Organisation for Economic Co-operation and Development

ENV/WKP(2022)19

Unclassified **English - Or. English**

28 November 2022

ENVIRONMENT DIRECTORATE

The role of development co-operation in tackling plastic pollution

Key trends, instruments, and opportunities to scale up action

Environment Working Paper No. 207

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Authorised for publication by Jo Tyndall, Director, Environment Directorate.

Keywords: Circular Economy, Plastics, Recycling, Waste, Environmental Policy, Solid Waste, Waste Management, Water Pollution, Foreign Aid, Foreign Assistance, Development Co-operation, Official Development Assistance, and Ocean Pollution

JEL Classification: O13, O19, Q25, Q53

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JT03508784

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Abstract

Plastics leakage to the ocean and, more broadly, the environment has become a pressing issue for many developing countries. While a number of development co-operation initiatives with a focus on tackling plastic pollution have recently emerged, there is currently no comprehensive assessment of the volume and scope of international development co-operation in this area. This report contributes to fill this gap by bringing together OECD's unique statistical sources and expertise. The report fulfils three main objectives. First, the report assesses the scale of the plastic pollution problem in developing countries including by providing evidence on developing countries' plastic use, waste, and leakage volumes, identifying plastic pollution main drivers, and assessing the specificity of plastics-related economic and environmental impacts in developing countries. Secondly, it quantifies development co-operation support in this area through a refined methodology developed as part of the OECD Sustainable Ocean for All Initiative. This includes presenting development finance trends in relation to both bilateral and multilateral providers of development co-operation and both their concessional and non-concessional flows. Finally, the report presents innovative development co-operation approaches that could be further developed, including financial mechanisms and approaches that are helping developing countries to scale up financing and impact of waste management projects with the support of development finance.

Keywords: Circular Economy, Plastics, Recycling, Waste, Environmental Policy, Solid Waste, Waste Management, Water Pollution, Foreign Aid, Foreign Assistance, Development Co-operation, Official Development Assistance, Ocean Pollution

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Résumé

Les fuites de plastiques dans l'océan et, plus largement, dans l'environnement, sont devenues un problème urgent pour de nombreux pays en développement. Bien qu'un certain nombre d'initiatives de coopération au développement axées sur la lutte contre la pollution plastique aient récemment vu le jour, il n'existe actuellement aucune évaluation complète du volume et de la portée de la coopération internationale au développement dans ce domaine. Ce rapport contribue à combler cette lacune en rassemblant les sources statistiques et l'expertise de l'OCDE. Le rapport répond à trois objectifs principaux. Premièrement, le rapport évalue l'ampleur du problème de la pollution plastique dans les pays en développement, notamment en fournissant des données sur les volumes d'utilisation, de déchets et de fuites de plastique dans les pays en développement, en identifiant les principaux facteurs de pollution plastique et en évaluant la spécificité des impacts économiques et environnementaux liés au plastique dans les pays en développement. Deuxièmement, il quantifie le soutien de la coopération au développement dans ce domaine grâce à une méthodologie affinée développée dans le cadre de l'initiative de l'OCDE "Un océan durable pour tous". Il présente notamment les tendances du financement du développement en relation avec les fournisseurs bilatéraux et multilatéraux de coopération au développement et leurs flux concessionnels et non concessionnels. Enfin, le rapport présente des approches innovantes de coopération au développement qui pourraient être développées davantage, notamment des mécanismes et des approches financières qui aident les pays en développement à augmenter le financement et l'impact des projets de gestion des déchets avec le soutien du financement du développement.

Mots-clés : Économie circulaire, Plastiques, Recyclage, Déchets, Politique environnementale, Déchets solides, Gestion des déchets, Pollution de l'eau, Aide étrangère, Coopération au développement, Aide publique au développement, Pollution des océans

Classification JEL : O13, O19, Q25, Q53

Acknowledgements

The present report was jointly prepared by the OECD's Environment and Development Co-operation Directorates. It was authored by Alberto Agnelli with substantive inputs and guidance from Piera Tortora, and under the overall supervision of Peter Börkey and Jens Sedemund. Jakob Netskar provided research assistance and Daniel Prosi supported the development of the methodology to track development finance flows in the framework of the OECD Sustainable Ocean for All initiative. This work was undertaken under the overall guidance of Shardul Agrawala, Head of the Environment and Economy Integration Division at the OECD Environment Directorate.

The authors are grateful to delegates of the Working Party on Resource Productivity and Waste for their helpful comments on earlier drafts of this paper. They would also like to thank Elena Buzzi, Maarten Dubois, and Frithjof Laubinger (all OECD) for their useful comments and suggestions during the drafting of this publication. The report benefitted from insights from expert interviews with Siljie Fagernes Anonsen (Norwegian Agency for Development Cooperation), Delphine Arri (World Bank), Brandon Bray and Clare Romanik (U.S. Agency for International Development), Jonas Bystrom (European Investment Bank), Romain Chabrol (Agence Française de Développement), Andrew Horan (U.S. Environmental Protection Agency), Lena Kampe (Deutsche Gesellschaft für Internationale Zusammenarbeit), and Miura Sho (Japan International Cooperation Agency). Dávid Munka, Illias Mousse Iye, and Aziza Perrière provided editorial assistance and Elizabeth Del Bourgo provided communications support.

Financial support from the United States is kindly acknowledged.

The responsibility for the content of this publication including any remaining omissions or errors lies with the authors.

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Executive summary

Plastic pollution is one of the great environmental challenges of the 21st century, causing wide-ranging damage to the environment. The urgency of global action and ambition for tackling plastic pollution has received increasing attention at the international level in recent years, including in the framework of the United Nations, the OECD, the G7 and the G20. Most recently, the UN Environment Assembly adopted a resolution where countries agreed to set up an intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution by 2024. In this context, the role of development cooperation in helping to tackle plastic pollution has also been attracting increasing attention.

This report brings together OECD's unique statistical sources to provide a comprehensive assessment of plastic pollution in developing countries and to analyse the role that the international development community is playing to support developing countries face this challenge. The report provides a new baseline of evidence to support (i) the international development community in better co-ordinating its actions in support of developing countries and (ii) policy-makers in developing countries in better navigating the wide range of support instruments available to address the issue of plastic pollution. The report also aims to provide helpful inputs to the upcoming meetings of the Intergovernmental Negotiating Committee (INC) to develop a legally binding instrument on plastic pollution.

Plastic pollution disproportionately affects developing countries

Historically, developing countries have not been major contributors to global plastic use but their plastic consumption is increasing rapidly. Per capita plastic use in non-OECD economies has consistently been lower than in high-income economies but in recent years plastics use in non-OECD economies has been growing faster than in OECD economies, driven by economic and population growth. According to the OECD Global Plastics Outlook projections, developing countries are expected to experience the largest increases in plastics use between now and 2060, with sub-Saharan Africa, India, and Southeast Asia expected to increase their plastics use by 550%, 450% and 270% respectively in the next forty years, compared to +120% in OECD European countries and +100% in the United States.

Most plastics leakage into the ocean takes place in a few rapidly growing developing countries. Non-OECD countries use slightly more than half of total plastics, yet they account for 86% of global plastic leakage. While the share of mismanaged plastic waste in total plastic waste in non-OECD countries has been declining from 60% in 1990 to 38% in 2019, their annual volume of mismanaged plastic waste in absolute terms has increased from 12 Mt to 70 Mt and it is projected to reach 148 Mt by 2060. This is driven mainly by the high amount of mismanaged waste ending up in the environment due to weak national systems for waste collection and management, strained by other trends such as lack of adequate infrastructure, insufficient financial resources, lack of technical capacities and import of hard-to-recycle waste. Plastic leakage to the environment also gives rise to a range of economic and non-economic costs which can disproportionately affect developing countries by magnifying pre-existing vulnerabilities.

Eliminating plastic pollution globally is possible but costs are unequally distributed and fall disproportionately on developing countries. At the global level, achieving zero plastic leakage would imply macroeconomic costs estimated at 0.8% of global GDP by 2060 but the largest burden relative to GDP would be borne by non-OECD countries. The largest costs are projected for Sub-Saharan Africa, whose GDP would be reduced by 2.8% below the baseline. Despite the relatively high cost of action, these

are still estimated to be smaller than the costs of pollution and clean-up. The high costs that will have to be borne by developing countries provide the rationale for increased international co-operation and development financing.

