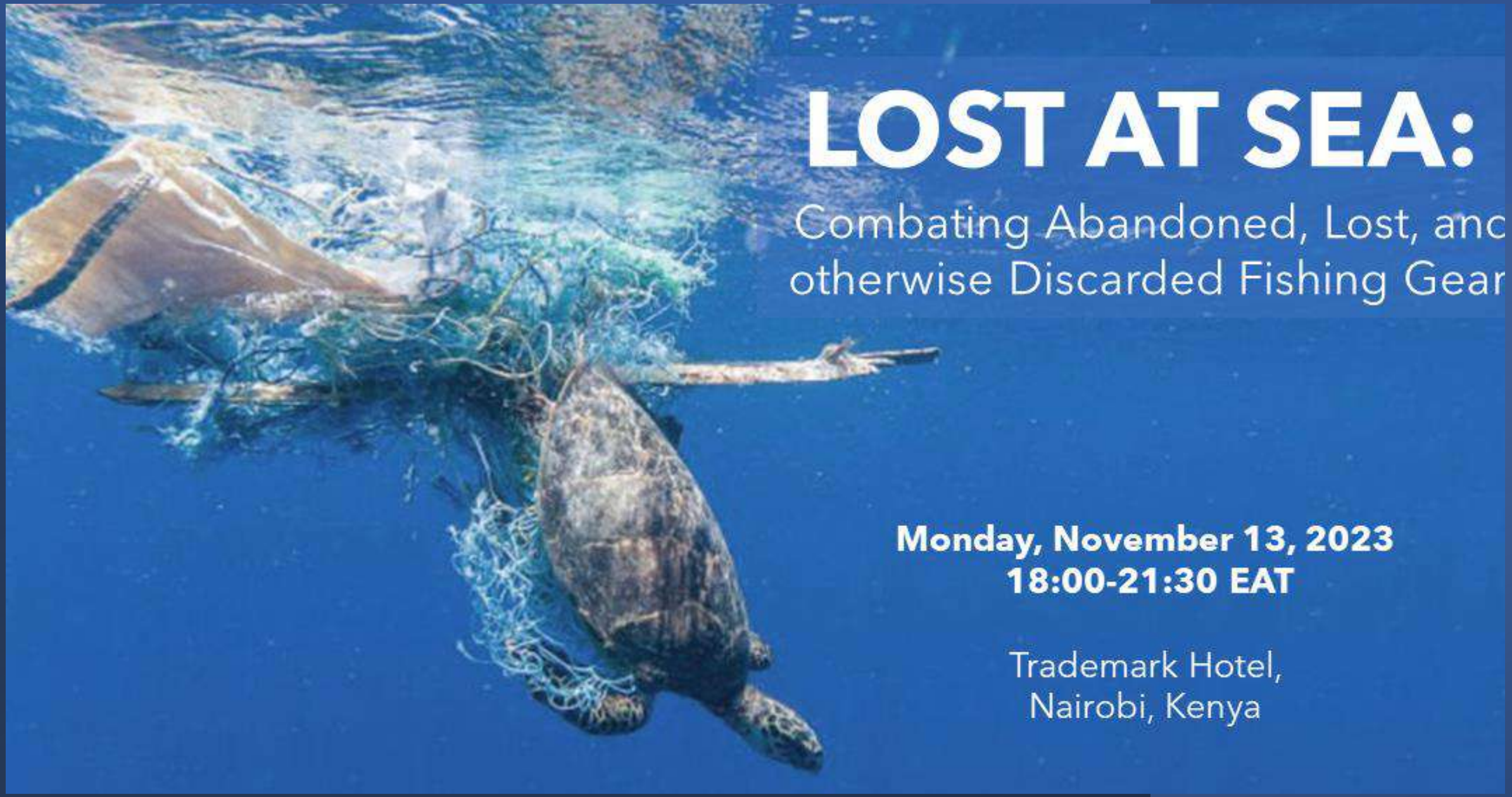
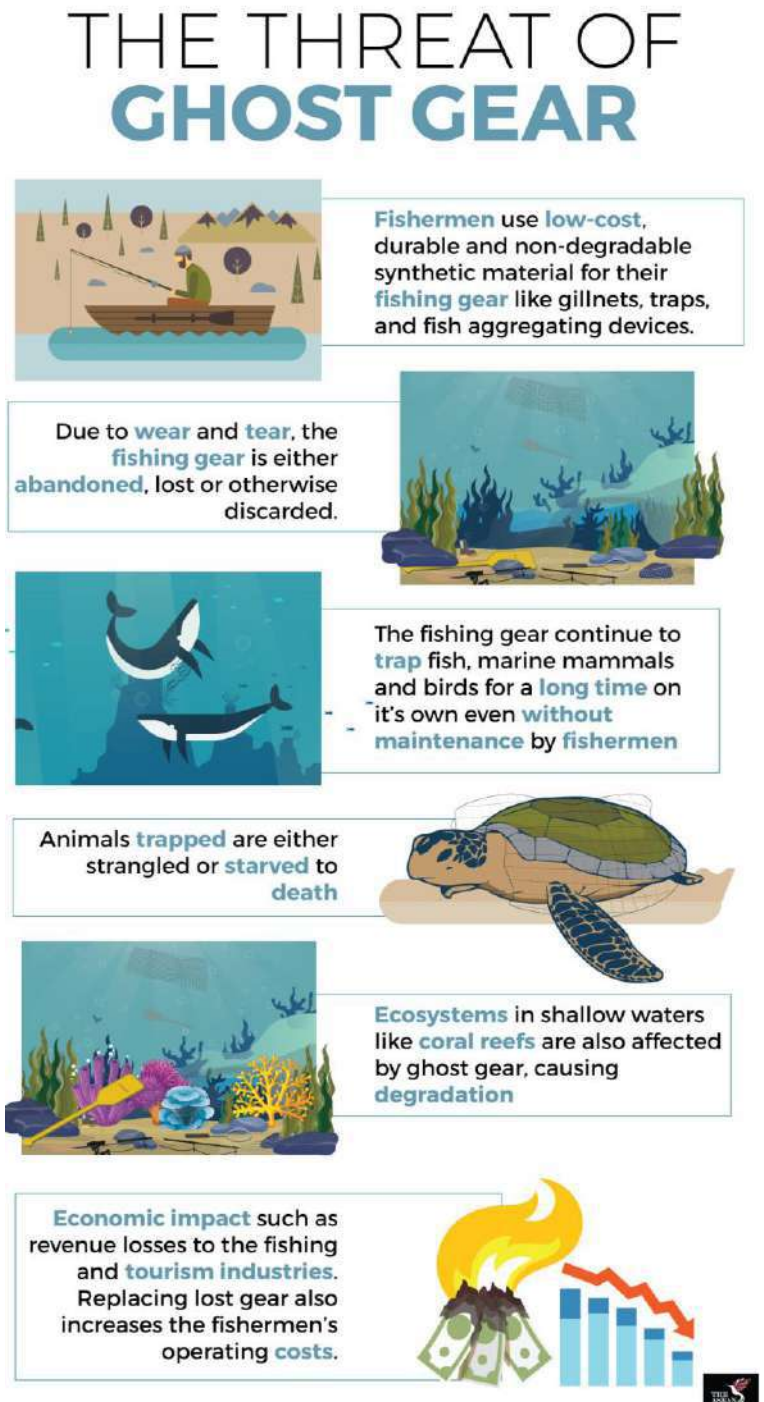
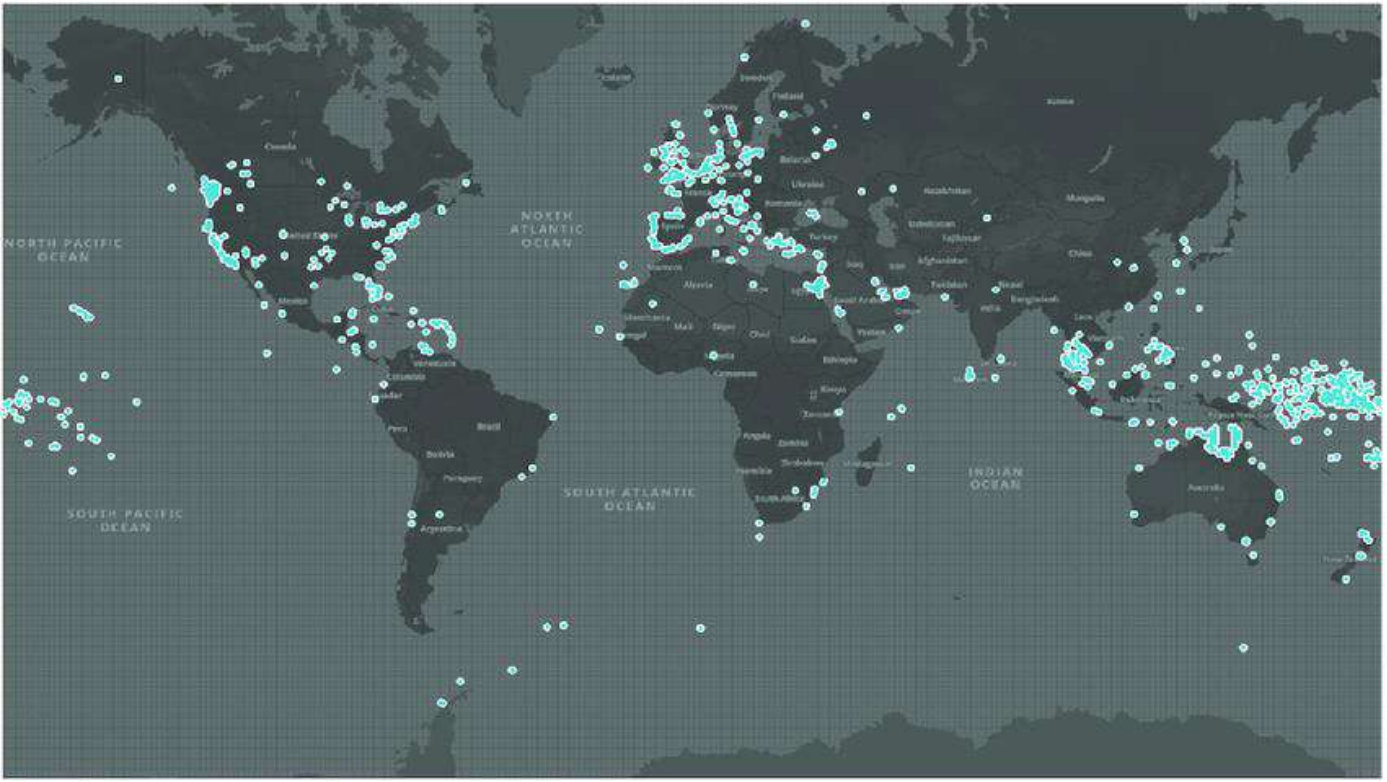
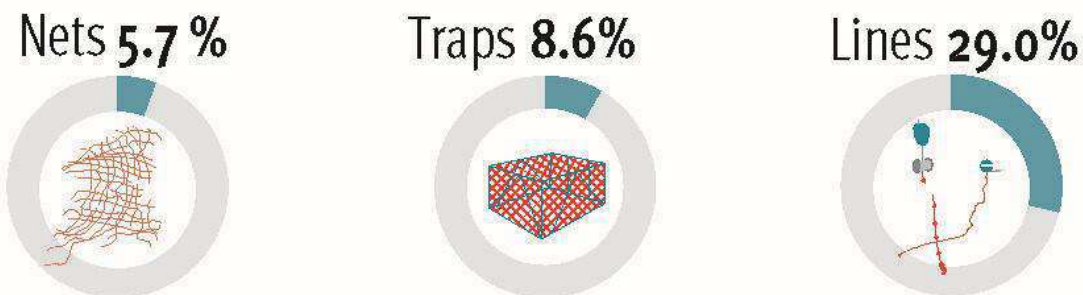

LOST AT SEA:
Combating Abandoned, Lost, anc
otherwise Discarded Fishing Gear
Monday, November 13, 2023
18:00-21:30 EAT
Trademark Hotel,
Nairobi, Kenya

- Most damaging form of marine plastic litter
- Multi-species impacts
- 70% of macro-plastics found in five ocean gyres
- 2% of all fishing gear used globally becomes ALDFG
- Economic losses can reach 30% in some fisheries
- Multi-sector damage to ecology, economy, navigation, tourism





