat	**24 years**	2.45E+01
Nigeria	GIVO Project	Recycled plastic flakes	**4 years**	3.98E+00
Zimbabwe	Chinhonyi University Project	Plastic tiles replacing cement titles	**50 days**	1.36E-01
		Plastic tiles replacing clay titles	**189 days**	5.19E-01

Calculations do not account for biodegradables <-> health interactions

Source: SMEP(2024) & Journal of Cleaner Production (forthcoming)

UN trade & development | UNCTAD | 60 years

Polyethylene Terephthalate	High-Density Polyethylene	Polyvinyl Chloride	Low-Density Polyethylene	Polypropylene	Polystyrene	Other Plastic
						
Drink bottles, polyester fabrics, food packaging	Chemical containers, toys, milk bottles	Pipes, window frames, disposable gloves	Plastic bags, shrink wrap, pallet wrap	Food containers, rugs, medical items	Packaging, car parts, appliance parts	Car parts, bottles, safety equipment, food containers
Usually Recycled	Generally Recycled	Occasionally Recycled	Sometimes Recycled	Generally Recycled	Occasionally Recycled	Rarely Recycled
Light, clear	Solvent resistant, UV resistant	Electric insulator, durable, flame retardant	Impact resistant, chemical resistant	Hinges, heat resistant	Heat resistant	Impact resistant, soluble, UV resistant

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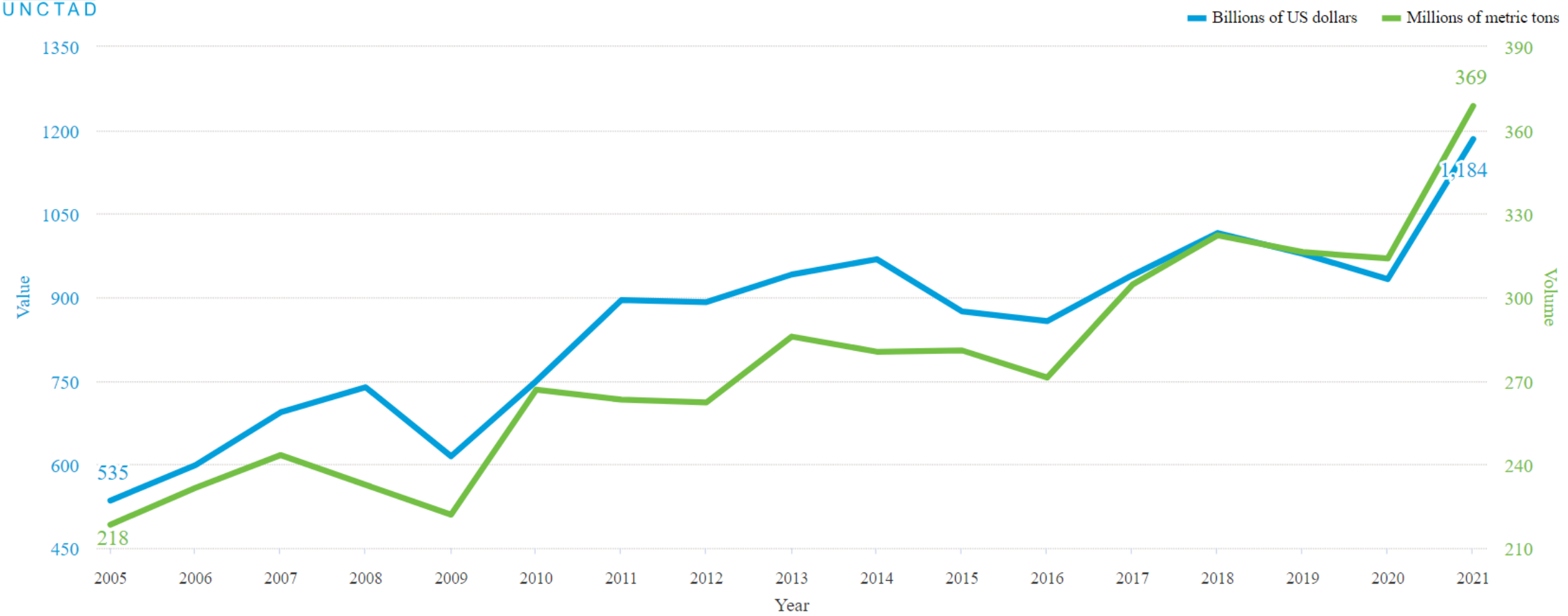
The soaring global plastics trade

Value and volume of global plastic goods exports between 2005 and 2021, billions of US dollars, millions of metric tons



Source: UNCTADstat based on calculations using UN Comtrade

Note: Total plastics trade has been aggregated across five stages of the life-cycle of plastics: primary forms of plastics, intermediate forms of plastics, intermediate manufactured plastic products, final manufactured plastic products, and plastic waste. The hierarchy table used for the aggregation of Harmonized-System six-digit is available on the UNCTADstat Classifications website.

Plastics trade: USD 1.2 trillion per year

The distinction between plastic substitutes and plastic alternatives

Plastics substitutes are natural materials that have similar properties to plastics, while plastic alternatives include bioplastics or biodegradable plastics.

Plastic substitutes		Plastic alternatives
Mineral, plant, marine or animal	ORIGIN	Bioplastics or Biodegradable plastics
Recyclable, reusable, biodegradable, compostable, or erodable	PROPERTIES	Recyclable, biodegradable, or compostable (end of life)
Should have lower environmental impact along their life cycle	IMPACT	Should have lower GHG lifecycle emissions when compared to plastics
Should not be harzardous for human, animal or plant life	SAFETY	Should not be harzardous for human, animal or plant life
Non-plastics		**Better plastics** (in principle)

Source: UNCTAD Vivas Eugui & Pacini (2022). UNCTAD, based on presentation on plastic substitutes HS codes, Life-cycle analysis and tariffs considerations. WTO Dialogue on Plastics.

Example of non-plastic substitutes

Seashell-derived tiles from South Korea. Credits: Newtab-22 studio

Sea glass made from microalgae-derived silica. Credits: Elisava

Off-bottom Eucheuma seaweed farms in Kilwa, Masoko, United Republic of Tanzania. Credits: Maliha Sumar, 2024

Seaweed fermentation to produce PHAs. Credits: Uluu, 2024

Vivomer (PHA-based) alternative plastics, home compostable.

Algae-based garment made from locally sourced algae. Credits: Runa Ray, 2024

Example of plastic substitute

Notpla

Making packaging disappear

An all-natural packaging solution made from seaweed and plants that is naturally biodegradable and home-compostable, just like a piece of fruit.