Development finance to curb plastic pollution is increasing but opportunities for improvement exist

In recent years development co-operation providers' prioritisation of plastics-related issues has increased. A growing number of bilateral and multilateral providers have established initiatives specifically focused on addressing marine pollution issues. This coincided with an increase in total development finance resources committed to curb plastics pollution (i.e., for waste management and plastics-specific initiatives), which reached a record high of USD 1 866 million in 2020, up from USD 650 million in 2014 (+24% per year on average), representing 0.4% of total development finance over the period. Development finance allocated to projects specifically targeting plastics or recycling increased almost three-fold between 2014 and 2020. Official Development Assistance (ODA) flows have been the largest source of development finance to curb plastics pollution, representing 59% of total development finance for this purpose in 2014-2020, followed by other official flows (39%) and philanthropic funding (2%). Throughout the years, ODA flows to curb plastic pollution (i.e., for waste management and plastics-specific initiatives) have been consistently on an increasing trend and more than doubled from an annual average of USD 331 million in 2014-15 to USD 700 million in 2019-20.

Analysis of development finance flows reveals opportunities for improvement. The number of development co-operation providers that support projects to improve waste management and reduce plastics pollution has significantly increased in recent years, yet funding remains highly concentrated. In 2018-20, the top 10 providers of development finance to curb plastic pollution (both waste management and plastics-specific projects) provided 80% of total funding. While debt financing, largely to fund waste management infrastructure, weighs heavily in total development finance allocations, grant financing still plays a critical role in supporting the institutions and policies that enable and catalyse public and private sector investment. In the 2014-2020 period, debt instruments represented 55% of total development finance funding for the sector, followed by grants (44%) and other instruments (1%), such as equity and guarantees. Grant funding is the most common financing instrument for projects that tackle plastics specifically. In 2018-20, 80% of funding targeting plastics-specific projects was in the form of grants. Finally, development finance to curb plastic pollution could be more aligned with where the main sources of leakage are. While ODA eligible countries in Europe receive disproportionate amounts of resources, parts of Asia receive significantly less when compared to the plastic leakage they produce. In 2019, for instance, China and India contributed respectively 25% and 11% of plastic leakage, while they received only 6% and 2% of development finance to curb ocean pollution respectively over the triennium 2018-2020.

Development co-operation providers are testing new ways to address plastic pollution, with a view to increase the volume of resources available and enhance their impact. The report analyses some promising development co-operation approaches that could be scaled-up. These include approaches supporting the adoption of plastics-related policy instruments and adopting blended finance approaches specifically targeted at plastic pollution and waste management in order to scale-up overall funding and leverage new sources of funding, including from the private sector.

Looking ahead: proposals for enhanced action

In light of the findings of this report, development co-operation providers could consider adopting the following measures in order to enhance their efforts to curb plastic pollution.

Scaling up total resources available to curb plastic pollution in developing countries

- **Aligning future development finance flows with circularity principles:** To scale up the impact of policies and interventions aimed at reducing plastic pollution, it is crucial to mainstream the lifecycle approach across multilateral and bilateral agencies' portfolios.
- **Exploring new financing instruments**: Development co-operation providers are in a key position to continue explore new financing mechanisms to scale up financing for plastic pollution reduction from all sources, including through blended finance and innovative instruments, such as blue bonds and financing instruments that leverage synergies across sectors.
- **Facilitating access to private financing**: Development co-operation can support developing countries in addressing the barriers to accessing private finance for waste management infrastructure, both at the national and sub-national level, including through enhanced capacity building activities and policy support.

Enhancing global targeting of resources and their alignment to country needs and priorities

- **Better targeting of development co-operation resources based on an evidence-based analysis of country needs**. There seems to be a mismatch between development finance allocations and country needs, as flows are often not concentrated where plastic leakages are the greatest, driven by large assistance of the EU institutions to ODA-eligible European countries. Data analysis and evidence on current and projected growth in plastics use and leakage can enhance the targeting of development finance to better align where needs are the greatest.
- **Greater alignment of resources to country needs and plans**: development co-operation providers can enhance engagement at the country level to ensure support is rooted into country strategies.

Adopting international good practices and fostering innovation

- **Integrated life-cycle approaches**: Incorporating a lifecycle approach into development co-operation policies and strategies, which considers the plastics issue not only at the end-of-life stage but also at earlier stages of the life cycle.
- **Making inclusivity a core principle** in all waste management projects, including by adopting gender lenses in development co-operation initiatives targeting plastics.
- **Promoting innovation:** Development co-operation providers can foster the creation and adoption of new technologies for recycling, waste management and clean up by promoting technology transfer and the development of innovations responding to local contexts.

Promoting mutual learning and developing guidance for effective development co-operation in this area

- **Knowledge exchange**: Development co-operation providers could encourage opportunities for mutual learning and for sharing best practices, both in countries and at the international level.
- **Guidance for effective development co-operation in this area:** DAC members and other development co-operation providers could consider the evidence and suggestions in this paper as a basis for agreeing on a development co-operation guidance for tackling plastic pollution, which would be part of the implementation of the *DAC Declaration on a new approach to align development co-operation with the goals of the Paris Agreement on Climate Change*.

1 Background

Plastic pollution is one of the great environmental challenges of the 21st century, causing wide-ranging damage to ecosystems and human health, while the fossil-fuel origins of most of the plastics produced also have implications for climate change. Yet plastics have become an integral part of the global economy, being used in almost all economic sectors.

The global urgency of tackling plastic pollution has taken an increasingly prominent position on the international agenda in recent years, including in the framework of the United Nations (UN) Agenda 2030, the G7 and the G20. Most recently, the UN Environment Assembly adopted a resolution where countries agreed to set up an intergovernmental negotiating committee to develop an international legally binding instrument aimed at ending plastic pollution by 2024 (UNEA, 2022[1]). In this context, the role of development cooperation in helping to tackle plastic pollution has been attracting increasing attention.

Increasing volumes of plastic waste enter the world's ocean every year. While most use of plastics is concentrated in OECD countries, most plastics leakage into the ocean takes place in a few rapidly growing developing countries, where waste management systems have not kept pace with the economic and population growth rates experienced in recent decades.

Several challenges hinder the establishment of effective waste management systems in developing countries, including policy and financing constraints. In this context, development co-operation can play a key role to support the provision of concessional finance to address market failures, build capacity and make investment in infrastructure and technologies more affordable.

As the G20 Action Plan on Marine Litter underscores, the leakage of plastics litter into the ocean can be addressed in a variety of ways throughout the plastics lifecycle. Among these are source reduction using alternative materials, enhanced waste collection and recycling, and clean-up and removal activities such as beach clean-ups and technologies to collect plastics from the ocean. Effectively addressing marine plastics litter will require a combination of these approaches. Development co-operation can provide support at all these various stages, including through dedicated capacity building, policy support, and investment in infrastructure and technologies for waste management and recycling.

In this context, the objective of this report is three-fold:

1. **Assessing the scale of the problem (Chapter 2),** including by providing evidence on developing countries' plastic use, waste, and leakage volumes, identifying plastic pollution main drivers, and assessing the specificity of plastics-related economic and environmental impacts in developing countries.
2. **Quantifying development co-operation support in this area (Chapter 3),** through a refined methodology developed as part of the OECD Sustainable Ocean for All Initiative. This includes presenting development finance trends in relation to both bilateral and multilateral providers of development co-operation and both their concessional and non-concessional flows.
3. **Presenting innovative development co-operation approaches that could be further developed and scaled up (Chapter 4)**, including financial mechanisms and approaches that are helping developing countries to scale up financing and impact of waste management projects, with support of development finance.

The report provides a new baseline of evidence to support (i) the international development community in better co-ordinating its actions in support of developing countries and (ii) policy-makers in developing countries in better navigating the wide range of support instruments available to address the issue of plastic pollution. The report also aims to provide helpful inputs to the upcoming meetings of the Intergovernmental negotiating committee (INC) to develop a legally binding instrument on plastic pollution.

This report builds on original and secondary sources of evidence. Data on plastic use, waste and leakage volumes are obtained from the OECD Global Plastics Outlook database, which includes data from 1990 to 2019 and projections up to 2060 covering the full lifecycle of plastics, from the use of plastic materials by polymer and application to the generation of plastic waste and finally the leakage of plastic waste into the environment (OECD, 2022[2]). Data on development finance flows has been computed based on a dedicated methodology developed as part of the OECD Sustainable Ocean for All Initiative and using statistical data from the OECD-DAC Creditor Reporting System (CRS) Database. It includes project-level information from major bilateral and multilateral providers of development co-operation as well as from 41 of the largest private philanthropic foundations working for development (OECD, 2022[3]).

2 Plastic pollution in developing countries

This chapter explores the issue of plastic pollution[1] in developing countries[2] by quantifying its volumes and outlining the associated economic and environmental costs. The main source of the data on plastic volumes is the OECD Global Plastics Outlook Database which collects and reconciles data for the full lifecycle of plastics across the world, including production, use, waste generation and leakage volumes (OECD, 2022[2]).