Fishing gear lost in the ocean in 2017

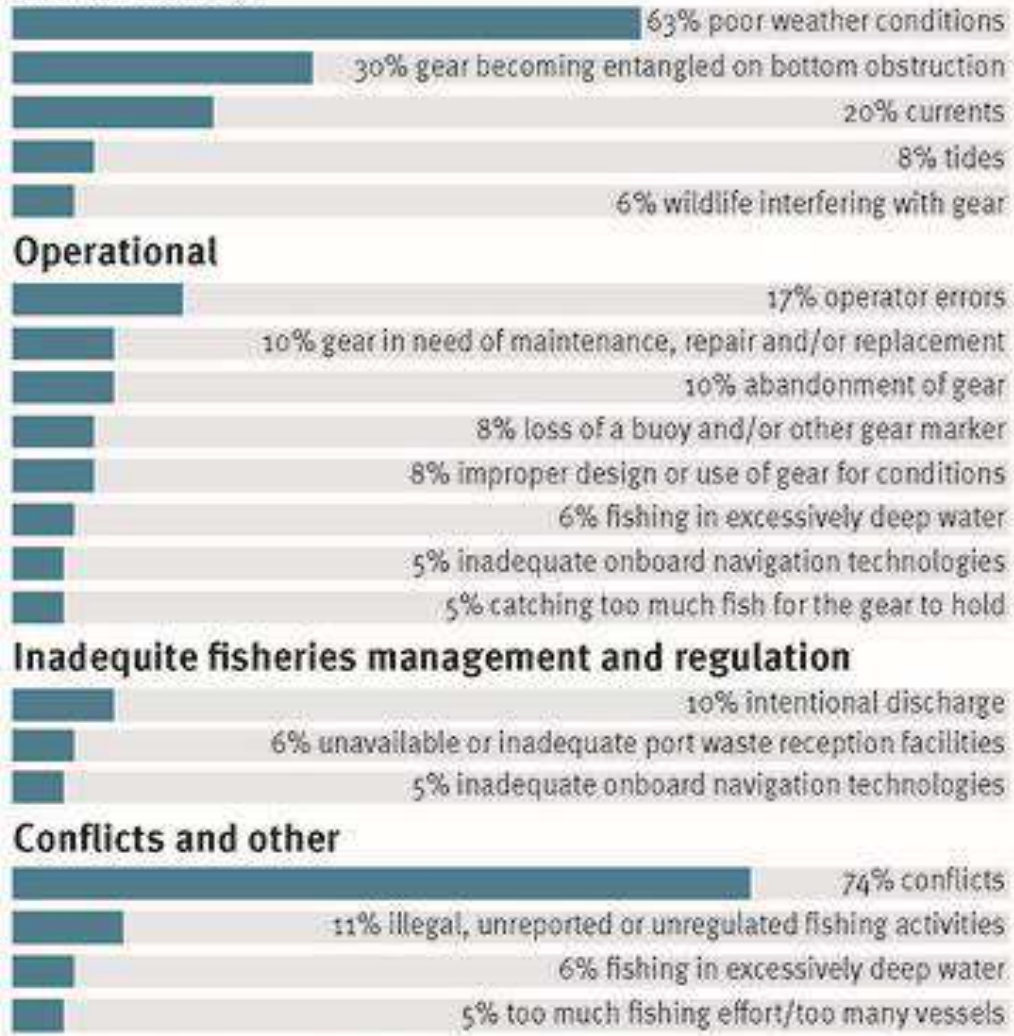


Not representative of all fisheries in all geographic conditions

Source: Richardson et al. (2019a) Illustrated by GRID-Arendal (2021).

UNEP (2021). Drowning in plastics – Marine Litter and Plastic Waste Vital Graphics.

Common causes of abandoned, lost or otherwise discarded fishing gear



The numbers show the percentage of studies reporting the listed specific causes of ALDFG. Based on a review of 176 reports over which 58% reported causes for ALDFG.

Source: MEPC (2020). **Illustrated by GRID-Arendal (2021).**

UNEP (2021). Drowning in plastics – Marine Litter and Plastic Waste Vital Graphics.

LOST AT SEA

Combating Abandoned, Lost, and otherwise, Discarded Fishing Gear (ALDFG)

Sunday, May 28 | Venue: Salons de l'hôtel des Arts et Métiers, Paris, France

Hybrid event (+45 in person, +40 online) representatives of private sector, government agencies (including Ministries of Environment and Ministries of Fisheries), NGOs, and civil society organizations discussed solutions along the fishing gear life cycle

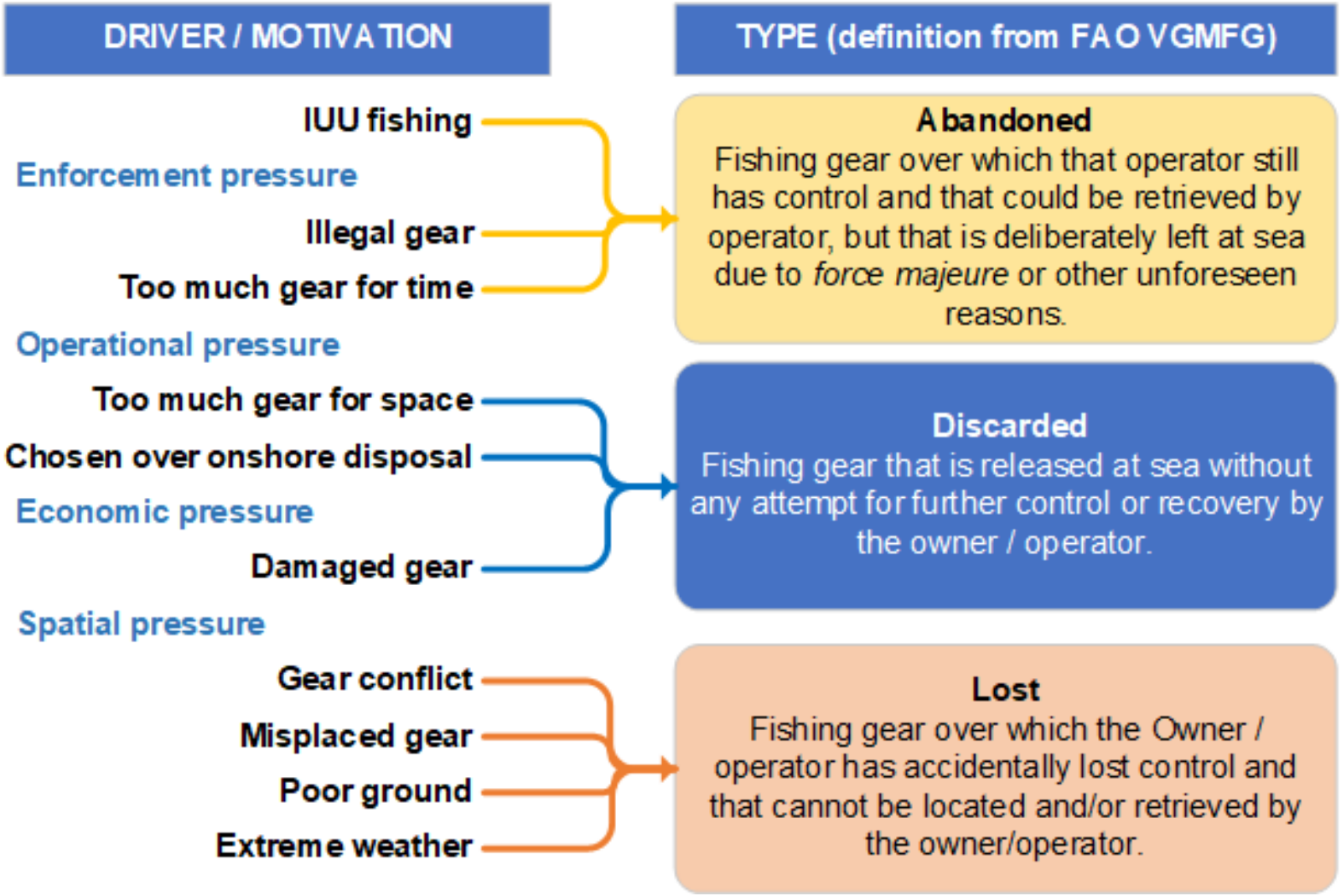
Key actions needed in each life cycle stage of fishing gear

Design & Production

Usage

End of life

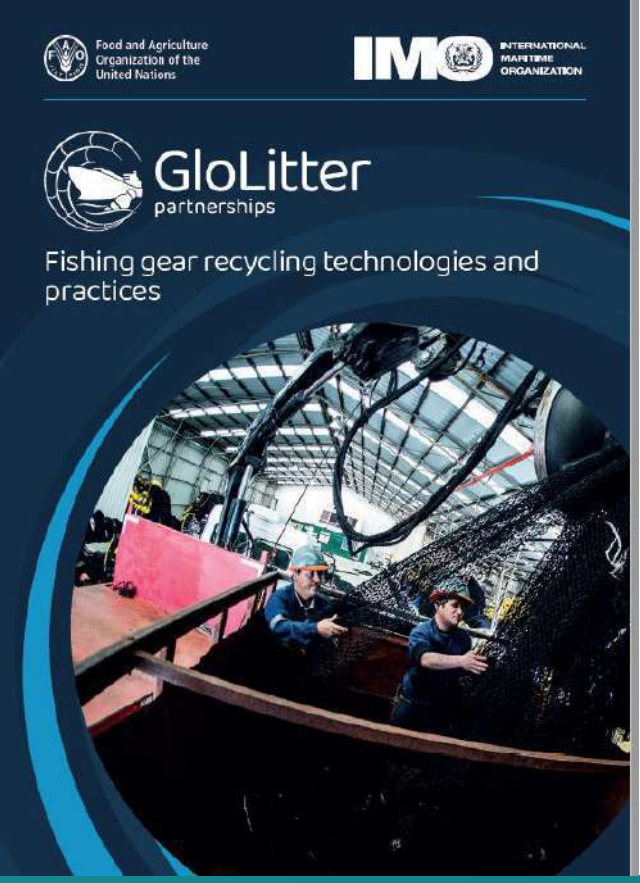
ALDFG actions must address the root causes

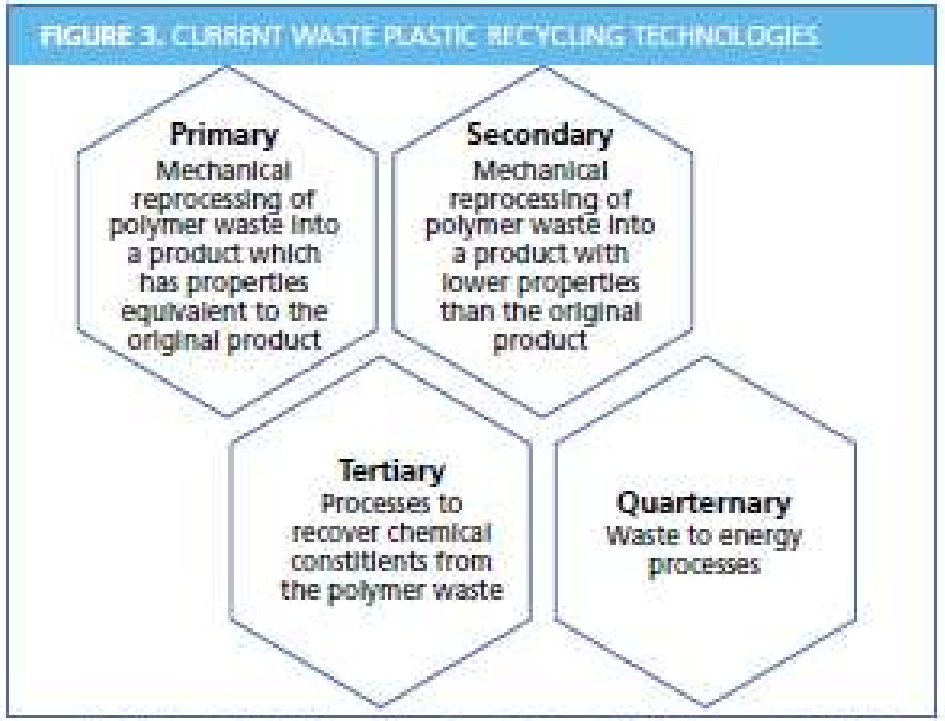


	DESIGN & PRODUCTION STAGE	USAGE STAGE	END OF LIFE STAGE
PREVENTION	E.g.s: Design gear for durability; visibility and to reduce loss. Include marking and owner identification in gear.	Egs. fisheries management measures scaled to fit the ALDFG problem; fishing gear marking and identification	Egs Provide feasible and affordable waste management options for all EOL fishing gear and retrieved ALDFG.
MITIGATION	Egs. Use biodegradable and natural fiber components in gear design to limit ghost fishing if lost.	E.gs. Establish reporting processes for lost gear.	Egs Provide feasible and affordable waste management options for biodegradable and natural fiber fishing gear.
REMEDIATION	Egs. Design for recyclability, including identifying polymers, minimizing mixed materials, …	Eg.s Mandate attempted recovery of lost fishing gear at the time of loss (when safe).	Eg.s Provide feasible and affordable waste management options for retrieved ALDFG.