One innovation is a takeaway food container coated with seaweed, a revolutionary move for the takeaway industry that has traditionally relied on plastic or chemicals to hold food.

Image source, NotPla: https://www.notpla.com/products/

Gaia Biomaterials

Biodegradable fishing nets

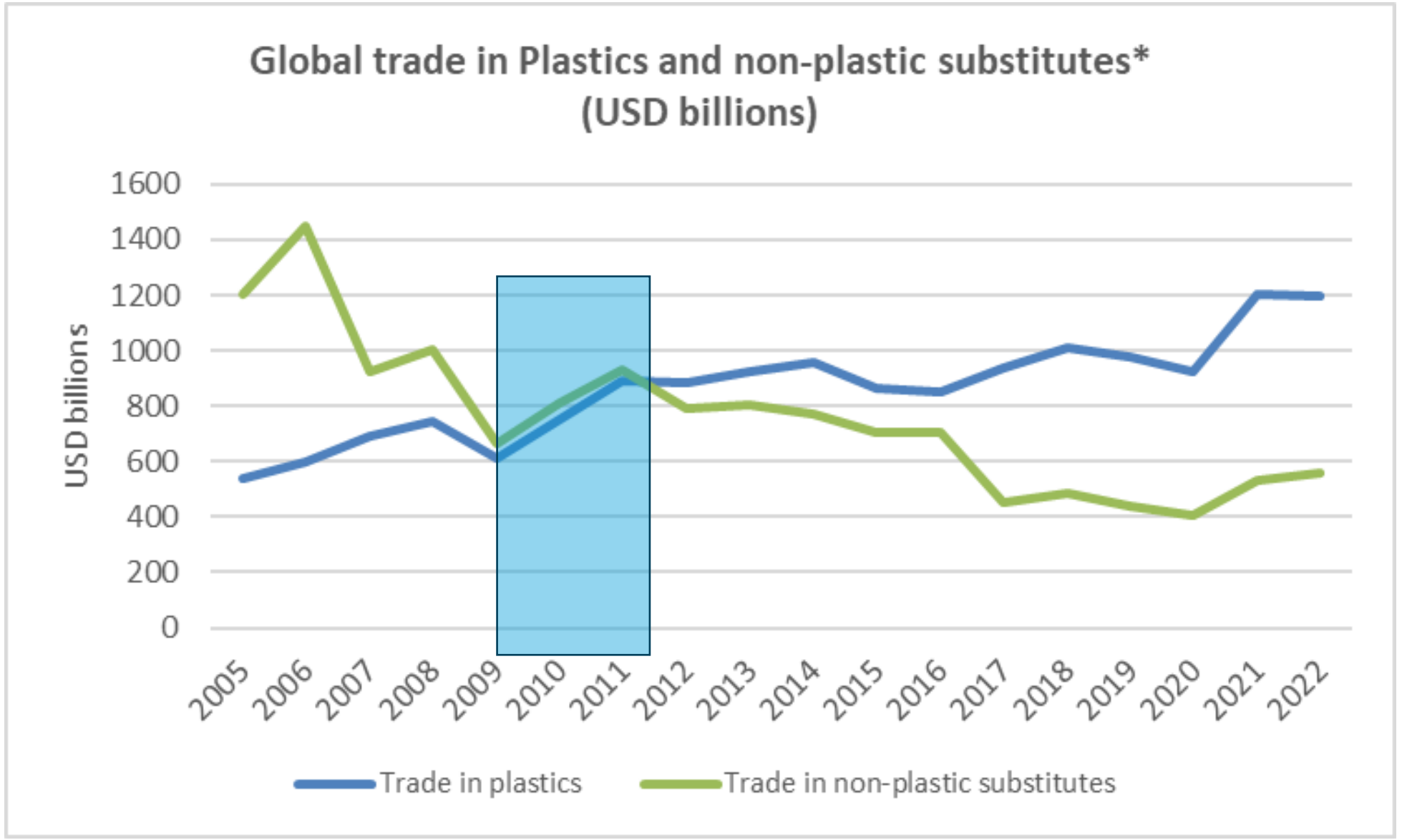
(alternative plastic)

UNCTAD-SMEP project developing renewable-based, biodegradable and compostable fishing nets.

Based on PBAT, PLA and Calcium Carbonate. (Biodolomer®)