Quantifying plastic pollution in developing countries

Global plastics use is at a historical high, and so is plastic waste generation

Global plastic use has grown steadily for more than 70 years, soaring to 460 Mt in 2019. This growth has been associated both with economic and social advantages as well as with severe environmental and health impacts. Plastics as low-cost, highly resistant, light, and mouldable materials have sustained economic growth across sectors and geographies. In many sectors, plastics have replaced traditional materials and enabled innovation thanks to their unique properties. Annual global use of plastics, including fibres and additives, has reached 460 million tonnes (Mt) in 2019, increasing nearly fivefold since the 1980s and outpacing GDP growth by 70% (OECD, 2022[4]). The fast intensification of global plastics use coincided with a surge in plastic waste production, which soared to 353 Mt in 2019. Of this, only 9% was recycled, while the majority was landfilled or incinerated (69%) and more than a fifth was inadequately disposed of or littered (OECD, 2022[4]).

Growth in plastic waste has been straining waste management systems around the world, particularly in developing countries with weaker systems of collection and disposal. In 2019, 22 Mt of plastics entered terrestrial and aquatic environments. Macro plastics constitute the vast majority of plastics entering the environment (88% in terms of weight). However, microplastics, i.e., plastics smaller than 5 mm, also make up a sizeable share of total annual leakage (12%). These may come from a variety of sources, including tyre wear, the loss of virgin plastic pellets and the use and washing of synthetic textiles. Most plastic leakage comes from human activities on land, mostly due to inadequate waste management (82%) and littering (5%), although marine activities also contribute to leakage. Of the 22 Mt leaking to the environment, 6 Mt ultimately end up in aquatic environments, where 139 Mt of plastics have already accumulated (OECD, 2022[4]).

[1] While plastic pollution comprises all types of pollution emerging from the plastics lifecycle (e.g., solid leakage, GHG emissions, other air emissions), this paper employs a narrower definition and focusses primarily on solid plastic leakage to the environment.

[2] Data for plastic use, waste and leakage is not available at the country level. For this reason, the distinction high-income/developing countries had to be replaced with OECD/non-OECD countries.

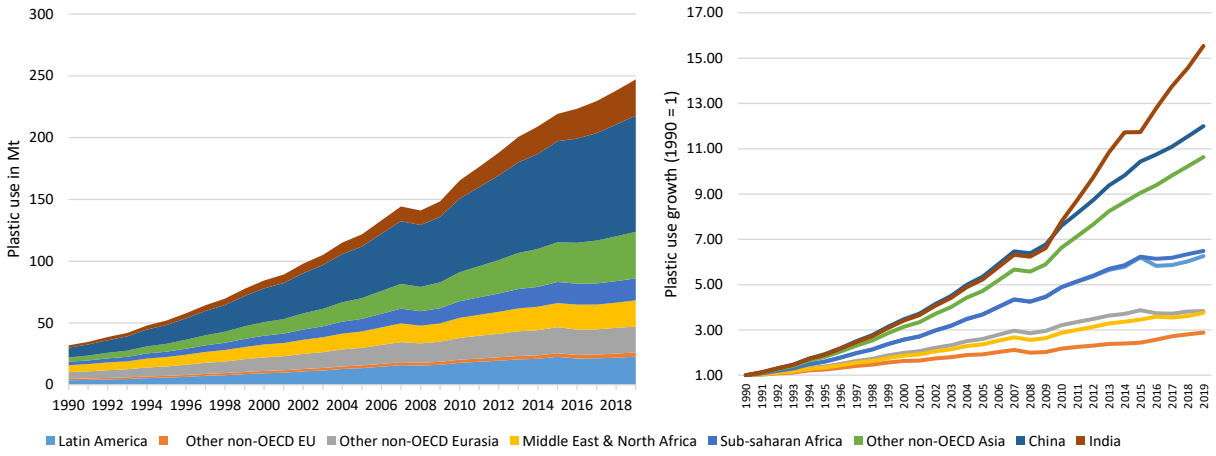
Developing countries use less plastics per capita but the absolute volume is increasing rapidly

Plastic use in non-OECD economies has historically been lower than in high-income economies both in absolute and per capita terms. Current per capita plastic use in non-OECD countries is 39 Kg/year, while the one of OECD countries is 4 times higher at 156 Kg/year (OECD, 2022[2]). This heterogeneity is largely explained by the difference in GDP and GDP per capita between countries, which strongly correlate with plastic use (OECD, 2022[4]). Sub-Saharan Africa represents an outlier in terms of plastic intensity relative to GDP, with plastic use relative to GDP higher than average at 4.5 tonnes per million USD (compared to 3.5 tonnes per million USD elsewhere) due to very low GDP levels, while plastic use per capita is at 16 kg (OECD, 2022[4]).

Mirroring economic growth trends, plastics use in non-OECD economies has been growing faster than in OECD economies. While at the beginning of the 1990s plastic use in OECD countries was three times larger than in non-OECD economies, in 2013 - for the first time - non-OECD economies surpassed OECD countries in volume of plastics used. In 2019, non-OECD economies contributed 54% of total plastic use globally. Since 1990, non-OECD economies' plastic use has increased by a factor of 7.7 compared to 2.2 in OECD countries (Figure 2.1).

Growth in plastic use in non-OECD economies has been heterogeneous, with India and China undergoing the highest growth rates. Between 1990-2019, India and China have respectively seen their plastic use increase by 15.5 and 12.0 times (Figure 2.1). Among OECD and non-OECD countries, China is currently the country with the highest plastic use, accounting for 20% of world total in 2019, up from 6% in 1990. The other non-OECD Asia group, which includes ASEAN countries, has also witnessed high growth rates, and increased its plastic use by a factor of 10.6 since 1990. This trend has mainly been driven by economic growth and demographic trends, which in recent decades have accelerated more in non-OECD countries.

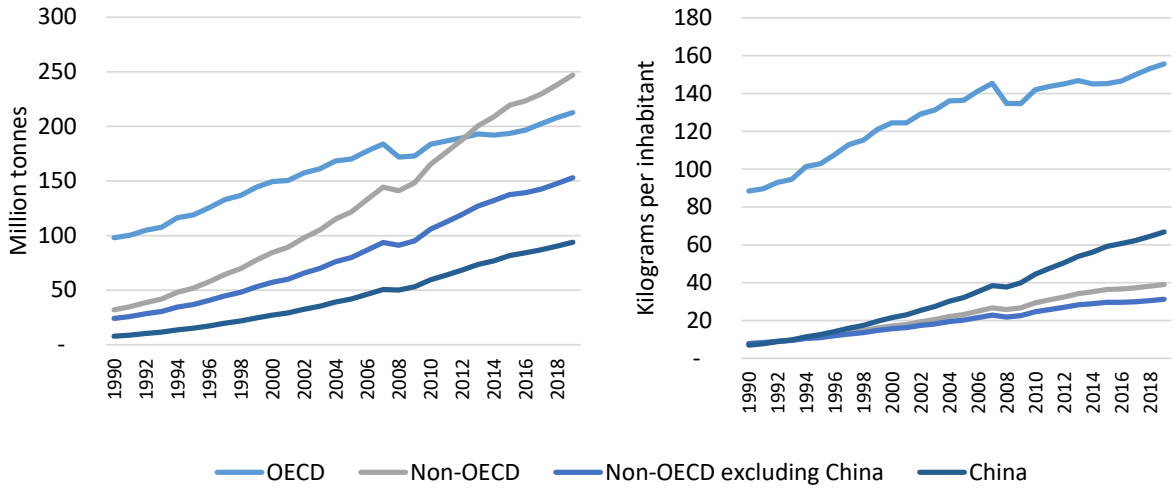
Figure 2.1. Plastic use in non-OECD economies



Source: OECD (2022[2]), OECD Global Plastics Outlook Database, https://doi.org/10.1787/c0821f81-en

By contrast, OECD economies have experienced a faster growth in terms of plastic use per capita, indicating that while plastic use is indeed growing in non-OECD economies, convergence towards OECD per capita levels is unlikely to occur very rapidly (Figure 2.2).