Key considerations

- **Harmonization** of management and policy authorities to prevent, mitigate, and remediate ALDFG.
- **Collaboration** between the many stakeholders involved in the fishing gear life cycles, from fishers, fisheries managers, fishing gear designers and manufacturers, ports, and waste managers and recyclers.
- The importance of **regulatory measures.**
- The need for **standards development** for the materials and components used to construct fishing gear and associated gear components, including new standards for biodegradability.
- The promotion of a **circular economy** for fishing gear.
- **Financing** solutions to facilitate adoption of alternative fishing gears and waste management processes including financial needs of small-scale fishers.





Source: Modified and adapted from Sahajwalla and Gaikwad (2018). The present and future of e-waste plastics recycling. Current Opinion in Green and Sustainable Chemistry, 13, 102–107 (https://doi.org/10.1016/j.cogsc.2018.05.006)

Fishing gear recycling technologies and practices

13 November 2023

Kelsey Richardson
Amparo Perez Roda
FAO *Fishing technology and operations team*

Lost at Sea event– Nairobi, Kenya

Outline

1 **Part One: Fishing gear recycling methods, technical measures, policy instruments and circular economy considerations**

- Design & manufacturing, Recyclable gear materials, Preparing gears for recycling, Methods for recycling gears (primary → quaternary: mechanical, chemical/advanced, energy recovery), **opportunities/challenges**

- Technical measures & policy/regulatory instruments to support fishing gear recycling

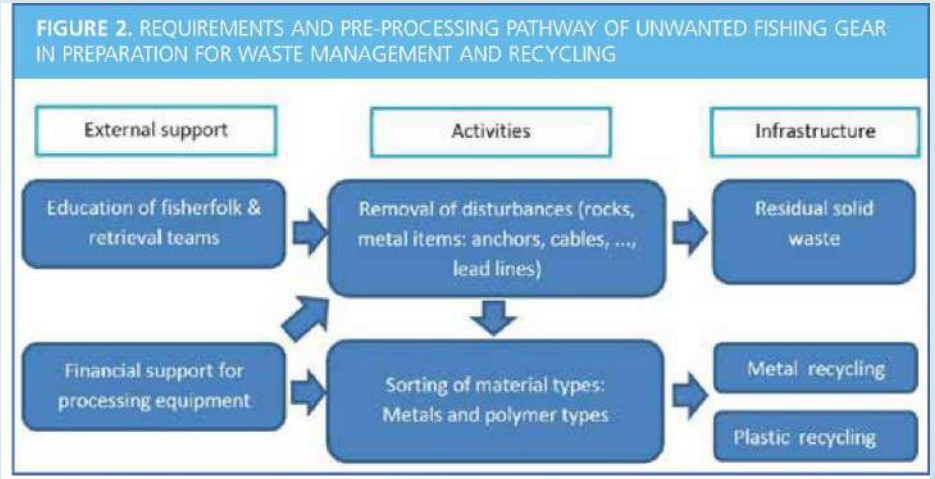
- Circular economy related to fishing gear

2 **Part Two: Practical examples of fishing gear recycling**

- Recovery & collection, Repurposing, Mechanical, Chemical, Energy recovery, Innovative products, Circular Economy

Part One: Fishing gear recycling considerations

- Fishing gear design & manufacturing
- Recyclable fishing gear materials
- Preparing gears for recycling
- Methods for recycling fishing gears:
  - Primary & secondary (mechanical)
  - Tertiary (chemical, recovery, thermal conversion)
  - Quaternary (energy recovery)
- Opportunities and challenges from available technologies



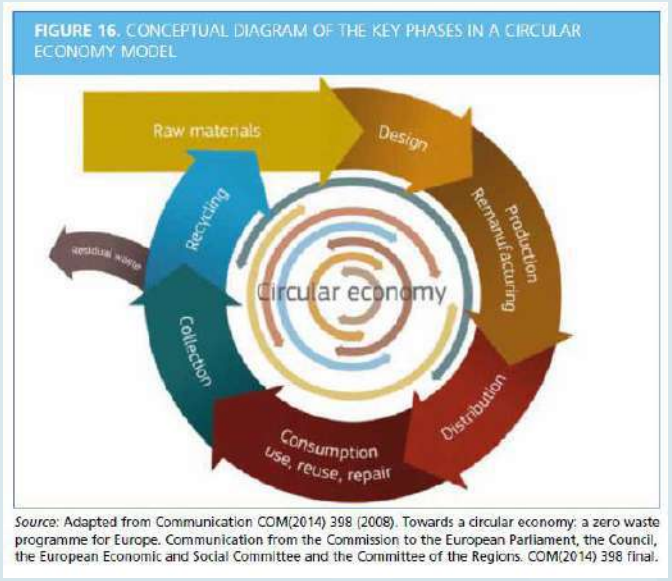
Source: Modified and adapted from Stolte *et al.* (2019). A treatment scheme for derelict fishing gear. Interreg Baltic Sea Region Programme 2014–2020, MARELITT Baltic Project report (https://marelittbaltic.eu/documents).

Part One: Technical measures & policy/regulatory instruments

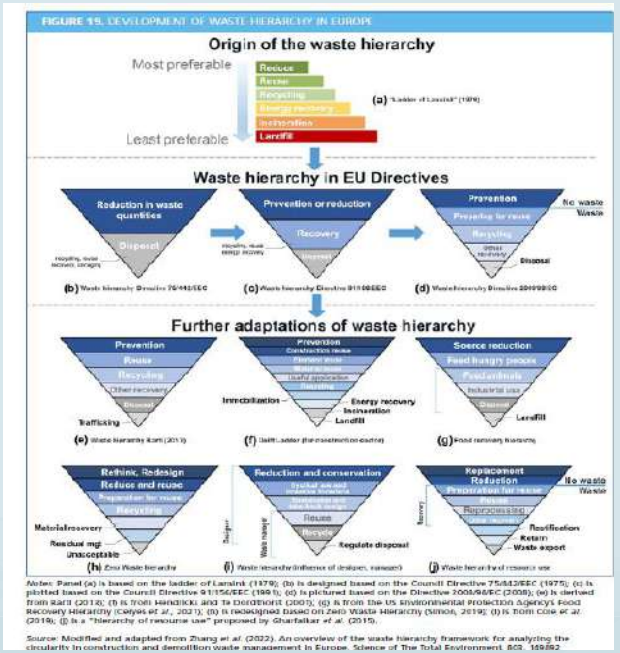
- Design for recyclability
- Fishing gear marking
- Port reception facilities (for EOLFG & recovered ALDFG)
- Centralized & Decentralized waste management infrastructure
- Market-based instruments
- Extended Producer Responsibility (EPR) for fishing gear
- International policy instruments related to “unwanted” fishing gear (EOLFG & ALDFG)

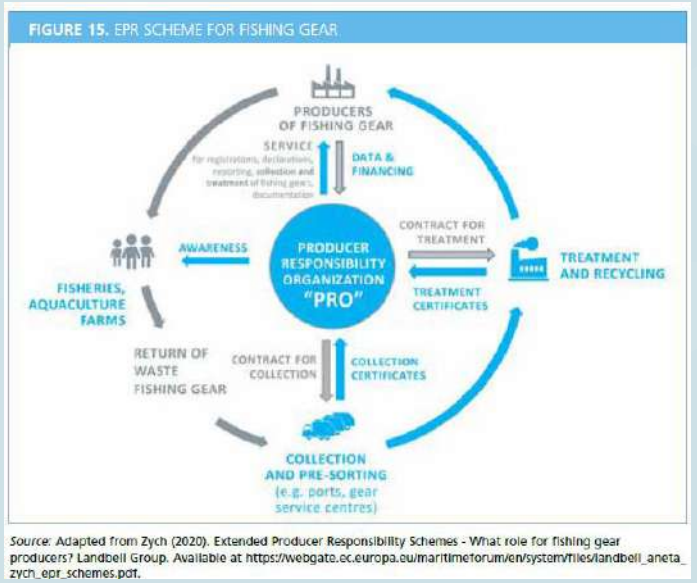
Part One: Circular economy for fishing gear

- The circular economy model
- The waste hierarchy, & R-based circular economy concepts (e.g., 3Rs, 4 Rs → 9Rs)
- Circular business models (CBMs) for fishing gears

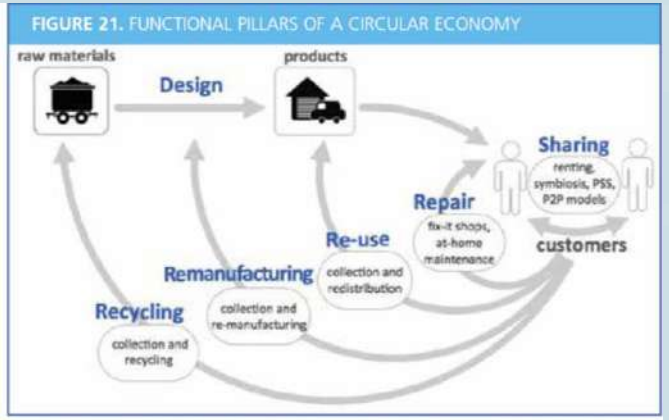


Source: Adapted from Communication COM(2014) 398 (2008). Towards a circular economy: a zero waste programme for Europe. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. COM(2014) 398 final.





Source: Adapted from Zych (2020). Extended Producer Responsibility Schemes - What role for fishing gear producers? Landbell Group. Available at https://webgate.ec.europa.eu/maritimeforum/en/system/files/landbell_aneta_zych_epr_schemes.pdf.



Notes: PSS means Product-Service System business model, and P2P means Peer-to-Peer lending (discussed in Table 6).

Source: EIO and CfSD (2016). Eco-innovate! A guide to eco-innovation for SMEs and business coach Eco-Innovation Observatory, funded by the European Commission, DG Environment, Brussels.

Part Two: Practical examples of fishing gear recycling

Examples for: Small-scale/artisanal → large-scale, industrial; national, regional, global scales; mechanical, chemical, energy recovery, which include:

- Recovery & collection of fishing gear for recycling
- Mechanical recycling
- Chemical recycling
- Energy recovery
- Innovative products made from recycled fishing gears
- Circular Economy

Annex 1 – Description of main tertiary recycling processes

Annex 2 – FAO fishing gear recycling webinars

Thank You – Asante

Any questions/comments/thoughts ???????

Sala, A. & Richardson, K. 2023. Fishing gear recycling technologies and practices. Rome, FAO and IMO.
https://doi.org/10.4060/cc8317en

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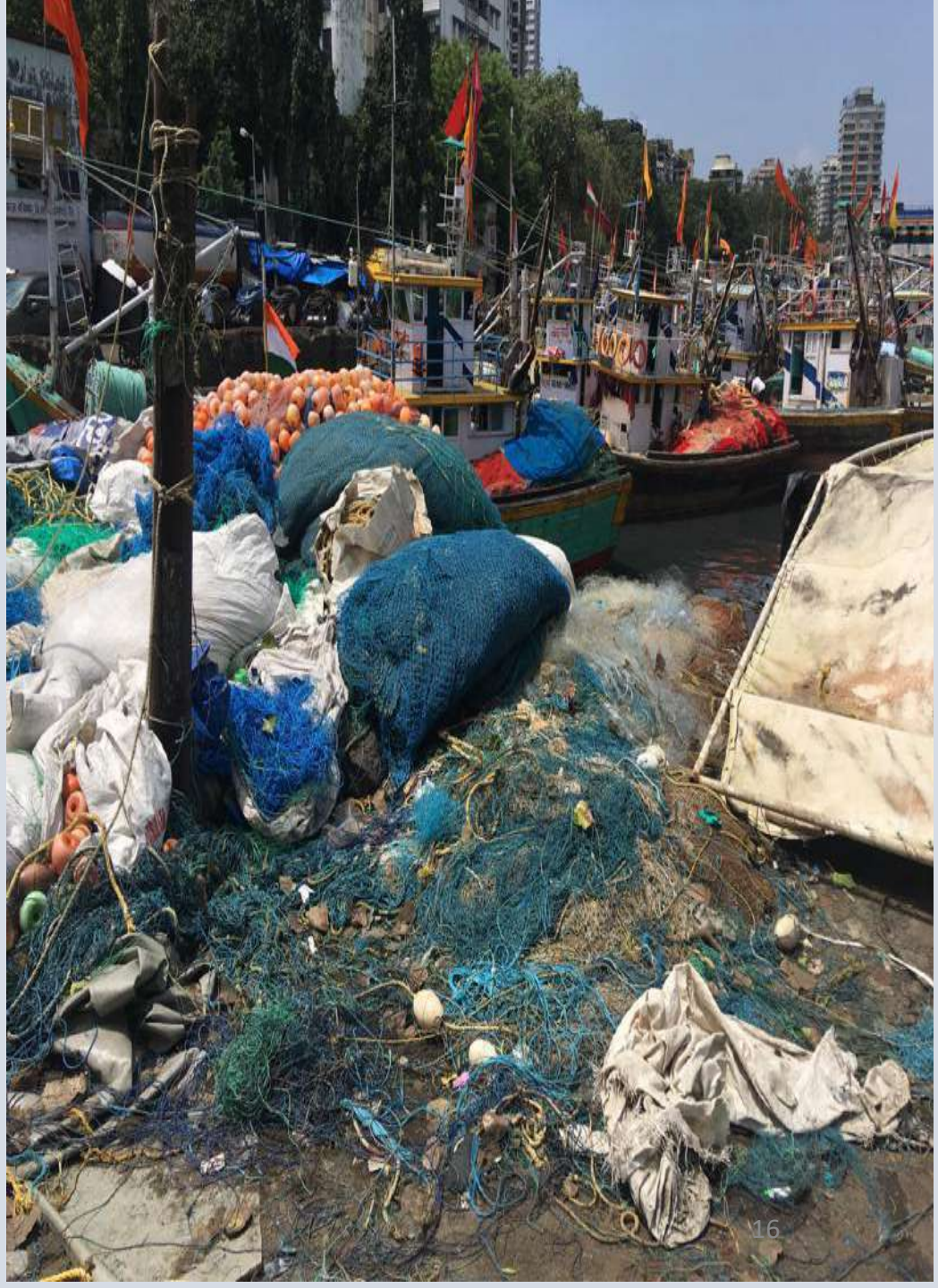
Tangled Seas: A Snapshot of Abandoned, Lost, or Otherwise Discarded Fishing Gear in South Asia