Example of plastic alternative

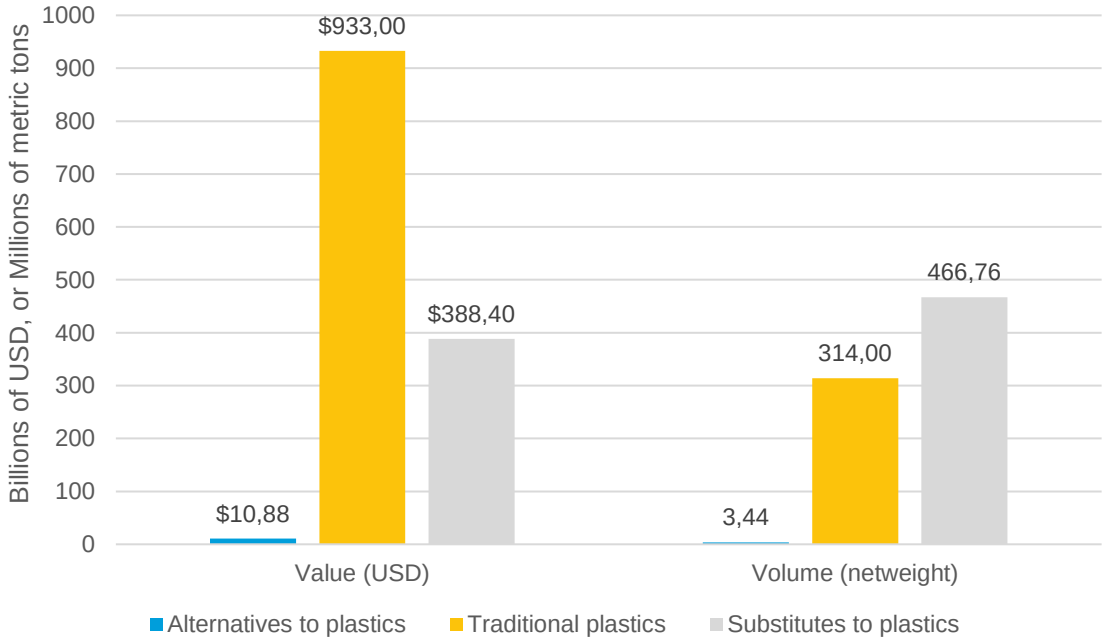
Images source: UNCTAD



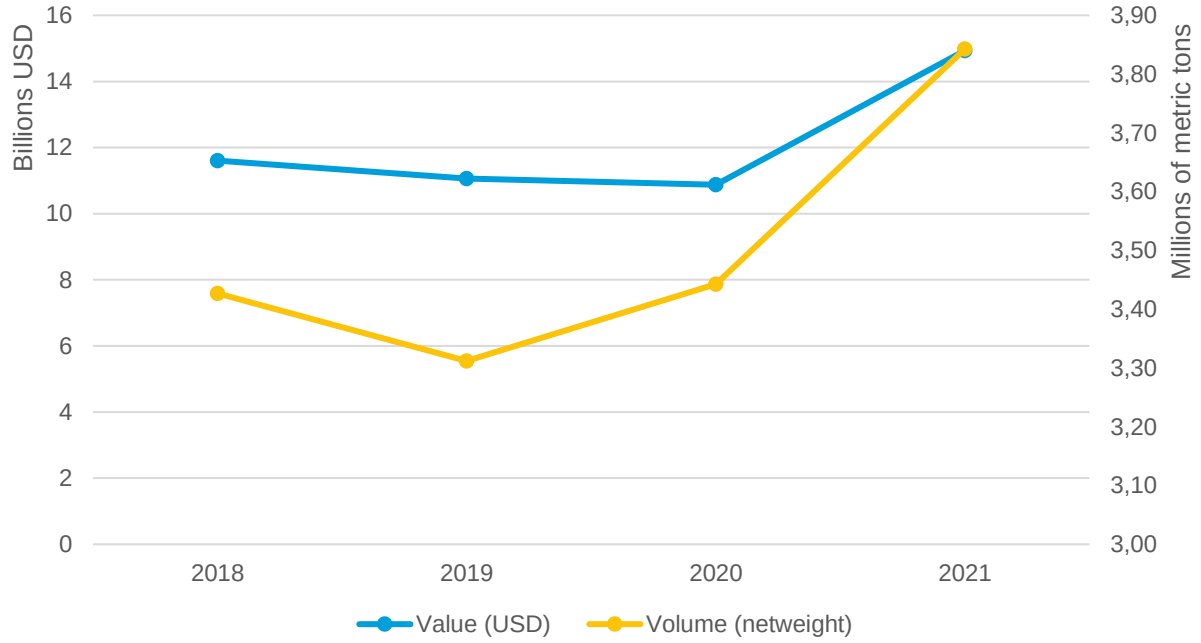
Source: UNCTAD Stats
Considering: 360 plastic products (polymers and intermediaries) and 282 non-plastic substitutes

Trade in Plastics, alternatives, substitutes

Trade value of plastic alternatives, conventional plastics and material substitutes (2020)



Global exports in **alternatives to plastics** (USD value and in metric tons) (2020-2021)

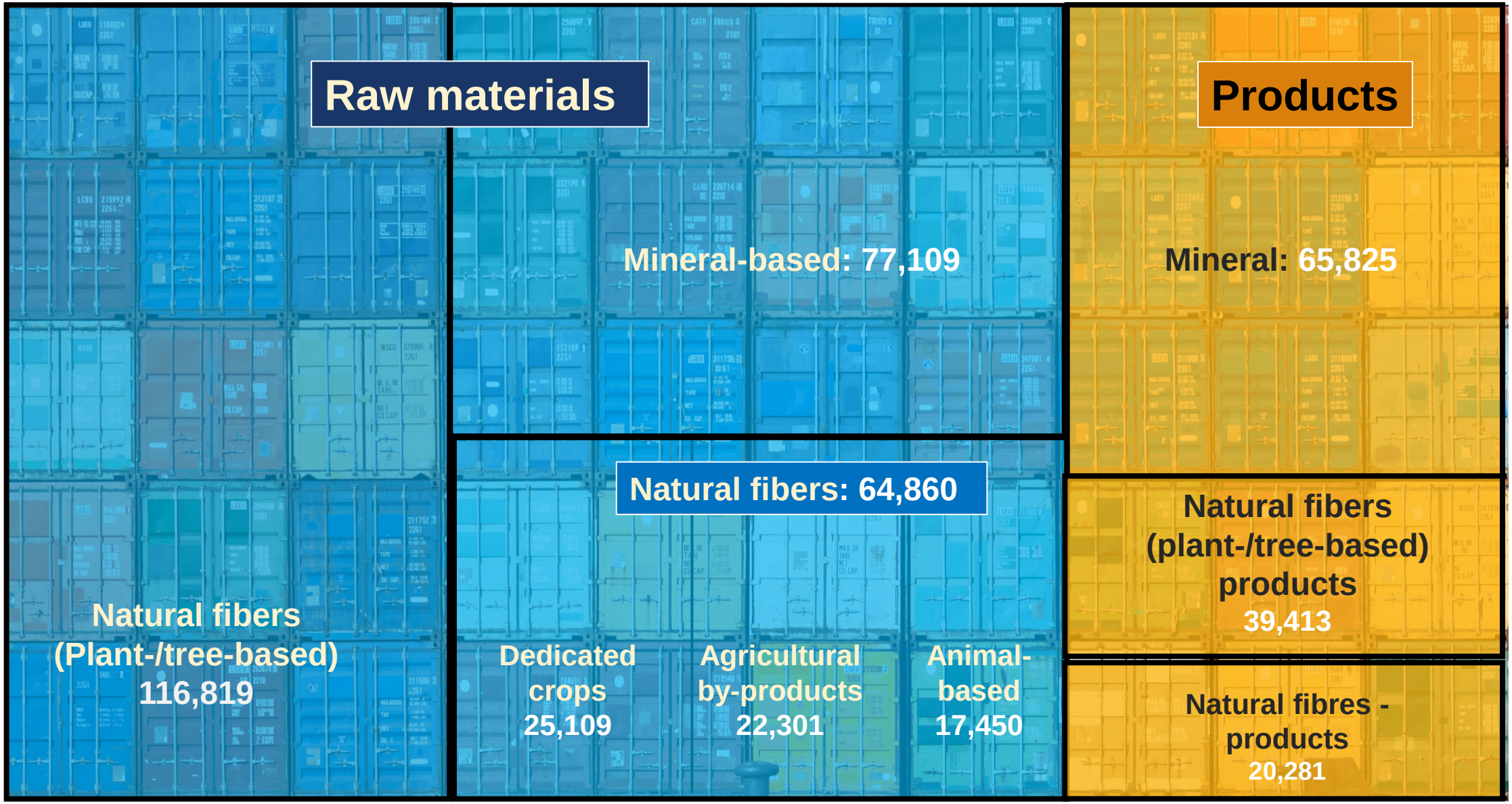


Source: UNCTAD Stats 2023

HS code	Code description
390799	Polyesters; n.e.c. in heading no. 3907, saturated, in primary forms
390770	Poly(lactic acid); in primary forms
391390	Polymers, natural and modified natural; in primary forms (excluding alginic acid, its salts and esters)
391310	Polymers, natural; alginic acid, its salts and esters, in primary forms