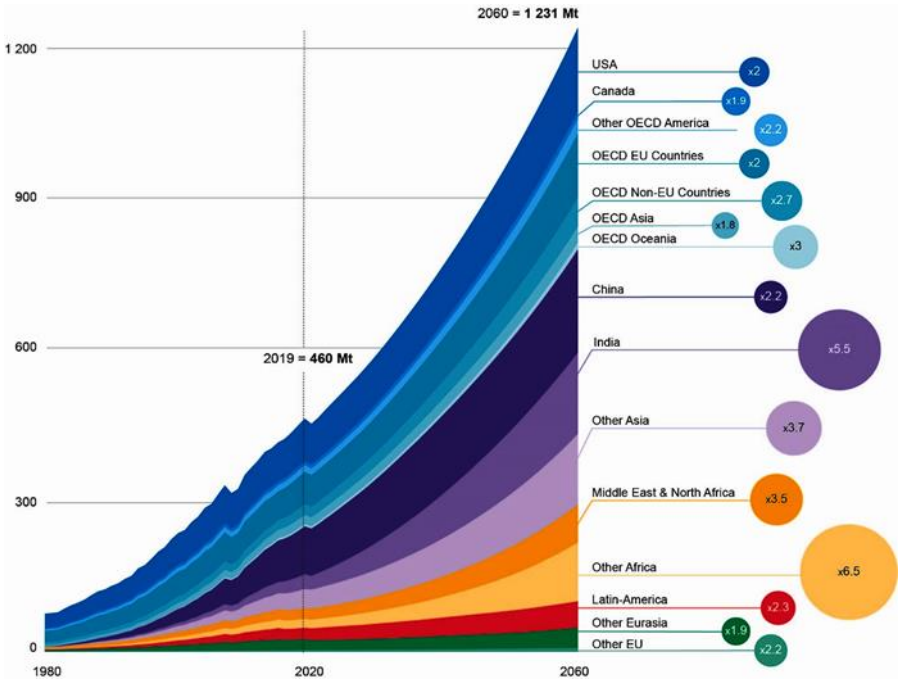
Figure 2.2. Plastic use in OECD and non-OECD economies



Source: OECD (2022[2]), OECD Global Plastics Outlook Database, https://doi.org/10.1787/c0821f81-en

Developing countries are expected to experience the largest increases in plastics use between now and 2060, unless new policies are introduced (Figure 2.3). The OECD Global Plastics Outlook projects that, under a business-as-usual scenario, sub-Saharan Africa, India, and Southeast Asia will increase their plastics use by 550%, 450% and 270% respectively in the next forty years (OECD, 2022[5]). This trend will mainly be driven by projected economic and demographic growth in these regions and compares with lower increases in OECD countries (e.g., +100% in the United States).

Figure 2.3. Plastic use projections to 2060



Note: the numbers in the circle on the right–hand side indicate the growth of plastics use from 2019 to 2060 for each region (e.g. x2 means a doubling of plastics use)
Source: OECD (2022[5]), Global Plastics Outlook: Policy Scenarios to 2060, https://dx.doi.org/10.1787/aa1edf33-en

Developing countries are more exposed to plastic waste leakage

Historically, developing countries have not been major contributors to global plastic use, yet it is in a few developing countries that plastic leakage predominantly originates. Currently non-OECD countries use slightly more than half of total plastics, yet they account for 86% of global plastic leakage (OECD, 2022[4]). This is driven mainly by the high amount of mismanaged waste ending up in the environment due to weak national systems for waste collection and management, strained by other trends such as high rates of economic growth, lack of adequate infrastructure, insufficient financial resources, lack of technical capacities and import of hard-to-recycle waste.

In developing countries, the speed of economic growth and the related increasing waste generation can lead to high levels of mismanaged waste. The fast growth of consumption and waste generation associated with economic growth can outpace increases of collection and waste management capacity, leading to a surge of waste that is mismanaged.

Other characteristics of middle- and low-income countries provide comparative advantages in high quality sorting and recycling. Developing countries often have lower labour costs (including through informal sector participation in waste management activities) that make waste management tasks such as collection and manual sorting of recyclables more economically feasible. While this can lead to relatively high recycling rates for plastics in some countries, these activities are usually limited to high-value recyclables, while lower-value waste is mostly left behind and mismanaged (Gunsilius, 2011[6]; OECD, 2022[4]). To harness these economic benefits and manage domestic waste at lower cost, high income countries have for many years shipped plastic waste of varying levels of quality to developing countries, and this has contributed to increase waste volumes in already strained waste systems in developing countries (Box 2.1).

Box 2.1. Waste trade and developing countries

Waste trade can strengthen markets for recycled plastics by exploiting economic efficiencies. At the same time, it risks amplifying plastic leakage in countries with weaker waste management systems. Secondary materials can be produced at a lower cost in many developing countries with well-developed recycling infrastructure, such as China and India. Trade in plastic waste and scrap can facilitate the movement of materials to countries with a comparative advantage in recycling and thereby help to strengthen markets for recycled plastics (OECD, 2022[4]). While aimed at enabling these economic efficiencies in the recycling industry, traded waste can sometime also have environmental impacts in importing countries (Chen et al., 2019[7]). Imported material can crowd out domestic waste, which eventually ends up being landfilled or mismanaged (OECD, 2022[4]), can reduce the level of dependence of the domestic recycling industry on well-developed domestic waste collection and separation and can finally lead to processing of residual waste in jurisdictions with less stringent environmental standards and regulations (European Environment Agency, 2019[8]; OECD, 2022[4]).

Between the 1990s and 2014, trade in plastic waste has been on an increasing trend and was characterised by a predominant flow from OECD to non-OECD countries. Since 1988, East Asian and Pacific countries have imported 75% of all plastic waste traded globally, while OECD countries contributed 64% of all exports (Brooks, Wang and Jambeck, 2018[9]).

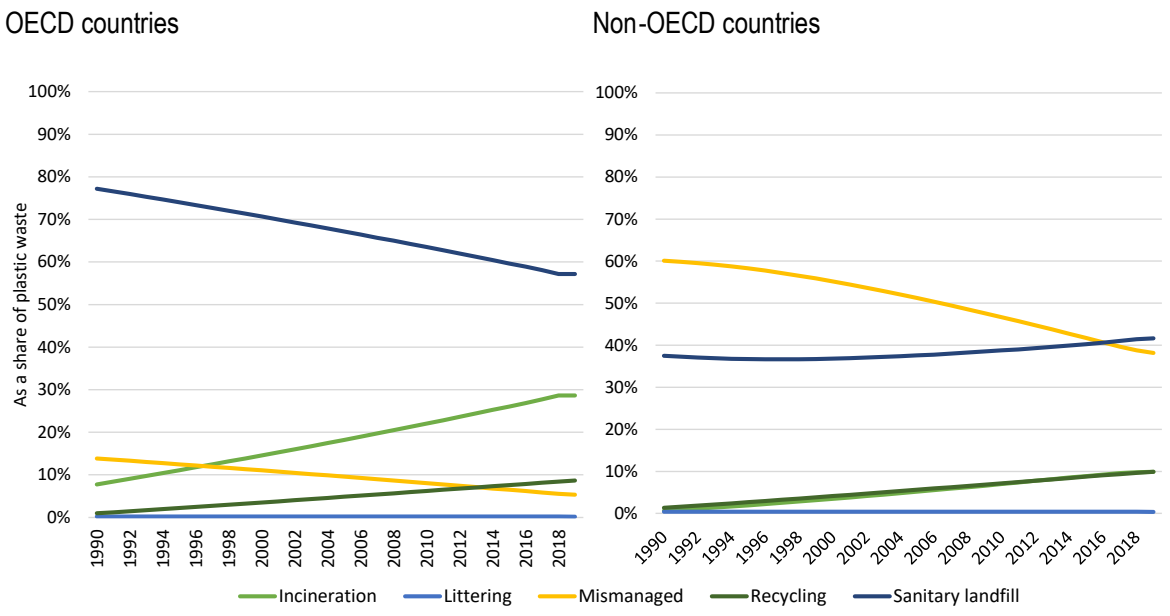
Following the introduction of stricter import requirements by China, trade flows in waste have started declining in 2014 but the re-direction of trade flows towards other countries warrants attention. Historically significant amounts of plastic waste were traded, some of which destined to developing and emerging economies, most notably China (OECD, 2022[4]). Between 2014 and 2020, trade flows in plastic waste have been curbed by 58%, mainly driven by the increased stringency in

Chinese import standards. While this led to an overall drop in plastic waste trade, for some countries this translated into a significant shock for local waste management systems. Trade weight spiked between 2017 and 2018 for Indonesia (218%), Malaysia (440%), Thailand (1141%), Türkiye (314%), and Vietnam (203%) (OECD, 2022[4]). This sudden growth in plastic waste imports has potentially put a strain on local recycling and waste management systems (Gündoğdu and Walker, 2021[10]). Following these large and sudden import increases, Thailand, Vietnam, Malaysia, India, and other countries adopted stricter import restrictions over the course of 2018 and 2019 aimed at curbing the flow of low-quality materials. Yet exports continued to increase throughout 2020 in countries like Malaysia, Türkiye, and Vietnam (OECD, 2022[4]).

New trade restrictions were adopted in 2021, in particular recent amendments to the Basel Convention and to the OECD Control System for waste recovery. These shifts in global governance of the sector expand the plastic waste types that are subject to trade restrictions and restrict the transboundary movement of certain plastic waste unless almost free of contamination and destined for recycling. The effectiveness of these changes in the trade regime in further curbing trade in plastic waste and related leakage remains to be seen.