Joseph Akpokodje
Senior Environmental Specialist,
World Bank
November 13, 2023

Outline

- Overview of ALDFG
- Objective of the Study in South Asia
- Summary of Baseline Methodology
- Summary of Recommendations

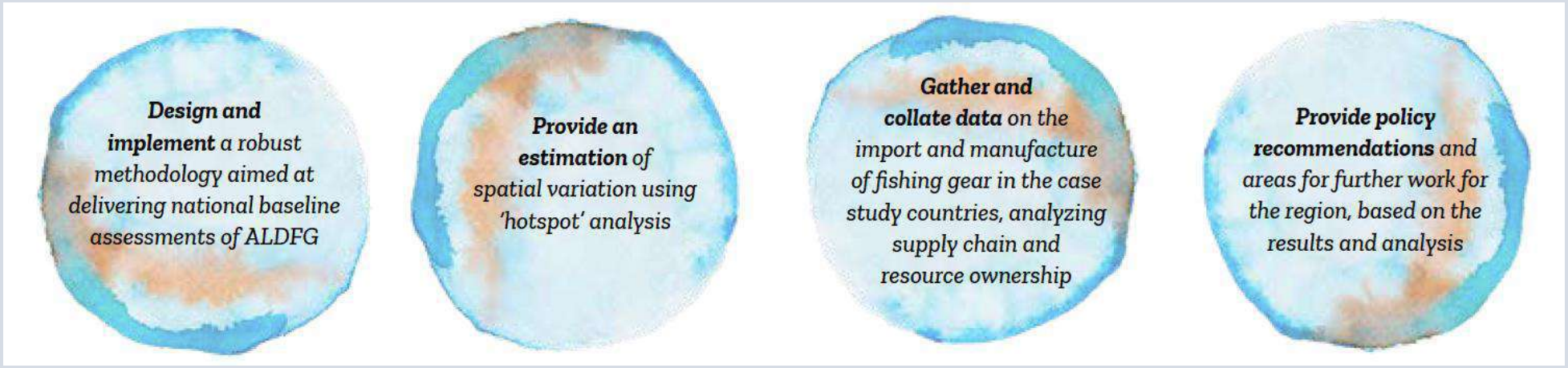


ALDFG contributes to ocean plastic pollution

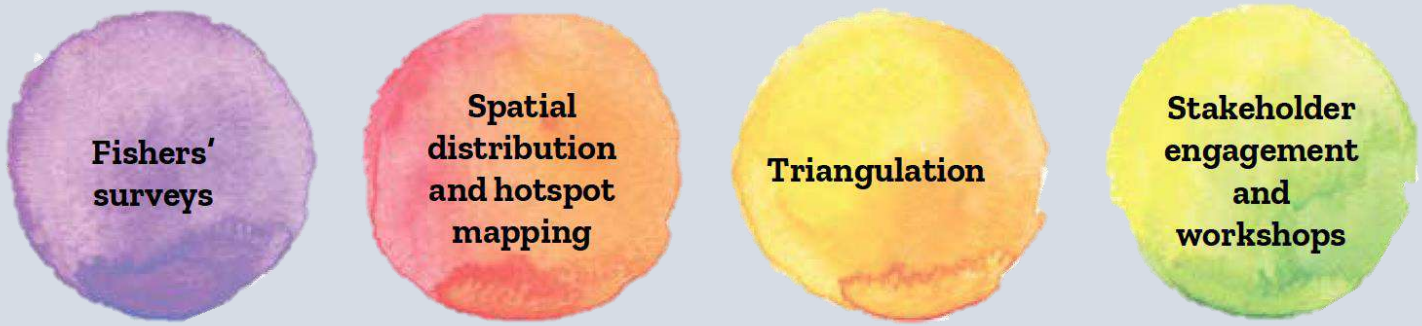
- **Abandoned, lost, or otherwise discarded fishing gear** (ALDFG), also known as ‘ghost gear’, contributes significantly to plastic pollution in the oceans
- Estimates of ALDFG vary based on model and estimation techniques
- An estimated 10% of global marine plastic pollution comes from ‘ghost gear’ including nets, lines, traps, and pots
- ALDFG has a significant impact on aquatic organisms through their continued capture, entanglement, or ingestion, resulting in mortality of fish stocks
- It also impacts safety at sea, with an increasing number of boats being damaged due to ALDFG

Objectives of this Study

- The World Bank initiated two studies to quantify plastic waste leakage into rivers and seas in the region
- They represent a seminal study of plastics leakage in both land and marine environments at a regional level for South Asia
- It is expected to support the efforts of the *Regional Marine Litter Action Plan for South Asian Seas Region*
- The aim of this study is to deliver objective, evidence-based baseline assessments of ALDFG at the national level for four case study countries: Bangladesh, the Maldives, Pakistan, and Sri Lanka



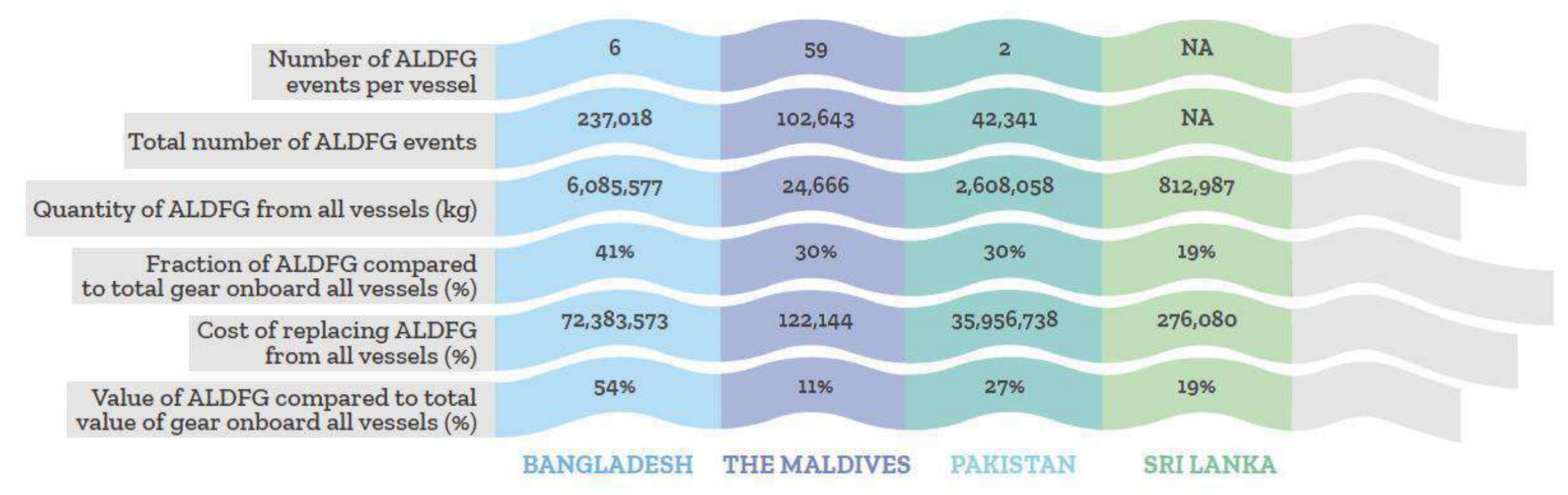
Summary of baseline methodology



Country	Fishing activity categorization	Survey areas	Total number of vessels	Sample protocol size	Actual sample size
BANGLADESH	• Trawlers • Gillnets • Set bag nets • Line gear	Multiple fishing ports and landing sites in four coastal districts: Barisal, Khulna, Chattogram, and Cox's Bazar	40,774	349	408
THE MALDIVES	• Pole and line • Hand line for yellowfin tuna • Hand line for reef fish and groupers (No nets are used in the Maldives except as bait nets)	80 fishing ports in 20 atolls	1,737	92	337
PAKISTAN	• Trawlers • Gillnets o Large gillnets: with a dry weight > 1000 kg o Medium gillnets: with a dry weight of 151-999 kg o Small gillnets: with dry weight of up to 150 kg • Surrounding nets (with seine line) • Line gear • Traps/cages	Multiple fishing ports and landing sites in two coastal regions of Balochistan and Sindh Provinces	22,910	96	1,162
SRI LANKA	KI survey conducted comprising government officers, harbor managers, fishing society leaders, boat owners, and fishers' representatives[4]	Four coastal districts representing the four regions of the country: Jaffna (north), Ampara (east), Matara (south), and Gampaha (west)	NA	NA	NA

Abandoned, Lost, or Otherwise Discarded Fishing Gear

Summary of annual ALDFG by country



Summary of recommendations – 1/2

No.	Recommendation	Area of intervention	Stakeholder level
1	**Immediate Action**		
1.1	Conduct a national baseline assessment for India	K	N
1.2	Refine the ALDFG methodology	K	G, N, R
1.3	Conduct targeted outreach and awareness raising	B, K	N, R
1.4	Establish a working group and national reporting process under SACEP on MPP, and particularly ALDFG	I, K, P, T	R
1.5	Review the interactions between international shipping lanes and fishing activity in S. Asia	K	G, N, R
1.6	Validate viability of biodegradable fishing gear	K, T	N, R
1.7	Facilitate greater regional and global funding opportunities for targeted research	F, K, T	G, R
2	**Global and Regional Frameworks on ALDFG**		
2.1	Strengthen implementation and enforcement of existing international and regional frameworks	I	G, R
2.2	Broaden the scope of existing mechanisms by inviting relevant international ALDFG stakeholders to participate in and inform policy dialogue in various international contexts	P	G
2.3	Consider including ALDFG in the global plastics treaty currently under development	P	G
3	**Cooperation and Collaboration on ALDFG**		
3.1	Strengthen and increase cooperation across all relevant S. Asia networks and organizations	I	G, N, R
4	**ALDFG Data and Knowledge**		
4.1	Strengthen international cooperation for data and information exchange, tracking, and recording ALDFG across regions, including capacity-building	I, K	G, R
4.2	Develop and test the efficacy of novel approaches aimed at monitoring and assessing ALDFG, including through the use of remote observation and satellite data	I, K	G, N, R
4.3	Develop cost-effective monitoring and assessment strategies for ALDFG	I, K	G, N, R
4.4	Review the use of FADs in S. Asia Marine ABNJ	K	G, N, R
4.5	Design and implement a pilot study on the use of bonds as part of an extended licensing system	K	G

Note: Areas of intervention are grouped as follows: B = Behavioral change, F = Financing mechanism, I = Implementation and institutional capacity, K = Knowledge and awareness raising, P = Policy and regulation, T = Technology and innovation.
Stakeholder level is denoted as follows: G = global, N = national, R = regional.
6R = redesign, reduce, remove, reuse, recycle, and recover, ABNJ = areas beyond national jurisdiction, ALDFG = abandoned, lost, or otherwise discarded fishing gear, EOL = end-of-life, FAD = fish aggregating device, MPP = marine plastic pollution, R&I = research and innovation, SACEP = South Asia Co-operative Environment Programme, S. Asia = South Asia.