Trade value of plastics substitutes

Export in 2020 represented $388 billion, approximately 2/3 represents exports of raw materials ($258 billion)



Plastic alternatives – though choices

Can include:

Plastic alternatives

Bioplastics or Biodegradable plastics

Recyclable, biodegradable, or compostable (end of life)

Should have lower GHG lifecycle emissions when compared to plastics

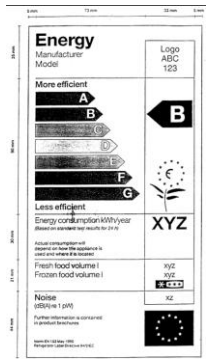
Should not be harzardous for human, animal or plant life

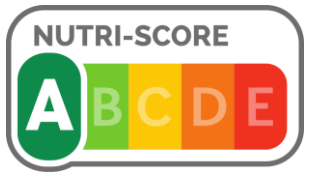
- Oxodegradables (conventional plastics with added-on metal oxides - accelerated degradation –results in microplastics)
  - Banned in some jurisdictions
- PLA (produced by starch fermentation & polimerization)
  - Depends on waste segregation/facilities often unavailable / real state costs mobilization problem
- Home/environment compostables (starch-based)
  - Limited uses (low heat / moisture resistance)
- Marine degradables, like PHA (produced by microorganisms)
  - Expensive!

Communicating risks of plastics

B2C

Canada: Compostability labelling rules prohibiting the terms “biodegradable” or “degradable” on plastic packaging and SUPs and limiting the use of the term “compostable” to plastics that meet certain standards and labelling requirements





B2B sectors

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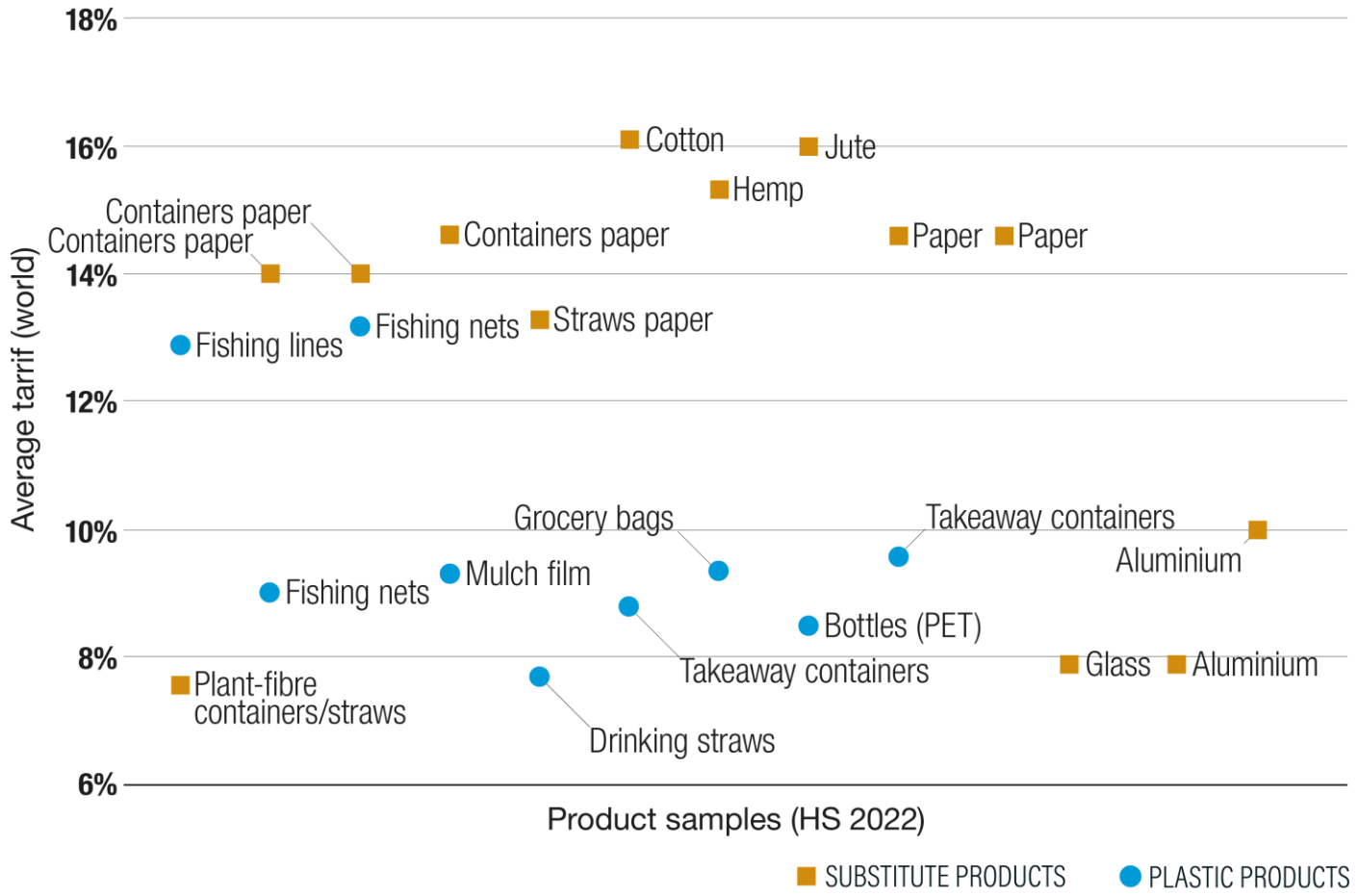
Average import tariffs on plastic products vs material substitutes

Substitutes often face higher import tariffs than their plastic equivalents.



Important to promote more policy coherence in tariff schedules vis-à-vis potential control measures and incentives

Source: UNCTAD, based on OEC data 2020 and HS 2022 codes.
Note: Aluminium, paper, cointainer paper and fishing nets are repeated because of different items represented in different HS codes.