The share of mismanaged plastic waste in non-OECD economies is declining but it is still at a high level. In 2019, most of the plastic waste in non-OECD economies was either disposed of in sanitary landfills (42%) or mismanaged (38%). The share of mismanaged plastic waste in total plastic waste has been declining from 60% in 1990 to 38% in 2019. However, due to the rapid growth of plastic use, the annual volume of mismanaged plastic waste in absolute terms has still increased (from 12 Mt to 70 Mt) and – under a business as usual scenario – it is projected to grow to 148 Mt by 2060 (OECD, 2022[5]). The rate of plastic waste collected for recycling in non-OECD countries (15%) is in line with the rate in OECD countries (16%) (Figure 2.4). Compared to non-OECD countries, however, OECD economies overall have lower levels of mismanaged plastic waste (6%), while relying more on incineration (25%) and sanitary landfills (53%).

Figure 2.4. Plastic waste fate



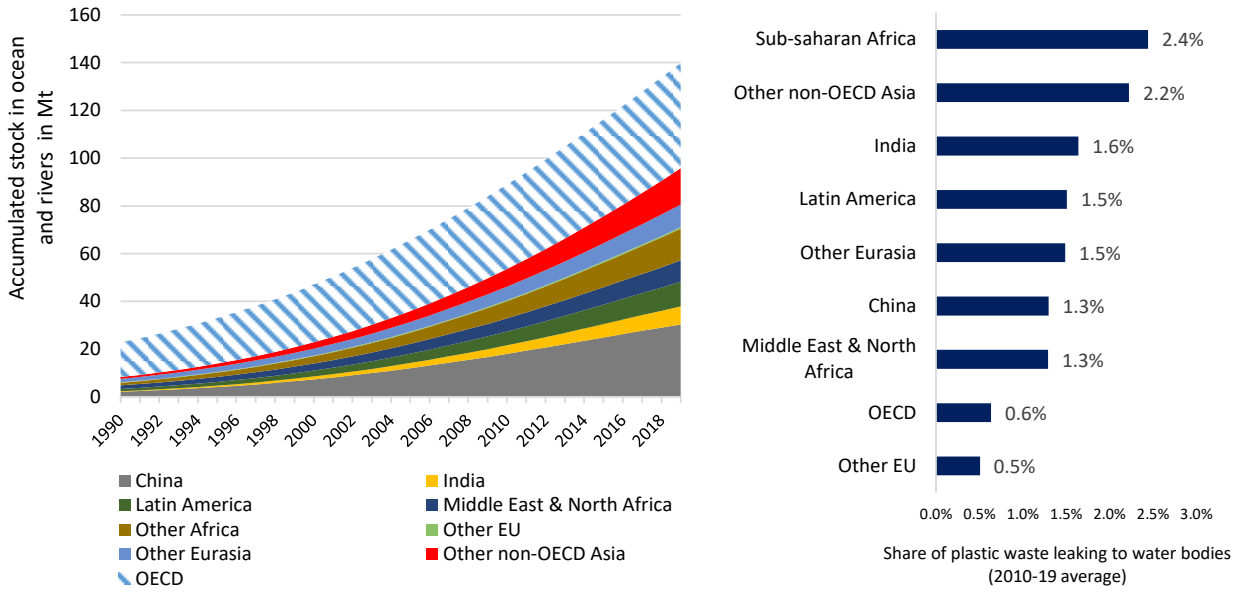
Source: OECD (2022[2]), OECD Global Plastics Outlook Database, https://doi.org/10.1787/c0821f81-en

The high share of plastic waste that is mismanaged enters the environment through terrestrial and aquatic leakage and some of it finally ends up in the ocean. The estimated stock of plastic waste accumulated in rivers and in the ocean in 2019 is estimated at 109 Mt and at 30 Mt respectively. Of this, approximately 32% originated from plastics leakage in OECD countries and the remaining in non-OECD countries. The Covid-19 pandemic has exacerbated plastic leakage due to the accelerated use of single-use plastics that in some countries further strained already insufficient waste management infrastructure (Cordova et al., 2021[11]; OECD, 2022[4]).

Contributions to the stock of accumulated plastics in the ocean, lakes and rivers is growing much faster in non-OECD economies, indicating a need for enhanced action. Since 2010, the amount of plastic waste accumulated in water bodies has doubled in India (+113%), *other non-OECD Asia (+106%)*, while it has increased by 86% in Sub Saharan Africa, 78% in Latin America and 68% in China. In OECD countries, the accumulated stock of plastic in water bodies over the same period has increased by 25%. Geographical differences exist among non-OECD economies. In *non-OECD EU* countries, the share of plastic waste (2010-19 average) that ends up in rivers and the ocean every year is lower than the one for OECD countries. On the contrary, *other non-OECD Asia*, which includes Southeast Asia, and *Sub-Saharan Africa* have rates of leakage to the ocean that are respectively 3.5 and 3.9 times larger than the OECD value (Figure 2.5).

If current levels of growth in plastic use, waste generation and leakage in developing countries continue in the future, this will likely lead to unsustainable levels of plastic pollution entering the environment. While higher plastic use does not necessarily translate into higher leakage, projections of plastic leakage to the environment to 2060 under a business-as-usual scenario show that between 2019 and 2060 plastic leakage more than doubles in non-OECD countries, from 18.9 Mt to 41.6 Mt (OECD, 2022[5]). This is mainly driven by large increases in Sub-Saharan Africa, where waste management systems were projected not keep up with socio-economic changes driving plastics use and waste (OECD, 2022[5]). To avoid this scenario, policies aimed at shifting the growth paradigm away from a linear model and closer to a circular one will need to be adopted, together with massive efforts in waste prevention, waste management and recycling infrastructure development, upskilling and regulatory reforms to enhance the efficiency of waste management systems.

Figure 2.5. Leakage to water bodies



Source: OECD (2022[2]), OECD Global Plastics Outlook Database, https://doi.org/10.1787/c0821f81-en

Costs of plastic leakage in developing countries

Impacts of plastic leakage are multi-faceted and far-reaching

The presence of plastics in the environment negatively affects the provision of ecosystem services of marine environments, human health, animal welfare, the conservation of sites with high cultural, scientific or heritage value and can cause unintended impacts by damaging urban infrastructure such as draining systems. Table 2.1 summarises these known impacts of plastic pollution.

Table 2.1. Impacts of plastic leakage[3]

Impact	Description
Damage to ecosystem services	• Marine pollution leads to the reduction in marine ecosystem services, including: ○ Provisioning services such as wild seafood, plant or animal materials, genetic materials, fibers, etc. ○ Regulatory services such as climate regulation, carbon sequestration, natural hazard protection, water condition, disease control. ○ Supporting services such as life-cycle maintenance and nutrient cycling. ○ Cultural services such as damage to sites with particular cultural, recreational, scientific, sacred or heritage value.
Damage to human health	• Ingestion of seafood contaminated with micro plastics is a potentially substantial exposure pathway for humans. • In peri-urban, suburban, and rural areas, where waste commonly ends up uncollected or mismanaged, plastics is often burnt of buried in unsanitary conditions negatively affecting human health. • Micro plastic contamination is not exclusive to marine environments, but it can also reach commonly consumed food, and beverages, such as tap water, bottled water and beer. • Humans are also exposed to micro plastics by inhaling airborne particles and fibers and micro plastics have been reported both in indoor and outdoor environments. • Nano plastics are of particular concern because their small size allows them to potentially be transferred to tissues or cells
Damage to animal welfare	• Plastic products and packaging can threaten animal welfare. Marine organisms can become entangled in marine debris and ingest them, leading to disease or death of mussels, turtles, fish and sea birds.
Damage to infrastructure	• Uncollected waste can cause flooding by blocking drainage systems.
Damage to income and sustainable livelihoods	• Marine plastic leakage has substantial economic costs for coastal communities due to potential negative impacts on fishing and tourism. Most common impacts include cost incurred to repair damaged equipment, cost of reduced economic activity or lost catch and cost of clean-up.

Source: UNEP FI (2022[12]), Diving Deep: Finance, Ocean Pollution and Coastal Resilience and OECD (2022[4]), Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options, https://dx.doi.org/10.1787/de747aef-en

These effects do not affect all countries equally but often magnify pre-existing vulnerabilities and country features. Countries with significant development constraints have high vulnerability to climatic hazards and this vulnerability is worsened by poverty, governance challenges and limited access to financial resources (IPCC, 2022[13]). Maintaining protection from natural hazards provided by the ocean and the marine organisms that inhabit it (e.g., corals) is therefore key to protect vulnerable communities in developing countries. In areas polluted by plastics, corals and other marine organisms are more likely to develop diseases (Lamb et al., 2018[14]) and this threatens developing countries' resilience to natural hazards and in turn increases their adaptation deficit.