Summary of recommendations – 2/2

No.	Recommendation	Area of intervention	Stakeholder level
5	**Private Sector Engagement**		
5.1	Review and develop appropriate financial and market-based mechanisms to deliver change	F	G, N, R
5.2	Work with the private sector to mitigate ALDFG and MPP	F	N
6	**Mitigating ALDFG**		
6.1	Promote a life cycle approach and 6R framework for plastic fishing gear	B, K, T	G, N, R
6.2	Improve fisheries management	B, I, K, T	G, N, R
6.3	Develop and embed supportive R&I landscapes to foster collaborative research between R&I actors to better address the problem of ALDFG	K, T	G, N, R
6.4	Explore opportunities to support women in developing fishing gear that contribute to a reduction in plastic ALDFG	F, K, T	G, N, R
6.5	Protect fishers and vulnerable fishing communities by improving access to safe sources of credit	B, F, K	G, N, R
7	**Waste Management of ALDFG**		
7.1	Enhance waste management policies, practices, and infrastructure	B, I, P	N
7.2	Review current options for recycling EOL fishing gear	T	N, R
7.3	Review behavioral change models specific to S. Asia fishing communities to deliver a reduction in ALDFG	B, K	G, N, R
7.4	Conduct a S. Asia pilot study to promote a more circular fishing economy supported by training, education, and behavioral change	B, K	N, R

Note: Areas of intervention are grouped as follows: B = Behavioral change, F = Financing mechanism, I = Implementation and institutional capacity, K = Knowledge and awareness raising, P = Policy and regulation, T = Technology and innovation.
Stakeholder level is denoted as follows: G = global, N = national, R = regional.
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Thank you!

Email:
jakpokodje@worldbank.org

The Price Tag of ALDFG: Economic and Ecosystem Costs

Leander Raes
Economics Team
IUCN Centre for Economy and Finance

LOST AT SEA:
Combating Abandoned, Lost, and otherwise Discarded Fishing Gear
Monday, November 13, 2023
Nairobi, Kenya

Estimating ALDFG

Methods:

1. Use of fisheries **statistics, waste sampling** and **interviews** with fishing sector
2. **Import-data** based leakage estimate: HS codes (56081100, 56081900, 950710, 950730, 950790, 9507901) + Richardson et al. (2019)

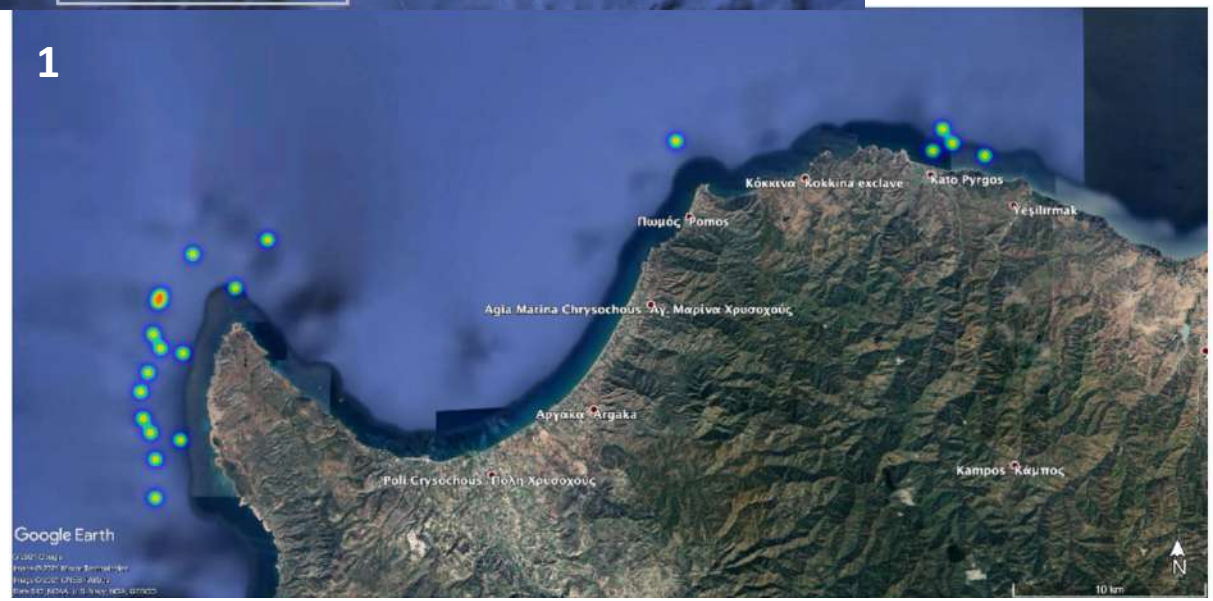
- ***Antigua and Barbuda***
  - First method: **10 tonnes** of fishing gear leaked annually
  - Second method: **1.73 tonnes** of fishing gear leaked annually
- ***Samoa***
  - First method: **0.7 tonnes** of fishing gear leaked annually
  - Second method: **9.04 tonnes** of fishing gear is leaked annually

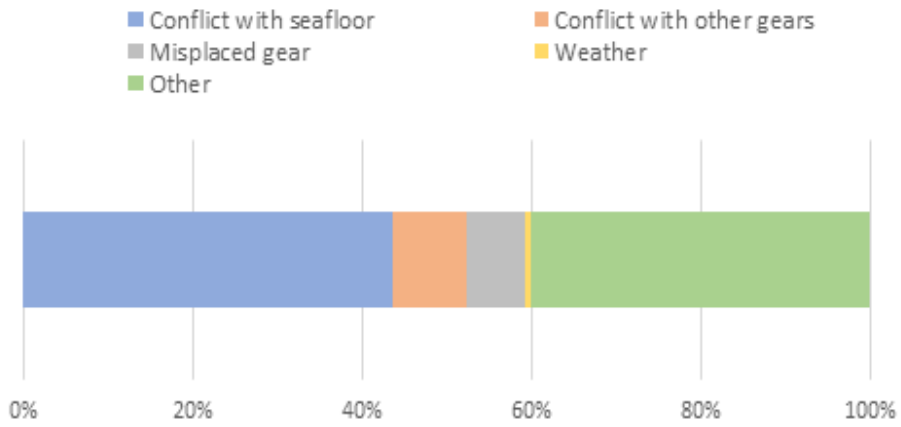
Plastic Waste Free Island Project: APWC (2019) Plastic Waste National Level Quantification and Sectorial Material Flow Analysis in Samoa, and in Antigua and Barbuda

Reference used: Richardson et al. (2019): https://doi.org/10.1111/faf.12407

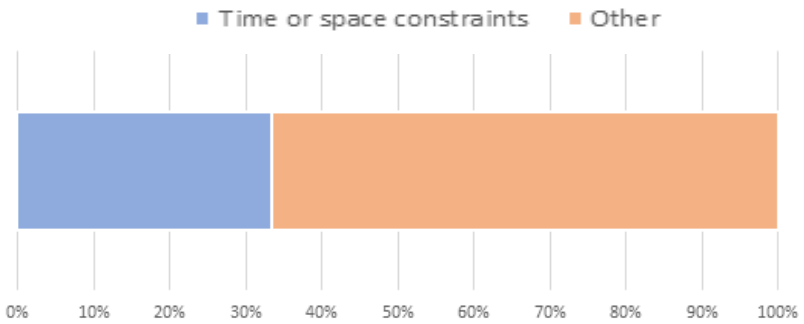
Localizing ALDFG and understanding causes

Location of ALDFG encountered





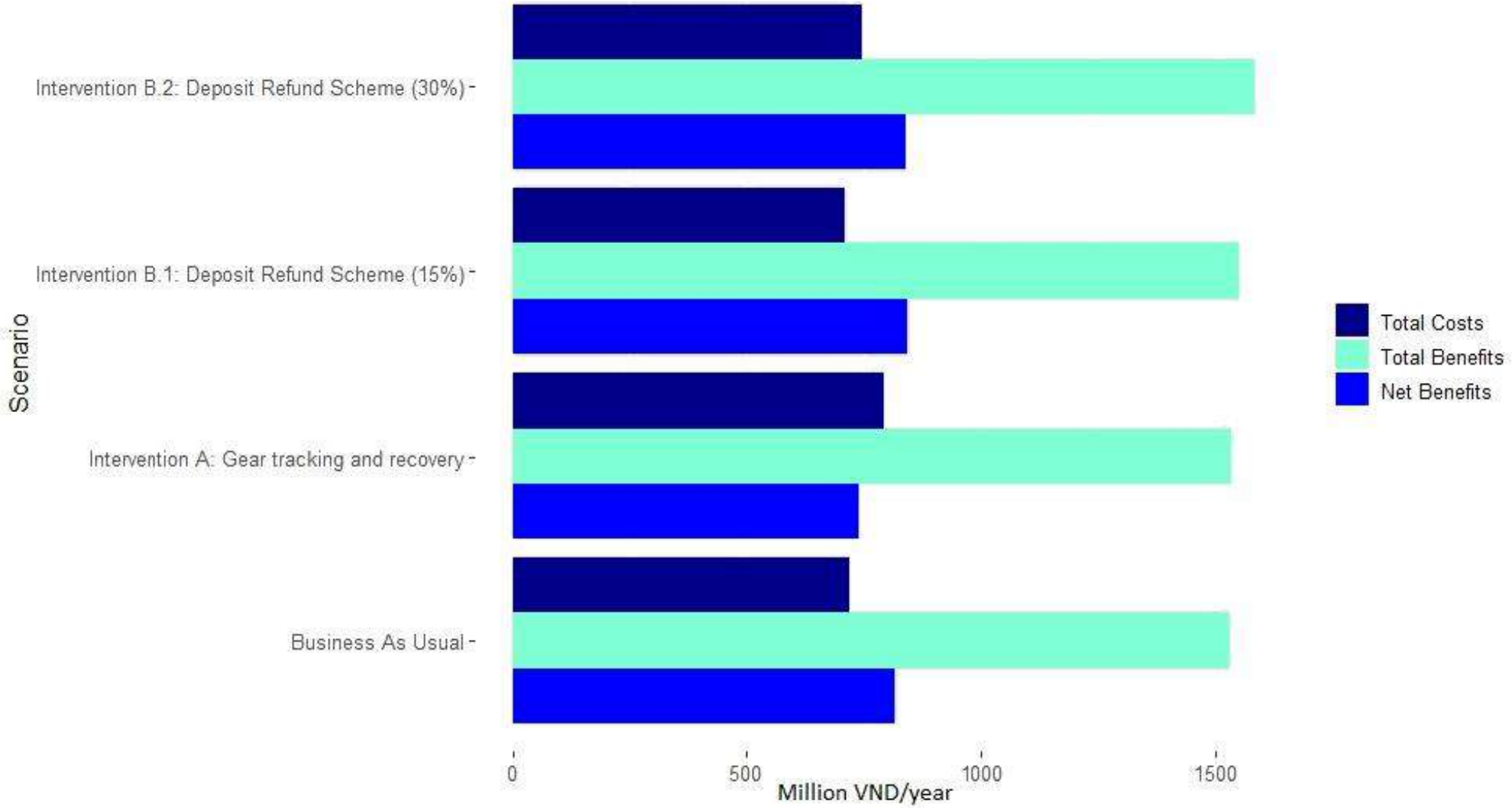
Percentage occurrence of causes of losing gear