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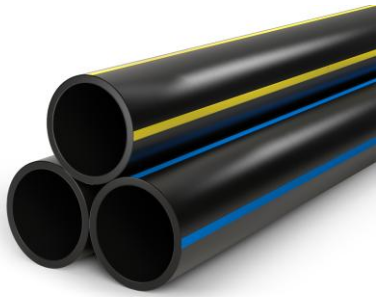
Tariff comparison

Non-Plastic Substitutes

Aluminum Kitchenware
Bamboo
Cotton Bag
Glass Containers
Jute bag
Paper pulp
Cups/plates
Seaweed (non-edible)

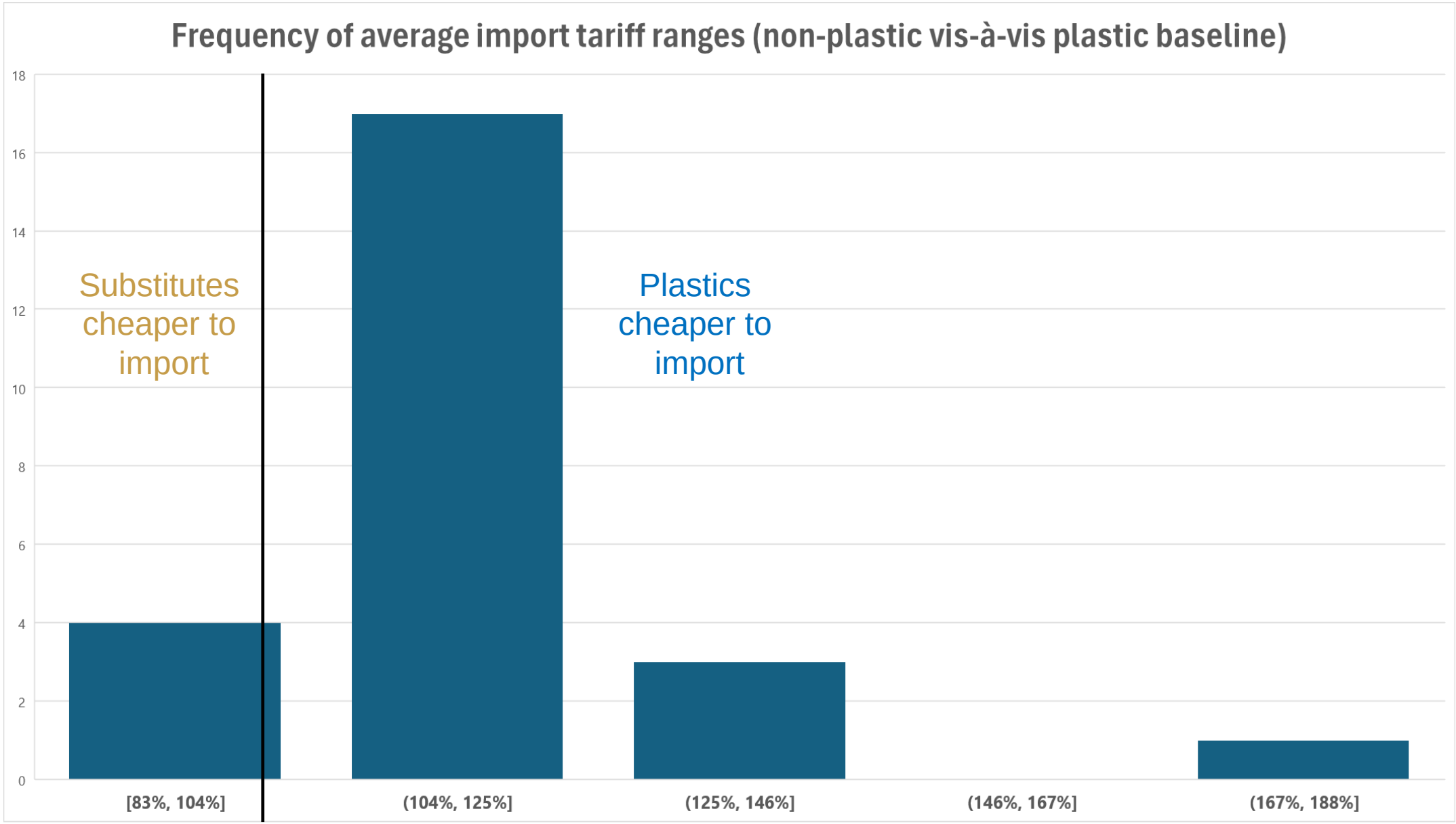
Plastic Products

Plastic film / sheets
Polyethylene single-use bag
Polyethylene pipe/tube
Polypropylene (PP) single-use bag
Polypropylene (PP) single-use plate



Biodegradables and compostables difficult to compare: Few HS codes (PLA)

Average Import tariffs per **world region** for selected **plastic products** vs **non-plastic** equivalents