Furthermore, **higher levels of mismanaged plastics can potentially translate into more exposure to health risks** (OECD, 2022[4]). Burned waste is, for instance, a source of hazardous compounds, directly affecting the health of the communities living close to the site and increasing the risk of cancer and respiratory diseases (Ferronato and Torretta, 2019[15]; OECD, 2022[4]). The presence of infectious waste, such as health waste, in dumpsites increases the health risks associated with waste scavenging. Waste

[3] Plastic pollution along the plastic lifecycle has additional economic costs (e.g., air emissions), but those are not within the scope of this paper.

pickers are also often unaware of the health risks associated with these practices (Ferronato and Torretta, 2019[15]).

Food is also a potentially substantial exposure pathway for humans (OECD, 2022[4]). Many middle and low-income countries, particularly small island developing states, often have diets that are more dependent on wild caught fish. This can increase the exposure of populations to seafood contaminated with micro-plastics, therefore intensifying health risks of plastic pollution.

Finally, damage to income and sustainable livelihoods is one of the most direct and disproportionate impacts of plastic pollution in developing countries. This specific impact is addressed in more detail in the next section.

The economic impacts of ocean plastic pollution are significant and rising

Costs from ocean plastic pollution can be either direct or indirect. Indirect costs are those incurred due to the damage to marine biodiversity, leading to lower provision of ecosystems services from the ocean and engendering losses in the value of marine natural capital (Beaumont et al., 2019[16]). Indirect costs are those related to diminished shoreline protection and lower appeal of tourist destinations. Direct costs are those associated with direct economic losses incurred by marine industries and businesses, or the cost incurred by governments for clean-up and removal activities (McIlgorm et al., 2022[17]). Direct economic losses for marine industries can originate from the reduction in economic activity caused by plastic pollution, such as in the tourism sector, and from the expenses sustained by businesses to repair damages caused by mismanaged plastic waste. In the fishing industry, for instance, such direct costs from plastics-related damages include accidents involving litter, entanglement of propeller blades and clogging of water intakes for engine cooling systems (APEC, 2009[18]). In the tourism sector, costs are connected to the loss in tourism revenues due to clean-up costs and lower tourist arrivals in polluted destinations.

Estimates of the direct and indirect global economic costs of ocean plastic pollution highlight their large scale and unabated growth (McIlgorm et al., 2022[17]). Estimating costs incurred due to plastic pollution is a complex task and most attempts to quantify them at the global scale mostly relied on imputed damages as a proportion of economic activity in ocean-economy sectors. The uncertainty of these estimates is large and is normally within very large intervals.

The first of such studies was developed by Takehama (1990[19]) who, using empirical insurance studies of the Japanese fishing industry, estimated that total losses in fished catch due to marine debris was 0.3% of annual gross value. Considering the rapid growth in overall plastics use and leakage, McIlgorm et al. (2022[17]) assumed a 1% damage from marine litter to the GDP of fisheries and aquaculture, shipping and transportation and a 1.5% damage to the tourism sector and estimated that marine litter damage to marine economies in the Asia-Pacific increased eight times since 2008 to USD 10.8bn in 2015. Estimates at the world scale suggest that direct costs to marine industries from plastic pollution amount to USD 18.3 billion per year in 2015. If these estimates are projected to 2030, the present value of these damages between 2020 and 2030 is estimated at USD 197 billion.

Deloitte (2019[20]) developed a similar model to estimate clean-up costs and revenue losses in the fisheries and aquaculture sector and in the tourism sector. In their model, clean-up costs of coastlines, waterways, port, and marinas are estimated to be the highest in Asia, where the cost of clean-up is estimated between USD 5.3 and USD 14.0 billion. This compares to USD 196 to USD 401 million in South America, USD 73 to USD 308 million in Europe and USD 25 to USD 69 million in Africa. Revenue losses in fisheries, aquaculture and marine tourism are also the highest in Asia and amount to USD 0.2 to USD 2.3 billion a year, compared to USD 0.1 to USD 1 billion in Europe and USD 8 to USD 92 million in Africa.

Indirect costs that value the damage to natural capital are even harder to produce but some attempts exist. In 2014, UNEP valued indirect costs of ocean plastic pollution at USD 13 billion per year in environmental damage to marine ecosystems (UNEP, 2014[21]) Similarly, Beaumont et al. (2019[16]) estimated that the annual cost of losses in marine natural capital lies between USD 3 300 and USD 33,000

for each tonne of plastics entering the ocean. WWF developed a methodology to estimate the lifetime cost to society, the environment and the economy of plastics and, using as main inputs parameters found in Beaumont et al. (2019[16]), estimated that the majority of these cost will originate from ecosystem service cost of plastic pollution on marine ecosystems. In their model, they estimate that the median ecosystem service cost imposed over the lifetime of plastics produced in 2019 is USD 3.1 trillion (WWF, 2021[22]).

Developing countries are particularly exposed to the costs of ocean plastic pollution

Developing countries are on average more vulnerable to the impacts of ocean plastic pollution than other high-income countries due to the higher leakage rates and the structure of their economies. Estimates produced by the OECD for six ocean-based industries showed that in 2015 they contributed to more than 11% of GDP in lower middle-income countries and 6% of GDP in low-income countries, compared to less than 2% of GDP for high-income countries (OECD, 2020[23]). These estimates do not consider the marine tourism sector that is often the most impacted economic sector due to loss of attractiveness of tourist destinations when significantly exposed to plastic pollution. In addition, economic costs inferred from GDP do not fully capture the relevance for livelihoods of informal work in the tourism and fishing sectors, which is particularly common in many developing countries and small island developing states. This higher dependence creates a stronger link between the level of plastic pollution and negative economic impacts.

In many popular tourist destinations, tourism sector growth has outpaced the development of adequate waste management infrastructure at the expenses of both the environment and economic activity. International tourism receipts are a key source of income, jobs, and foreign exchange for many developing countries. These tourism flows can also trigger severe problems related to waste management when tourists' arrivals grows faster than infrastructure development. It is estimated that due to the large influx of tourists coupled with poor waste management infrastructure, approximately 35% of all waste generated in the Indonesian island of Bali leaks to the environment (Widyarsana, Damanhuri and Agustina, 2020[24]). An example from the Philippines also shows that this leakage is not without economic cost. Following concerns regarding waste management issues, in 2018 the Government of the Philippines temporarily closed to the public for six months the resort island of Boracay to implement a clean-up and rehabilitation project. This closure had severe impacts on businesses and people employed on the island, which in 2017 attracted more than 2 million tourists.

With no hard boundaries restricting the flow of plastics in the ocean, the costs of plastic pollution are not always incurred by countries where the leakage occurs. Oceanic currents can carry ocean plastic pollution far from the source area and this decouples national policies to curb ocean leakage and direct economic costs from plastic pollution. Burt et al. (2020[25]), for instance, document the disproportional impact and associated cost incurred by a small island nation, the Seychelles, in order to remove plastic litter from Aldabra Atoll, a UNESCO World Heritage Site. They estimate that the cost to public authorities to clean up Aldabra Atoll completely would amount to USD 4.7 million. While plastic pollution on the atoll is estimated to originate predominantly from the regional fishing industry (83%) on which national legislation only has limited impacts, the national government incurs the full cost of clean-up. These transboundary effects can become very heavy in countries with limited financial resources to cover these costs, such as in many developing and small island nations.

The cost of preventing plastic pollution

Preventing plastic pollution requires a multi-level and systemic approach. While infrastructure is key to enable waste management, a shift towards lower levels of plastics leakage in the environment requires tackling issues also at previous stages of the plastics life cycle. Some of the most important aspects conducive to an effective waste management system are circularity-enabling legal and regulatory frameworks, well-developed institutional and organisational frameworks, sustainable financial frameworks, widespread technical capacity, and cultural/behavioural awareness.