Percentage occurrence of abandoning and discarding fishing gear

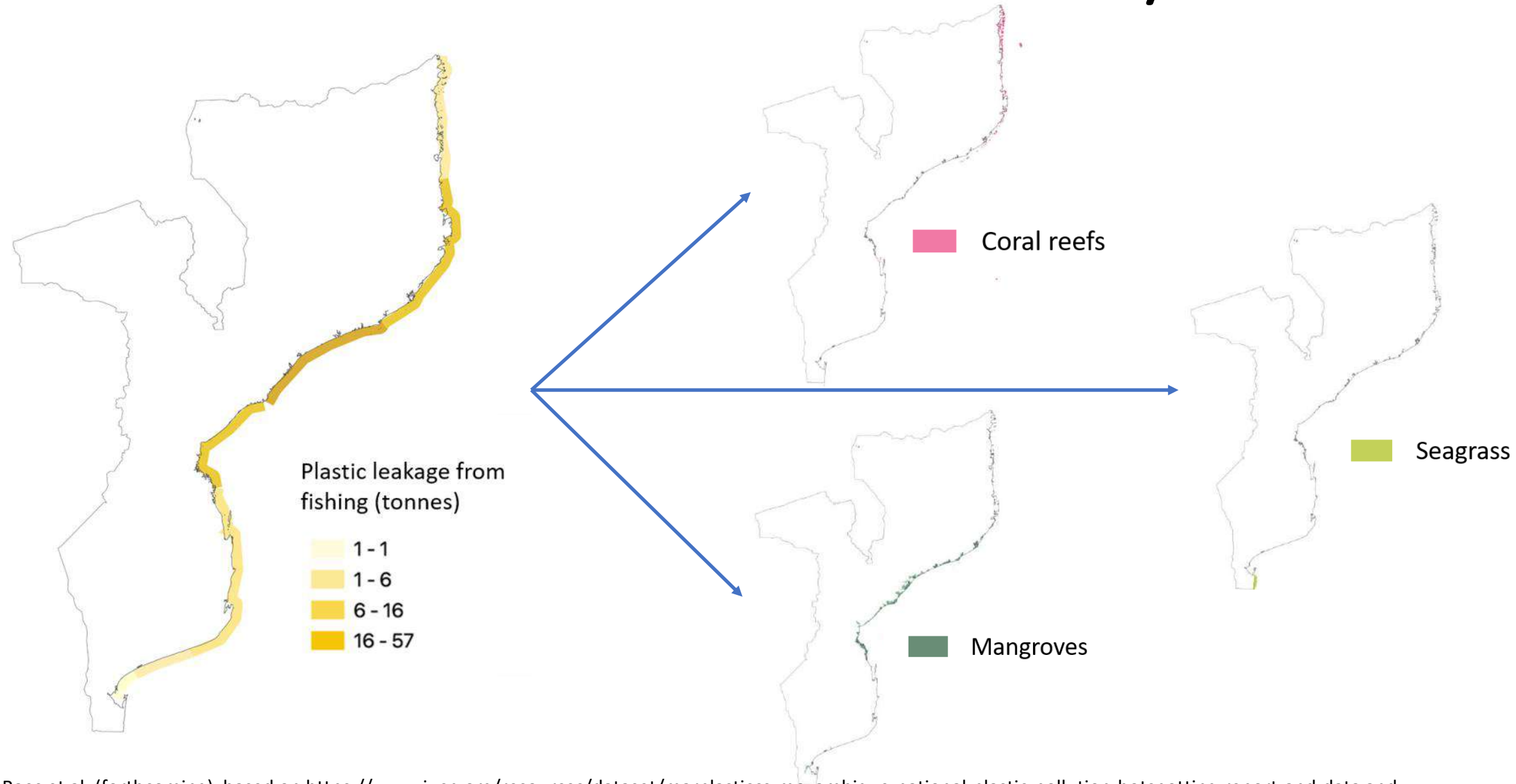
Source: https://www.iucn.org/sites/default/files/2022-08/economic_assessment_of_abandoned_lost_and_otherwise_discarded_fishing_gear_aldfg_in_the_fishery.pdf

Understanding the costs and benefits of solutions



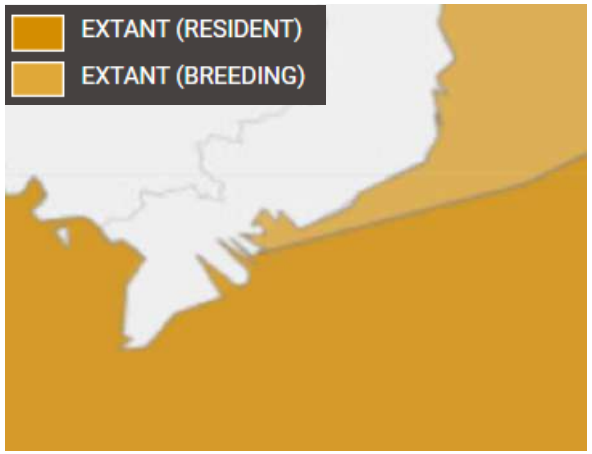
Source: https://www.iucn.org/resources/grey-literature/marplasticcs-economic-briefs-viet-nam

ALDFG and coastal and marine ecosystems



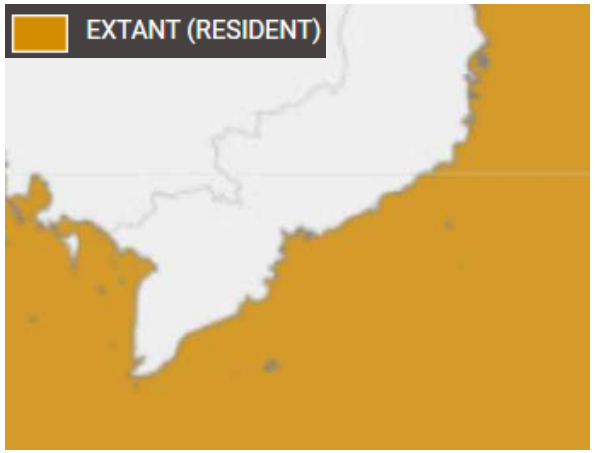
Source: Raes et al. (forthcoming), based on https://www.iucn.org/resources/dataset/marplasticcs-mozambique-national-plastic-pollution-hotspotting-report-and-data and https://habitats.oceanplus.org/mozambique

ALDFG and marine biodiversity



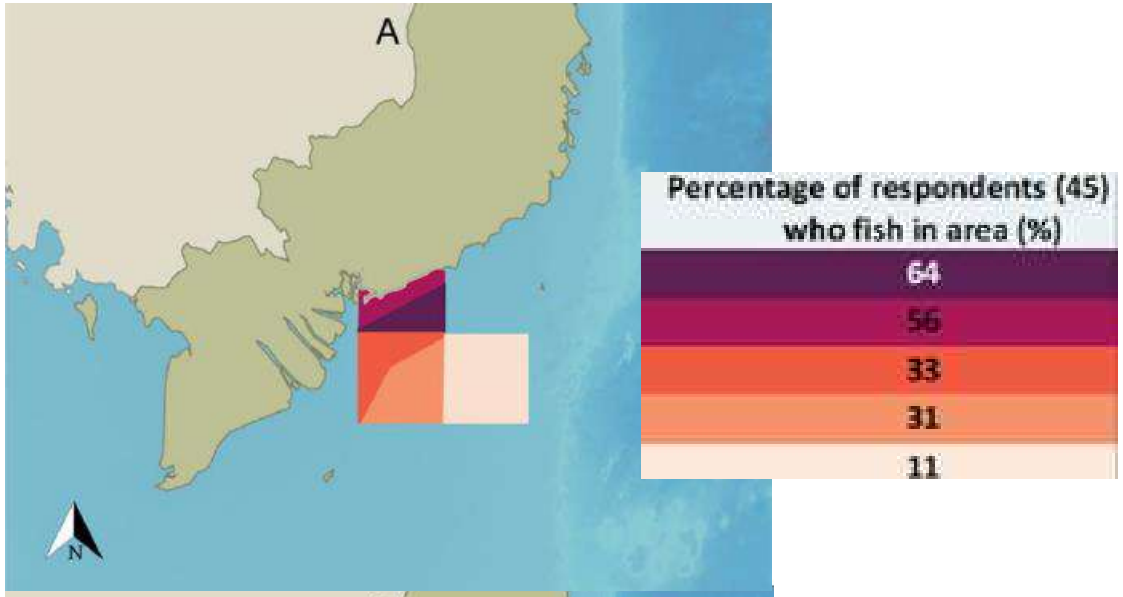
Geographic Range **Loggerhead Turtle** (*Caretta caretta*)

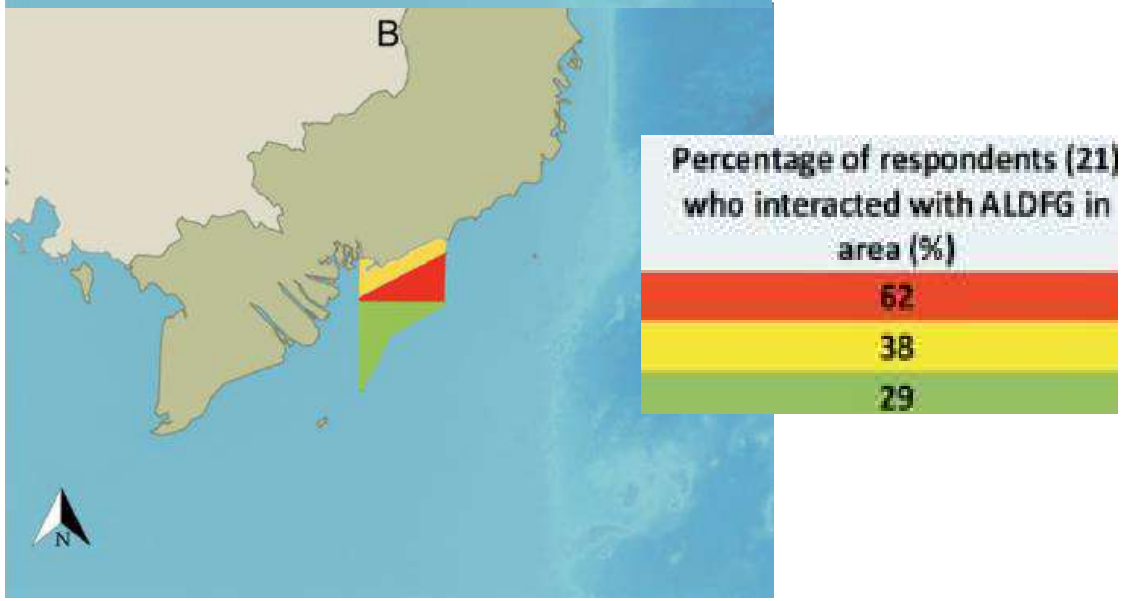
Red List **Threats** specifically mentions **ingestion** of plastics and **entanglement**



Geographic Range **Hawksbill Turtle** (*Eretmochelys imbricata*)

Red List **Threats** specifically mentions **ingestion** of plastics and **entanglement**





Sources: https://www.iucnredlist.org/species/3897/119333622; https://www.iucnredlist.org/species/8005/12881238 and https://www.iucn.org/resources/grey-literature/marplasticcs-economic-briefs-viet-nam

Thank you

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@IUCN_plastics

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

UNCTAD

WTO fish subsidies agreement negotiations: subsidies leading to overcapacity & overfishing as they related to fishing gear

Insights on material substitutes for fishing gear

David Vivas Eugui; Chief a.i. Economy Section

Henrique Pacini, Economic Affairs Officer

Trade, Environment and Sustainable Development Branch, UNCTAD

Nairobi, November 2023

UNITED NATIONS

UNCTAD

New regulatory trends: the WTO Fisheries Subsidies Agreement

Prohibition on subsidies contributing to IUU fishing (Article 3)

- Affirmative determination by Member coastal state, flag state or RFMOs
- Timely notification and sharing of information
- Reasonable and proportionate sanctions and duration
- Laws, regulations and/or administrative procedures in place
- Very limited **special and differential treatment** (two year peace clause within EEZ; binding but non-actionable)

Prohibition on subsidies contributing to fishing or related activities of overfished stock (Article 4)

- Recognized as overfished by Coastal Member or RFMOs within areas of competence
- Allowed if measures to rebuild the stock to biologically sustainable levels are in place
- Very limited **special and differential treatment** (two year peace clause within EEZ; binding but non-actionable)

Prohibition on subsidies for fishing in the unregulated high seas (Article 5)

- Unregulated high seas fishing (e.g., species and areas)
- **Special care and due restraint** when providing subsidies:
  - to vessels not flying the subsidizing member's flag;
  - to fishing or related activities when the status of the stock is unknown
- **Applicable to all WTO Members**

In-built negotiations on the WTO Fisheries Subsidies Agreement

KEY PROHIBITION: No Member shall grant or maintain **subsidies to fishing or fishing related activities that contribute to overcapacity or overfishing,** including those allocated to:

(a) construction, acquisition, modernisation, renovation or upgrading of vessels;

(b) **THE PURCHASE OF MACHINES AND EQUIPMENT FOR VESSELS (INCLUDING FISHING GEAR AND ENGINE, FISH PROCESSING MACHINERY, FISH-FINDING TECHNOLOGY, REFRIGERATORS, OR MACHINERY FOR SORTING OR CLEANING FISH);**

(c) the purchase/costs of fuel, ice, or bait;

(d) costs of personnel, social charges, or insurance;

(e) income support of vessels or operators or the workers they employ;

(f) price support of fish caught;

(g) subsidies to at-sea support; and

(h) subsidies covering operating losses of vessels or fishing or fishing related activities.

Conventional materials used in fishing gear

Fishing net/line	Fishing traps	Ropes	Aquaculture
Nylon-6	HDPE	Nylon	PP (oyster cup)
HDPE	PP	Natural fibres	
ABS (net float)	Wood (bamboo,…)	PE	
PLA	Metal (wire)	PP	
	Natural fibres		

SMEP Catchgreen

Biodegradable fishing nets/ropes

(alternative plastic)

Potential applications in Seaweed and mollusks farming (ropes), nets and cages

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

Gender aspects

Products being trialled

Images source: UNCTAD

UNITED NATIONS
UNCTAD

SMEP Catchgreen (2)

- Products currently being trialed in collaboration with Kenya Marine and Fisheries Research Institute (KMFRI)

- Important to produce scientific evidence on biodegradability in oceans (on various sites)

- Also important for parallel work to be done on establishment of biodegradability standards (for 2-5 years, in marine environment).