Sustainable Manufacturing and Environmental Pollution Programme

BEYOND PLASTICS

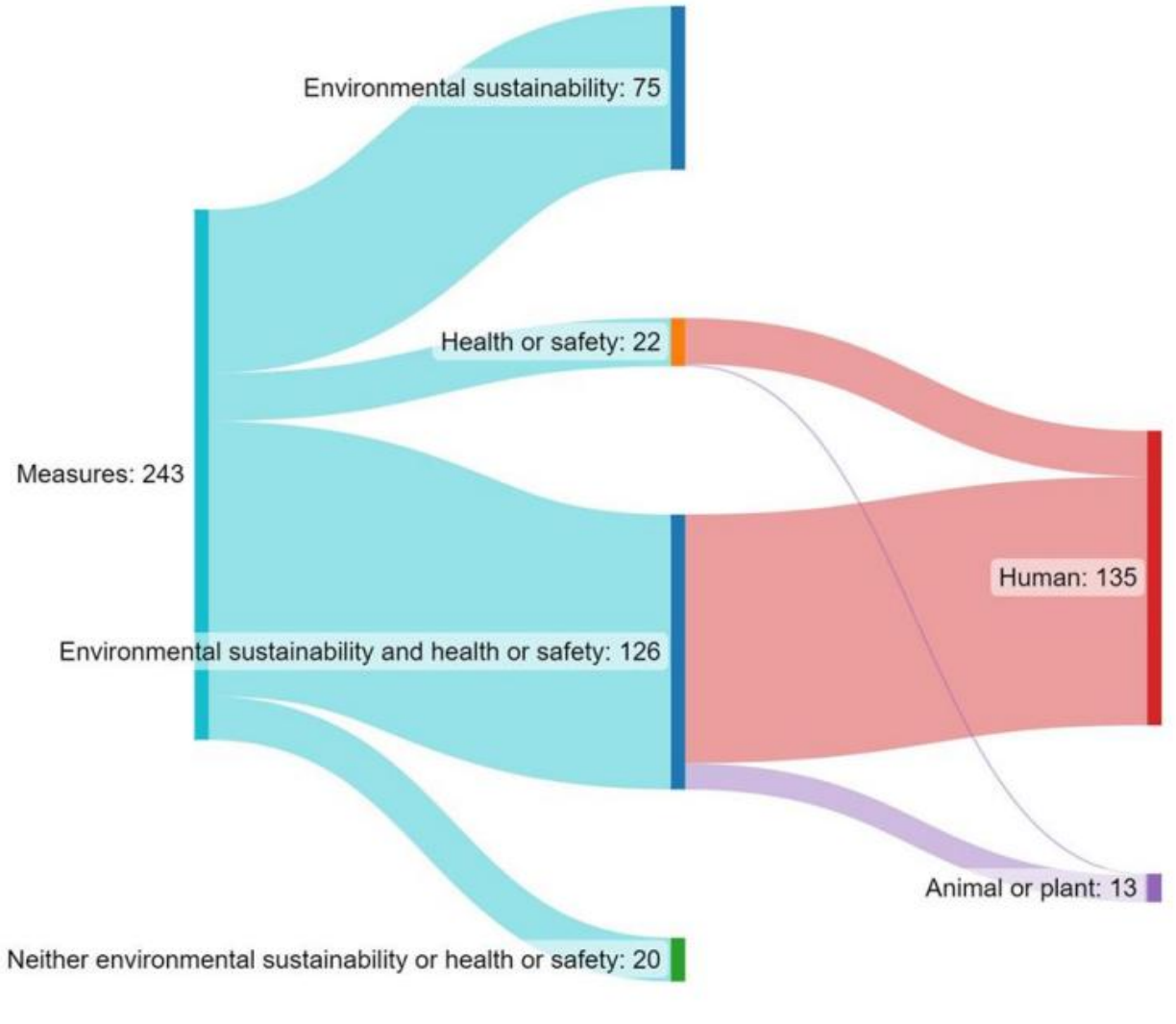
A review of trade-related policy measures on non-plastics substitutes

April **2024**

UK International Development
Partnership | Progress | Prosperity

UN trade & development

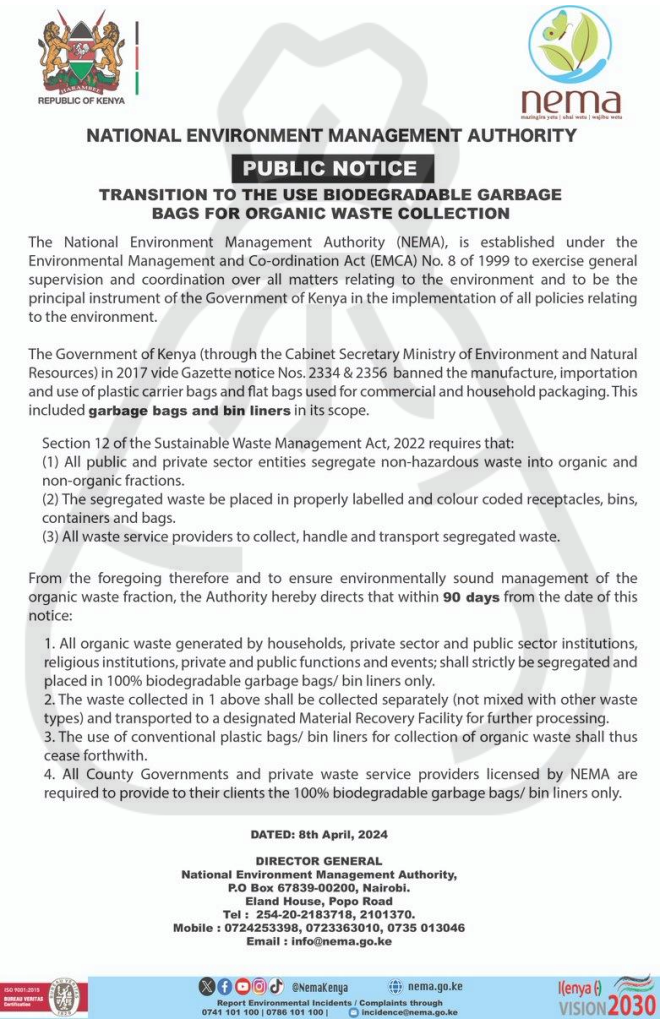
Objectives of trade-related policy measures on non-plastic substitutes
(notified to WTO 2009-2021)



Harmonized types of measures on non-plastic substitutes, by development status of notifying member (2009-21), total and percentages

Type of measures	Developed	Developing	LDCs	Total	Developed	Developing	LDCs	Total
Environmental requirements / command-and-control								
Technical regulation or specifications	32	78	30	140	43%	60%	77%	58%
Conformity assessment procedures		16	9	25	0%	12%	23%	10%
Import licences	7	11		18	9%	8%	0%	7%
Ban/Prohibition	5	8		13	7%	6%	0%	5%
Export licences	5	3		8	7%	2%	0%	3%
Risk assessment	1	2		3	1%	2%	0%	1%
Regulation affecting movement or transit	2	1		3	3%	1%	0%	1%
Other environmental requirements		1		1	0%	1%	0%	0%
Price and market based measures					**0%**	**0%**	**0%**	**0%**
Countervailing measure / investigation	5			5	7%	0%	0%	2%
Safeguard measure / investigation		3		3	0%	2%	0%	1%
Import quotas	1	1		2	1%	1%	0%	1%
Export quotas		1		1	0%	1%	0%	0%
Support measures					**0%**	**0%**	**0%**	**0%**
Tax concessions	7	3		10	9%	2%	0%	4%
Grants and direct payments	8	1		9	11%	1%	0%	4%
Non-monetary support		1		1	0%	1%	0%	0%
Loans and financing	1			1	1%	0%	0%	0%
Grand Total	**74**	**130**	**39**	**243**	**100%**	**100%**	**100%**	**100%**

Regulating plastic alternatives is challenging



REPUBLIC OF KENYA

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

PUBLIC NOTICE

TRANSITION TO THE USE BIODEGRADABLE GARBAGE BAGS FOR ORGANIC WASTE COLLECTION

The National Environment Management Authority (NEMA), is established under the Environmental Management and Co-ordination Act (EMCA) No. 8 of 1999 to exercise general supervision and coordination over all matters relating to the environment and to be the principal instrument of the Government of Kenya in the implementation of all policies relating to the environment.