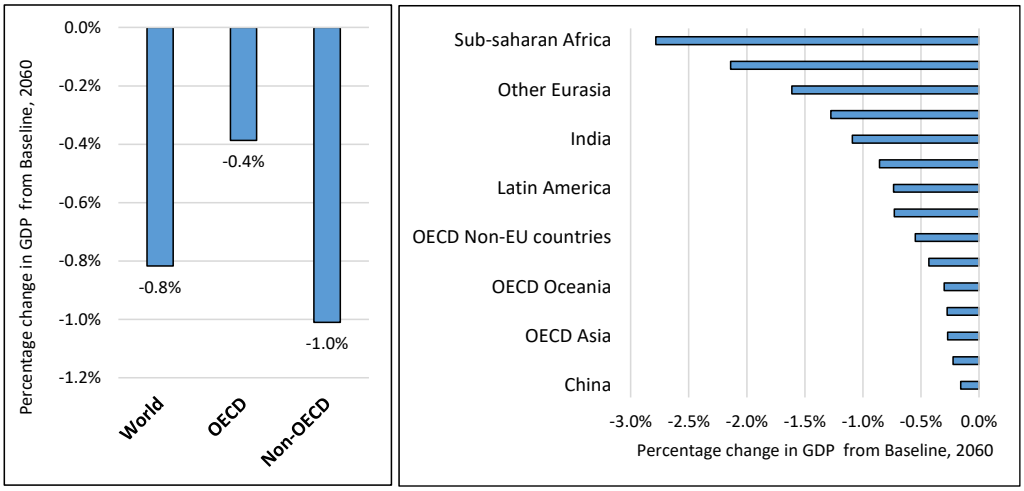
Middle- and low-income countries often lack service coverage contributing to poor living conditions. Due to rapid rates of urbanizations and population growth, which have outpaced the speed of infrastructure development, the rate of mismanaged waste in non-OECD economies – although declining - is approximately 40%. In many developing countries, achieving effective waste management systems will require large investments in infrastructures matched with the adoption of enabling policy frameworks.

OECD studies provide insights into the estimated costs of eliminating plastic pollution worldwide. The OECD Global Plastics Outlook looks at two policy scenarios that can bend the plastics curve and compares them to the consequences of a business-as-usual scenario (OECD, 2022[5]). The regional scenario envisages more ambitious targets for OECD countries than for non-OECD countries, while the global ambition scenario looks at a very stringent policy package envisioning coordinated global action and ambitious worldwide policies to decrease plastic waste by one third and completely eliminate plastic leakage from the environment.

Costs for eliminating plastic pollution globally are unequally distributed. At the global level achieving the global ambition scenario would imply macroeconomic costs estimated at 0.8% of global GDP by 2060 (USD 3.4 trillion). However, the largest burden relative to GDP would be borne by non-OECD countries, as substantial investments in improved waste management must be made to achieve the ambitious policy target (Figure 2.6). The largest costs are projected for Africa, whose GDP would be reduced by 2.8% below the baseline not least due to substantial investments in improved waste management needed to achieve the ambitious policy targets. While higher investment per se does not lead to a decline in GDP, the higher taxes needed to finance it will be detrimental to GDP. Overall costs, however, cannot be traced back to a single cause and are the results of the interrelated effects caused by domestic policy costs from fiscal instruments and regulations; investment in waste systems; induced effects on demand for goods and services, as relative prices shift and income levels change; and competitiveness changes between competitors in different countries (OECD, 2022[5]).

These costs are still smaller than the costs of pollution and clean-up. Compared to waste treatment costs that fall at USD 100 per tonne for landfilling and USD 300 per tonne of recycling, the cost of clean-up is much higher and is estimated at more than USD 1000 per tonne (OECD, 2022[5]; Soós, Whiteman and Gavgas, 2022[26]). This suggests that the cost of delayed action would be much higher and shows that prevention, while not costless, is also economically more sensible.

Figure 2.6. Cost of reducing plastic pollution by region – global ambition scenario



Source: Adapted from OECD (2022[5]), Global Plastics Outlook: Policy Scenarios to 2060, https://dx.doi.org/10.1787/aa1edf33-en

Developing countries also face specific challenges raising overall costs that can be addressed through specific policy interventions and assistance. Developing countries, for instance, face higher costs for upfront investments due to less access to finance and higher risk premiums. In addition, the overall policy environment and the absence of key enabling conditions, such as adequate legal frameworks and organisational and institutional capacity, also influence the availability of financing as well as the costs associated with infrastructure development and operation. This could undermine the economic feasibility of scenarios involving higher upfront investments, especially in the absence of additional financial support. By contrast, if financing becomes available to fill the gap in the initial investment, high ambition scenarios eventually become feasible and will ultimately catalyse the associated environmental benefits. This is where international co-operation and the resources it can mobilise can come into play.

The next chapter explores the role development co-operation is playing in curbing plastic pollution and provides original estimates of development finance flows to support this objective.

3 Development finance to curb plastic pollution

The role of development co-operation[4] to tackle plastic pollution

Global urgency and ambition for tackling plastic pollution has taken central stage in the international agenda in recent years. The relevance of addressing plastic pollution has been recognised in multiple fora. The United Nations (UN) Agenda 2030 recognises the need to "prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution" under Sustainable Development Goal (SDG) 14 on Life below Water (UN, 2015[27]). G7 and G20 have consistently kept the issue of plastic pollution high on their agenda and committed to Action Plans and Blue Prints to tackle plastic pollution, notably the G7 Action Plan to Combat Marine Litter (2015) (G7, 2015[28]) and the G20 Action Plan on Marine Litter (2017) (G20, 2017[29]). Finally, in 2022 the UN Environment Assembly adopted a resolution where countries agreed to set up an intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution by 2024 (UNEA, 2022[1]).

The ramifications and impacts of marine plastic pollution go beyond the boundaries of SDG14 and pose challenges to the achievement of other SDGs through indirect effects on poverty, health, greenhouse gas (GHG) emissions, water, terrestrial pollution, urban infrastructure and, ultimately, inequality between and within countries (Walker, 2021[30]). As explained in Chapter 2, for vulnerable developing countries the impacts of plastic pollution can directly undermine their development prospects.

Key international agreements and fora have acknowledged the important role that international development co-operation needs to play in tackling plastic pollution. In the *G7 Action Plan to Combat Marine Litter* (2015), G7 Members recognised that "support through international development assistance and investments are important to combat marine litter" (G7, 2015[28]) In the *G20 Action Plan on Marine Litter* (2017), G20 Members identified "international co-operation […] for capacity development and infrastructure investments for improved waste management systems" as an effective policy measure to promote sustainable waste management (G20, 2017[29]). Furthermore, the 2018 G7 *Ocean Plastics Charter* also stressed the importance of "accelerating international action and catalyzing investments to address marine litter in global hot spots and vulnerable areas through public-private funding and capacity development for waste and wastewater management infrastructure, innovative solutions and coastal clean-up". Initially adopted by G7 countries, it was eventually endorsed by almost 30 governments and over 70 companies and organizations (G7, 2018[31]).

As a response to the heightened focus of the international community on the issue, in recent years **bilateral and multilateral providers of development co-operation have established a significant number of new initiatives specifically focussed on addressing marine pollution issues** (UNEP (2021[32]). Table 3.1 provides a non-comprehensive illustration of some of these initiatives.

[4] In this report, the term "development co-operation" refers to assistance activities carried out by bilateral and multilateral donors for the promotion of the economic development and welfare of developing countries. The resources disbursed for the implementation of these activities are broadly referred to as "development finance", of which a more detailed definition is provided in Box 3.2.

Bilateral agencies have established dedicated programs. Examples include the Japanese International Co-operation Agency (JICA)'s MARINE initiative, the Norwegian Development Programme to Combat Marine Litter and Micro plastics, and the United States Agency for International Development (USAID)'s Clean Cities Blue Ocean initiative.

Multilateral institutions have also set up programmes dedicated to curbing ocean pollution. Initiatives from multilateral institutions include the World Bank's PROBLUE Multi-Donor Trust Fund which features a dedicated pillar on marine pollution, and the Asian Development Bank's Healthy Oceans Action Plan. In the Asia and the Pacific region, which is considered as one of the hotspots of marine plastic pollution, multilateral agencies implemented multiple projects to enhance capacity for monitoring and managing marine plastic pollution, including UNEP's Countermeasure for Plastic Free Rivers, UNESCAP's Closing the Loop Initiative and the UNEP/COBSEA's Sea Circular Initiative.

In addition, countries have also embarked on collaborative efforts to pool resources and share expertise. These include, for instance, the Clean Oceans Initiative (COI) spearheaded by the EIB, AFD and KfW and eventually joined by Italy's CDP and Spain's ICO, and the *Rethinking Plastics Initiative*, developed as a collaboration between the European Union (EU), GIZ and Expertise France (EF). Under the ASEAN+3 Marine Plastics Debris Cooperative Action Initiative, the Regional Knowledge Centre for Marine Plastic Debris was established in 2019 with financial support from Japan at the Economic Research Institute for ASEAN and East Asia (ERIA) as an information clearinghouse for policy-relevant issues on marine plastic debris for ASEAN+3. Finally, in 2019 the 187 Members of the Basel Convention set up the Plastic Waste Partnership to tackle plastic pollution, including through the enhancement of environmentally sound management of plastic waste through pilot projects in developing countries.