    - Potential area for public sector investment

The Global Ghost Gear Initiative®

Addressing Abandoned Lost or Otherwise Discarded Fishing Gear and Aquaculture Equipment in the ILBI

Hannah Pragnell-Raasch, Policy Specialist, Global Ghost Gear Initiative

INC-3 | 13th November 2023

Ocean Conservancy®

GLOBAL GHOST GEAR INITIATIVE®

135
Member Organizations

20
Supporting Governments

4
High Level Global Affiliates

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

UN environment programme

European Commission Maritime Affairs and Fisheries

OSPAR COMMISSION

Why ALDFG should be addressed in the ILBI

ALDFG is the most pervasive & harmful form of marine plastic pollution.

SIDs and LDCs are disproportionately impacted.

Current frameworks addressing ALDFG are fragmented and piecemeal.

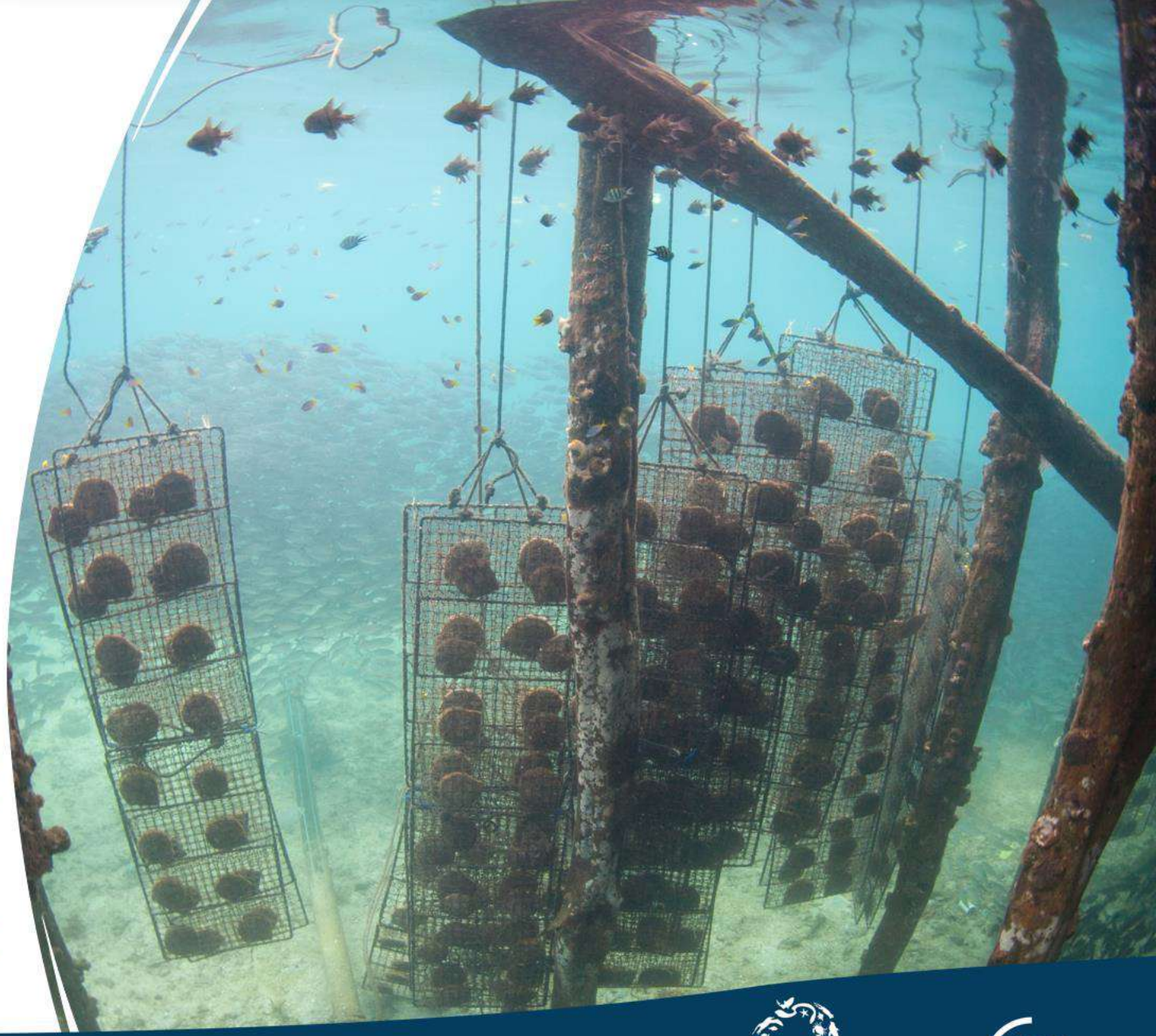
ILBI provides once-in-a-lifetime opportunity to address ALDFG holistically across its full life cycle.

Perspectives on the zero-draft text

- Addressing plastic fishing and aquaculture gear is more than solely a waste management issue as defined in the zero-draft.
- Being a distinct form of plastic pollution, urge Member States to consider the addition of a specific category in Part II for plastic fishing and aquaculture gear.
- Need for upstream, midstream and downstream management measures that would be further underpinned and supported by voluntary measures under national action plans (for example).
- Should a sectoral approach be adopted, the sectors need to be defined and the provisions pertaining to each sector clearly identified in order to ensure a robust and unambiguous instrument.

Recommendations moving forward

- Plastic fishing and aquaculture gear needs to be addressed holistically across the full life cycle:
  - Gear design (including traceability, design and labelling standards, design for circularity);
  - Gear marking;
  - Lost gear reporting;
  - Effective port side collection facilities for end-of-life (EOL) gear, recycling systems and long-term funding mechanisms to support such programs, such as extended producer responsibility (EPR);
  - Appropriate and just disposal and remediation.
- Data collection and monitoring of ALDFG and EOL gear - scientifically underpinned baseline as well as a means to report on potential globally or nationally set targets.



Thank-you!

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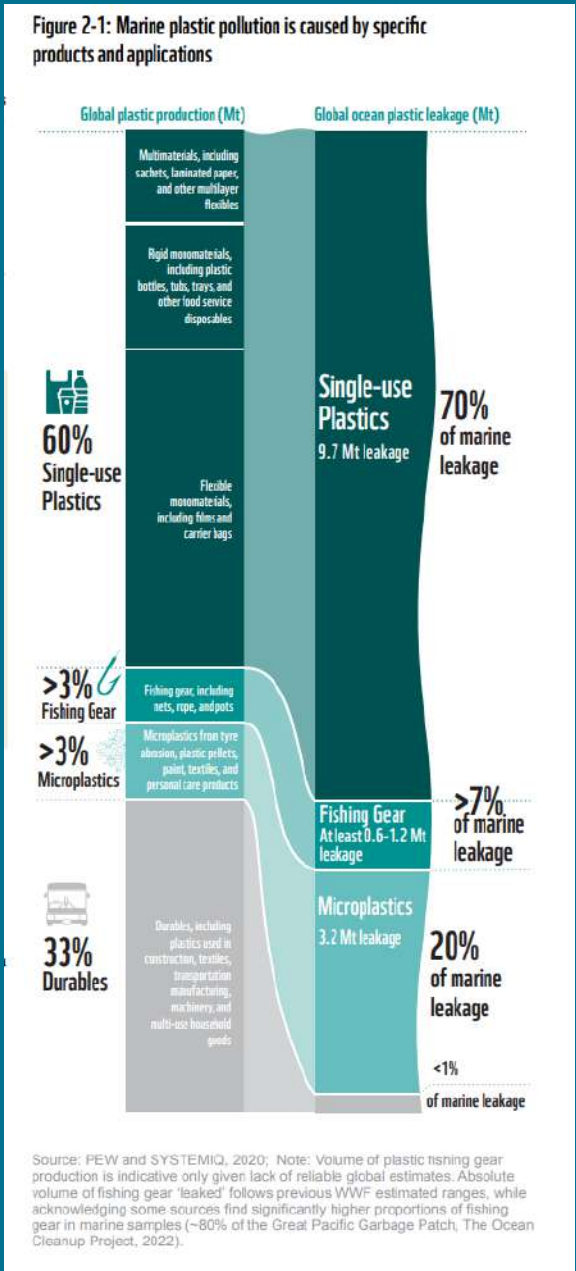
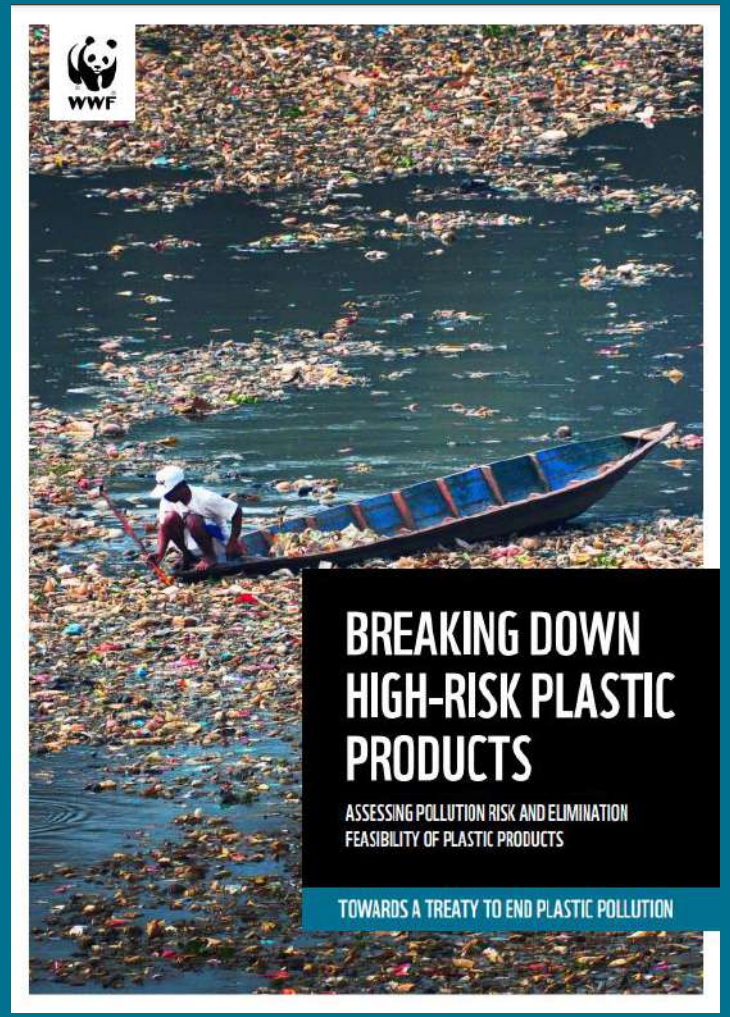
Addressing plastic pollution from fishing gear in the treaty

WWF

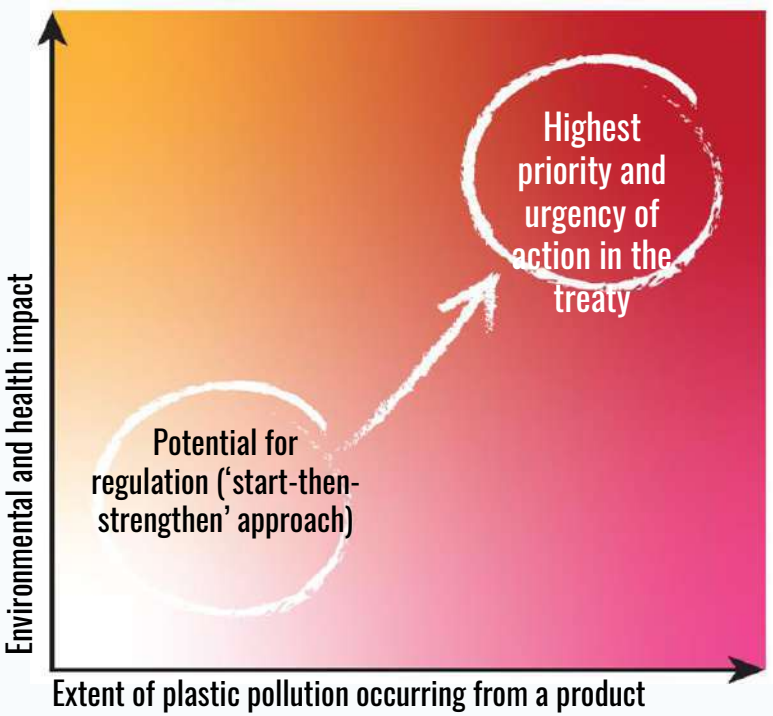
Plastic products and what to do about them





Global regulations of high-risk plastic products: needed **and** feasible

An assessment of **pollution risk** shows that action is urgently needed and must be **prioritized** for **14 plastic product groups**