The Government of Kenya (through the Cabinet Secretary Ministry of Environment and Natural Resources) in 2017 vide Gazette notice Nos. 2334 & 2356 banned the manufacture, importation and use of plastic carrier bags and flat bags used for commercial and household packaging. This included **garbage bags and bin liners** in its scope.

Section 12 of the Sustainable Waste Management Act, 2022 requires that:
(1) All public and private sector entities segregate non-hazardous waste into organic and non-organic fractions.
(2) The segregated waste be placed in properly labelled and colour coded receptacles, bins, containers and bags.
(3) All waste service providers to collect, handle and transport segregated waste.

From the foregoing therefore and to ensure environmentally sound management of the organic waste fraction, the Authority hereby directs that within **90 days** from the date of this notice:

1. All organic waste generated by households, private sector and public sector institutions, religious institutions, private and public functions and events; shall strictly be segregated and placed in 100% biodegradable garbage bags/ bin liners only.
2. The waste collected in 1 above shall be collected separately (not mixed with other waste types) and transported to a designated Material Recovery Facility for further processing.
3. The use of conventional plastic bags/ bin liners for collection of organic waste shall thus cease forthwith.
4. All County Governments and private waste service providers licensed by NEMA are required to provide to their clients the 100% biodegradable garbage bags/ bin liners only.

DATED: 8th April, 2024

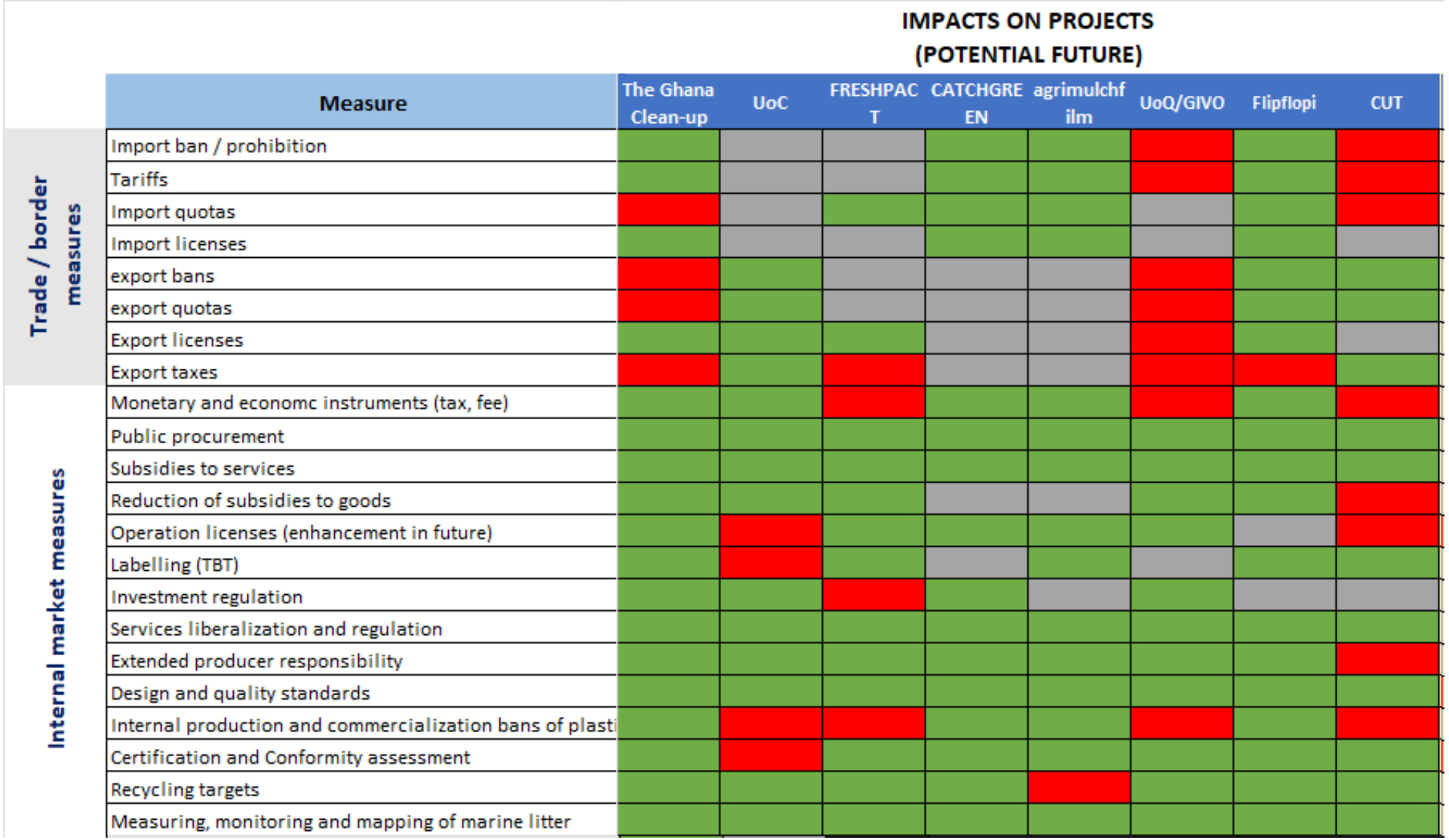
DIRECTOR GENERAL
National Environment Management Authority,
P.O Box 67839-00200, Nairobi.
Eland House, Popo Road
Tel : 254-20-2183718, 2101370.
Mobile : 0724253398, 0723363010, 0735 013046
Email : info@nema.go.ke

@NemaKenya nema.go.ke
Report Environmental Incidents / Complaints through
0741 101 100 | 0786 101 100 | incidence@nema.go.ke
Kenya VISION 2030

Region	Law	Requirement & Enforcement
France	Energy Transition for Green Growth Act	Mandates compostable bags for fruits/vegetables; penalties for non-compliance.
Italy	Italian Ban on Plastic Bags	Biodegradable bags required for loose food packaging; fines for violations.
India	Plastic Waste Management Rules	Encourages biodegradable plastics for specific uses; national enforcement with penalties.
Taiwan	Plastic Bag Restriction (2018)	Bans single-use plastic bags; mandates biodegradable or reusable bags in retail.
Rwanda	Plastic Bag Ban (2008)	Complete ban on plastic bags; supports biodegradable packaging; strict penalties.
European Union	EU Directive on Single-Use Plastics	Bans single-use plastics; promotes biodegradable alternatives; member states enforce fines.

Region	Law	Requirement & Enforcement
South Korea	Waste Management Law	Bans plastic bags in retail; biodegradable alternatives encouraged; enforced by local governments.
Australia	National Waste Policy Action Plan	Biodegradable packaging required in several states; phase-out of single-use plastics by 2025.
Chile	Chilean Plastics Law (2019)	Nationwide ban on plastic bags; promotes biodegradable alternatives; fines for businesses using non-compliant bags.
California (USA)	California Plastic Bag Ban	Compostable or reusable bags required in grocery stores; penalties for non-compliance.
New York (USA)	New York State Plastic Bag Ban (2020)	Bans single-use plastic bags; encourages biodegradable alternatives.
Seattle (USA)	City Mandate on Compostable Packaging	Requires compostable bags and packaging in food services; enforced through local regulation.

Control measures on trade and domestic markets: How do plastic entrepreneurs respond to them?



How to deal with plastic pollution?

Bottom-up or top-down?

INC – Top-Down approach: Global Negotiations, Led by the UN, bringing countries together to create an international **legally binding agreement** on plastic pollution.

- Uses Lifecycle Approach – Covers the full lifecycle of plastics, from production to disposal and recycling.
- Key Focus Areas – Includes plastic **production limits**, **waste management**, **microplastics**, and **alternative and non-plastic substitute materials**.
- Stakeholder Engagement – Involves governments, businesses, NGOs, and scientists in policy discussions.
- Implementation & Compliance – Establishes financial, technological, and legal frameworks to enforce treaty commitments.

- **Over 170 countries involved**


NGOs #49
IPEN

Regional processes

East African Community (EAC) – The EALA Single-Use Plastics Bill aims to ban and regulate plastic products across EAC member states.

European Union (EU) – The EU Single-Use Plastics Directive restricts certain plastic products and promotes extended producer responsibility.

Pacific Region (SPREP) – The Pacific Regional Action Plan on Marine Litter focuses on reducing plastic pollution, especially in the ocean.

ASEAN – The ASEAN Regional Action Plan for Combating Marine Debris (2021–2025) supports waste management and circular economy initiatives.

Thank you!
Merci
شكرًا لكم
Asante Sana

Henrique.Pacini@un.org

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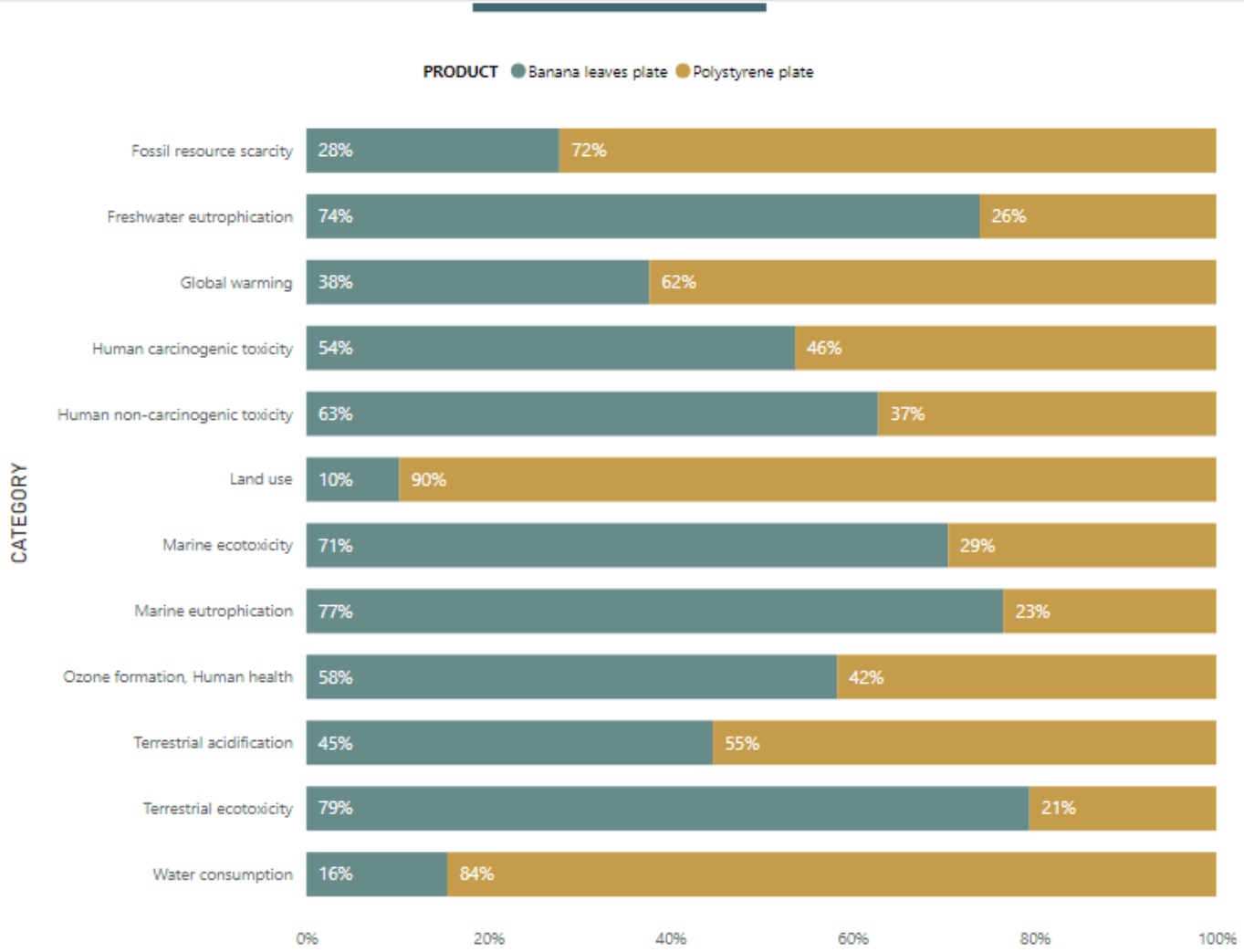
Process-based Life Cycle Assessment



FUNCTIONAL UNIT AND REFERENCE FLOWS

Functional unit	Plastic product	Substitute product	Uses
"Serving an average meal"	1 Polystyrene plate	1 banana leaves plate	Single use

Non-plastic substitutes: pros and cons

Plastic plate (PS)

Banana leaves plate (PS)

FCDO-UNCTAD SMEP Programme: Material comparison dashboard