Elimination of many high-risk plastic products is **feasible**:

(1) Technical feasibility
Proven avoidability, and existence of alternatives and processes today and within the next decade

(2) Socio-economic feasibility
It will not cause undue burden on a society or a demographic group

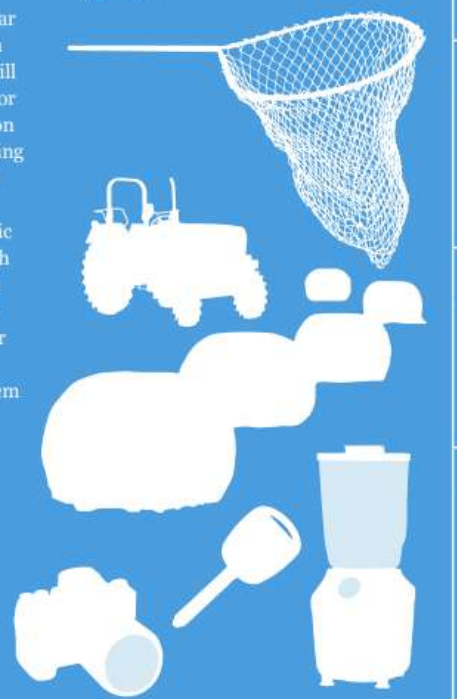
(3) Unintended environmental consequences
It is unlikely that it will give rise to other environmental problems

PRODUCT GROUP		ELIMINATE/ REDUCE	CIRCULATE/ MANAGE
PACKAGING	1a. Packaging: contact sensitive - single-use food and beverage (necessary/other)	☑	☑
	1b. Packaging: contact sensitive – multi-use food and beverage	*Not currently assessed as a priority high-risk plastic product group*	
	1c. Packaging: contact sensitive – cosmetics and personal care (necessary/other)	☑	☑
	1d. Packaging: contact sensitive – pharmaceutical and medical		☑
	1e. Packaging: other contact sensitive		☑
	1f. Packaging: non contact sensitive	☑	☑
CHARACTERISTIC-SPECIFIC PRODUCTS	2a. Characteristic-specific products: single-use short-lived – fibres/non-woven – necessary		☑
	2b. Characteristic-specific products: single-use short-lived – fibres/non-woven – other (non-necessary)	☑	
	2c. Characteristic-specific products: other single-use short-lived items – necessary	☑	☑
	2d. Characteristic-specific products: other single-use short-lived items – other (non-necessary)	☑	
	2e. Characteristic-specific products: longer life – cause significant secondary microplastic release	☑	☑
	2f. Characteristic-specific products: longer life – other longer life items	*Not currently assessed as a priority high-risk plastic product group*	
SECTOR-SPECIFIC PLASTIC PRODUCTS	3a. Sector-specific plastic products: marine, aquatic and terrestrial – marine/aquatic – fishing and aquaculture		☑
	3b. Sector-specific plastic products: marine, aquatic and terrestrial – terrestrial – agriculture/ agricultural plastics applied directly		☑
	3c. Sector-specific plastic products: other	*Not currently assessed as a priority high-risk plastic product group*	
PRIMARY MICROPLASTICS	4a. Primary microplastics: in application or intentionally added microplastics	☑	
	4b. Primary microplastics: preproduction		☑

3.3. SECTOR-SPECIFIC PRODUCTS

The use of plastics in sectors like fishing, aquaculture and agriculture poses particular pollution issues, since products are used in direct contact with the environment and will directly enter the environment if not used or discarded correctly. A significant proportion of fishing and aquaculture gear is made using plastic components, which are also subject to degradation and microplastic leakage during their lifetimes. In some cases, plastic products in these sectors do not have a high enough value to ensure they are recovered if accidental loss does occur, and adequate waste management options are often either lacking or too expensive. The physical properties of some of these items make them particularly harmful if they do end up in the environment (e.g., fishing lines, ropes and nets which are deadly to wildlife that continue to be ensnared in them).

Table 3-3: Assessment of plastic product groups: sector-specific plastic products



SECTOR-SPECIFIC PRODUCTS	PROBABILITY:			IMPACT:		
	VOLUME IN CIRCULATION	TENDENCY TO ENTER	TRANSBOUNDARY RELEVANCE	PREVALENCE	PHYSICAL PROPERTIES	SPECIFIC RELATED HARMS
3A. SECTOR-SPECIFIC PRODUCTS: MARINE, AQUATIC AND TERRESTRIAL – MARINE/ AQUATIC – FISHING AND AQUACULTURE	Low	High	Moderate	High	High	High
	Designed to be used in direct contact with land/water. Not always designed for durability/repair, high propensity to get snagged/lost due to currents or other factors. High likelihood of entering the environment, but not all products will have transboundary impacts.			Commonly found in marine plastic litter globally. High tendency for breakdown and dispersal. Can continue to harm, trap and smother marine wildlife and habitats. High amounts of phthalates, some products primarily made from plastics using additives (e.g., PVC for soffits).		
3B. SECTOR-SPECIFIC PRODUCTS: MARINE, AQUATIC AND TERRESTRIAL – TERRESTRIAL – AGRICULTURE/ AGRICULTURAL PLASTICS APPLIED DIRECTLY	Low	High	Moderate	High	High	High
	Designed to be used in direct contact with land. High propensity to get lost in flooding events. Surface run-off and erosion can transport microplastics from fields to waterways.			Commonly found in land litter globally. Due to design, it can harm, trap, and smother wildlife. Microplastics can effect changes in soil physio-chemical properties which can have impacts such as reduced root growth or nutrient uptake.		
3C. SECTOR-SPECIFIC PRODUCTS - OTHER	High	Low	Low	Low	Low	High
	Products tend to be used in the home, less likely to end up in the environment. Risk of dumping if costs of disposal are high. Tend to be durable, heavy, difficult to blow away or float.			Not commonly found in litter. Little mobility in the environment, though some components and smaller products may still be mobile. Lower impact until broken down. PVC used in construction and household products releases harmful substances when incinerated – can leach into soils and groundwater. Several toxic additives are found in e.g., e-waste, and if leaked to the environment the harms are severe so impact is high[34].		

Class I product groups and suitable controls for elimination

	PRODUCT GROUPS IN CLASS I	BANS*	PHASED REDUCTION (PHASE-OUTS & PHASE-DOWNS)	PRODUCT STANDARDS	ECONOMIC INSTRUMENTS	SUMMARY RATIONALE
PACKAGING	1a. Packaging: contact sensitive - single-use food and beverage (necessary/other**)		☑	☑	☑	Large volumes and high propensity for leakage. Global bans assessed as low feasibility or socioeconomically acceptable across product groups, reduction at product/application level suitable and phase-out/phase-down recommended. Standards to further strengthen reduction.
	1c. Packaging: contact sensitive – cosmetics and personal care (necessary/ other**)		☑	☑	☑	Large volumes and high propensity for leakage. Global bans assessed as low feasibility. Reduction at product/application level assessed as suitable.
	1f. Packaging: non-contact sensitive		☑	☑	☑	Large volumes and high propensity for leakage. Bans assessed to be less socioeconomically acceptable.
CHARACTERISTICS-SPECIFIC PLASTIC PRODUCTS	2b. Characteristics-specific plastic products: single-use short lived – fibres/non-woven – other (non-necessary)	☑		☑		Waste management and recycling lacking, leakage common. Alternatives widely available. Bans supported by standards.
	2c. Characteristics-specific plastic products: other single-use short-lived items – necessary		☑	☑	☑	Alternatives currently lacking. Reductions desirable and phase-outs/downs feasible. Economic instruments to incentivize behaviour change, standards to enforce it.
	2d. Characteristics-specific plastic products: other single-use short-lived items – other (non-necessary)	☑	☑	☑	☑	Waste management/recycling lacking, leakage common. Use of plastics in items non-essential. Alternatives widely available. Bans supported by economic instruments due to widespread nature of use.
	2e. Characteristics-specific plastic products: longer life – cause significant secondary microplastic release		☑	☑	☑	Bans assessed as less feasible or socioeconomically acceptable. Standards to reduce volume and leakage through design. Targets to support effectiveness. Economic instruments to encourage consumer behaviour change.
PRIMARY MICROPLASTICS	4a. Primary microplastics – in application or intentionally added microplastics	☑	☑	☑	☑	Alternatives available with associated economic cost of R&D and consumer satisfaction. Bans appropriate.

Global bans are proposed for the following product groups, with scope for ambitious and far-reaching control measures to reduce use across all other items identified as suitable for Class I controls:

- **Non-necessary fibres-non-woven**: such as wet wipes, cigarette butts, disposable vacuum filters and plastic tea bags.
- **Non-necessary single-use items**: such as plastic balloons, cutlery/plates/cups, ear bud sticks and disposable e-cigarettes, etc.
- **Intentionally added microplastics**: such as microbeads in personal care products such as toothpastes, skin care and scrubs; antifouling application on ship hulls, microplastics used in industrial applications such as printer inks, spray paints, injection mouldings and abrasives.

Class II product groups and suitable controls for circulation and management

CLASS II PRODUCT GROUP	TARGETS	ECONOMIC INSTRUMENTS	CIRCULARITY STANDARDS/MINIMUM REQUIREMENTS						STANDARDS TO REDUCE HARM IN ENVIRONMENT	EPR	DRS	RATIONALE
			REUSE	RECYCLING	RECYCLED CONTENT	COLLECTION	DISPOSAL	MICROPLASTIC CONTROLS				
1a. Packaging: contact sensitive – single-use food and beverage (necessary/other)	☑	☑	☑	☑	☑	☑	☑	☑	Possible	☑	☑	All identified measures can be applicable to single-use food and beverage packaging. They are all relevant to this group and have been used successfully for products in this category.
1c. Packaging: contact sensitive – cosmetics and personal care (necessary/other)	☑	☑	☑	☑	☑	☑	☑	☑		☑	Possible	Almost all the identified measures can be applicable to these groups of packaging. These product groups are less likely to enter the environment than single-use food and beverage packaging.
1d. Packaging: contact sensitive – pharmaceutical	☑	☑	☑	☑	☑	☑	☑	☑		☑	Possible	
1e. Packaging: contact sensitive – other	☑	☑	☑	☑	☑	☑	☑	☑		☑	Possible	
1f. Packaging: non contact sensitive	☑	☑	☑	☑	☑	☑	☑	☑		☑	Possible	
2a. Characteristics-specific plastic products: single-use short lived – fibres/non-woven - necessary	Possible	Possible	☑	☑		☑	☑	Possible	Possible	Possible		Some items may be suitable for measures indicated, though approaches such as DRS are less tested for products within this category. Economic instruments risk incentivizing illegal disposal behaviours.
2c. Characteristics-specific plastic products: single-use short lived – other non-packaging – necessary			☑	☑		☑	☑		Possible			Not all measures will apply to this category and economic instruments may be redundant. Measures like EPR and DRS are not well tested.
2e. Characteristics-specific plastic products: longer-life items of concern – causing significant secondary microplastic release						☑	☑	☑		☑		Products in this group are not suitable and well-tested for DRS measures. High-risk stage is the use stage of the life cycle.
3a. Sector-specific plastic products: marine, aquatic and terrestrial – marine/ aquatic	☑	Possible	Possible	☑	Possible	☑	☑	Possible	Possible	☑	☑	Products suitable for collection and recycling targets, but not possible for all. DRS would be relevant for return of potentially lost fishing gear and/or terrestrial plastic applications.
3b. Sector-specific plastic products: marine, aquatic and terrestrial – terrestrial	☑	Possible	Possible	☑	Possible	☑	☑	Possible	Possible	☑	☑	
4b. Primary microplastics: pre-production		Possible				☑	☑	☑				Standards for management of pre-production pellets in existence throughout the supply chain in some countries. Easily incorporated into health and safety requirements in production.

Class II product groups and suitable controls for circulation and management

CLASS II PRODUCT GROUP	TARGETS	ECONOMIC INSTRUMENTS	CIRCULARITY STANDARDS/MINIMUM REQUIREMENTS						STANDARDS TO REDUCE HARM IN ENVIRONMENT	EPR	DRS	RATIONALE
			REUSE	RECYCLING	RECYCLED CONTENT	COLLECTION	DISPOSAL	MICROPLASTIC CONTROLS				
3a. Sector-specific plastic products: marine, aquatic and terrestrial – marine/ aquatic	☑	Possible	Possible	☑	Possible	☑	☑	Possible	Possible	☑	☑	Products suitable for collection and recycling targets, but not possible for all. DRS would be relevant for return of potentially lost fishing gear and/or terrestrial plastic applications.
3b. Sector-specific plastic products: marine, aquatic and terrestrial – terrestrial	☑	Possible	Possible	☑	Possible	☑	☑	Possible	Possible	☑	☑	

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