Major beneficiaries of development co-operation too have recognised the relevance of mobilising development finance resources to tackle ocean plastic pollution. The *Pacific Regional Action Plan on Marine Litter (2018-2025)* sees resources from "international investment programs" as a key funding stream for the implementation of the action plan, in combination with resources from Pacific Island countries themselves (SPREP, 2021[33]). Similarly, in the *Regional Action Plan for Combating Marine Debris in ASEAN Member States,* Southeast Asian nations recognise the key role played by development assistance for the implementation of the Action plan (ASEAN, 2021[34]). At the same time, they also point to the importance of making development finance flows more effective by ensuring "a clear, coordinated approach to […] development co-operation support" through enhanced dialogue between ASEAN Members and key development partners

Table 3.1. Examples of plastics-related initiatives by bilateral and multilateral providers of development co-operation

Name of Initiative	Organization(s)	Financial Commitments	Focus	Geographical Focus
Bilateral initiatives				
Clean Cities Blue Ocean	United States Agency for International Development (USAID)	USD 48 million over 5 years	Main objectives/focus areas: (i) Enhancement of solid waste solutions; (ii) Social change for sustainable practices; (iii) Improvement of governance; (iv) Involvement of the private sector	Asia, Latin America & Caribbean.
Marine Litter Program	Norwegian Agency for Development Co-operation (NORAD)	USD 200 million over 3 years	Main objectives/focus areas: (i) Improving plastic waste management; (ii) Clearing coastal areas and rivers for litter; (iii) Private sector development; (iv) Strengthening capacity to achieve global commitments	Asia, Africa, SIDS
Pacific Ocean Litter Project	Australia	USD 16 million over 6 years	Main objectives/focus areas: Focus on reducing the sources of single- use plastics. Takes a *reduce* and *refuse* approach rather than a *recycle* and *return* approach.	Pacific Island Nations
Blue Planet Fund	United Kingdom's Department for Environment, Food and Rural Affairs (Defra) and the Foreign, Commonwealth and Development Office (FCDO)	~USD 615 million over 5 years. Share allocated to waste projects is unavailable.	Main objectives/focus areas: Among other objectives, the Blue Planet Fund aims at reducing marine pollution through action on land-based and sea-based sources.	Developing countries
Reduction of marine plastic debris in ASEAN countries	Japan-ASEAN Integration Fund (JAIF)(Funded by Japan and held in trust at the ASEAN Secretariat)	USD 9.5 million	Main objectives/focus areas: Human resource development, awareness-raising and public relations activities of environmental preservation including reduction of marine plastic debris in ASEAN countries.	ASEAN
Multilateral Initiatives				
Problue	World Bank	USD 38 million between 2018 and 2021 allocated to waste projects	Main objectives/focus areas: (i) Solid waste management improvement; (ii) Transitioning to a more circular economy (e.g. product design); (iii) Reducing the upstream production and use of plastic.	Global
Healthy Ocean Action Plan	Asian Development Bank	USD 5 billion over 5 years overall. The share allocated to marine pollution is not	Main objectives/focus areas: Focus on several sectors such as tourism, fisheries, ecosystem management, waste management and coastal infrastructure.	Asia

		available.		
Sea Circular	UNEP and COBSEA	-	Main objectives/focus areas: focus on the lifecycle stages of (i) production of plastic products, (ii) plastic use, and (iii) collection sorting/recycling to ensure that less plastic is wasted and strategically prevent plastic litter entering the ocean.	Selected countries in Southeast Asia
Countermeasure for Plastic Free Rivers	UNEP and Japanese Government	-	Main objectives/focus areas: identify sources and pathways of plastic pollution in river systems in Asia, particularly the Mekong and the Ganges. The project has developed plastic leakage models for localities in 6 different countries using an innovative and replicable approach. Deploying technologies like GIS, machine learning and drones has allowed the CounterMEASURE team to augment ground-level research in an efficient and scalable way.	Mekong River basin and Ganges River basin
Closing the Loop	UNESCAP	-	Main objectives/focus areas: building the tools and technology to help governments and organizations measure and monitor plastic waste within their cities. Using innovations like artificial intelligence, satellites imaging, drones, citizen science and waste flow modelling, we pinpoint the 'source to sea' movement of how plastic leaks into the marine environment from cities.	ASEAN cities
Joint Efforts				
Clean Ocean Initiative	European Investment Bank (EIB), French Development Agency (AFD), Kreditanstalt für Wiederaufbau (KfW), Cassa Depositi e Prestiti (CDP), Instituto de Crédito Oficial (ICO) and European Bank for Reconstruction and Development (EBRD)	EUR 4 billion over 7 years.	Main objectives/focus areas: (i) Solid waste management; (ii) Waste management in ports and harbours; (iii) Innovation in the plastics value chain; (iv) Urban storm water management systems; (v) Wastewater treatment plants	Global, with a particular focus on Asia, Latin America & Africa.
Rethinking Plastics	European Commission and German Federal Ministry for Economic Co-operation and Development (BMZ)	EUR 9.9 million over 3 years.	Main objectives/focus areas: (i) Circular economy; (ii) Production and consumption; (iii) Waste management; (iv) Ports and fisheries; (v) Green public procurement; (vi) Awareness raising and education	East- and South-East Asia

Source: Authors

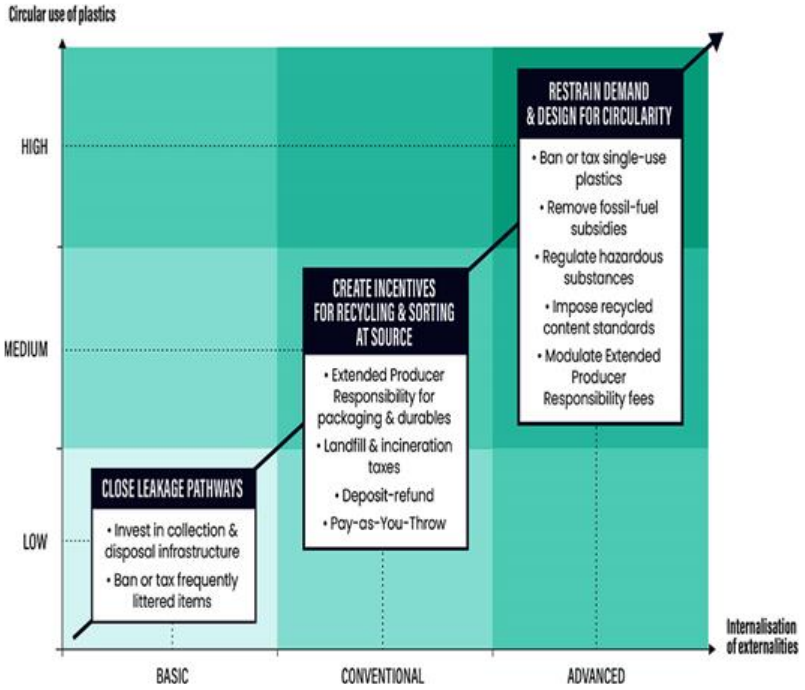
A life-cycle approach to development co-operation interventions

The leakage of plastics litter into the ocean can be addressed in a variety of ways throughout the plastics lifecycle. Among these are source reduction using alternative materials, enhanced waste collection and recycling, and clean-up and removal activities such as beach clean-ups and technologies to collect plastics from the ocean. Effectively addressing marine plastics litter will require a combination of these approaches. Development co-operation can provide support at all these various stages, including through dedicated capacity building, policy support, and investment in infrastructure and technologies for waste management and recycling.

Adopting a life-cycle approach to addressing plastic pollution means considering all the impacts generated by a plastic product in each stage of its life cycle (UNEP, 2004[35]), from the extraction of raw materials, and including the interlinked stages of processing, product manufacturing, distribution, use and end of life management. Measures aimed at addressing the impacts of plastic products across these stages, rather than the end-of-life stage only, can enhance the impact of policy interventions and ensure integrated solutions that support plastics sustainable production and consumption.

Development co-operation support can support countries to address issues at each stage of the plastics lifecycle but needs to consider on local conditions. Upstream interventions can complement end of life projects and help prevent plastics mismanagement at the source. To be effective, all interventions need to be rooted into holistic, national strategies to address plastic pollution (Box 3.1) that, as suggested by the OECD Global Plastics Outlook policy roadmap (Figure 3.1), require adaptation to national conditions and a phased approach which first closes leakage pathways, then creates incentives for recycling and sorting at source and finally restrains plastics demand and supports design for circularity (OECD, 2022[4]).

Figure 3.1. A policy roadmap for more circular use of plastics



Source: OECD (2022[4]), Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options, https://dx.doi.org/10.1787/de747aef-en

Box 3.1. Achieving action on plastics through the National Plastic Action Partnership

Outlining clear strategies and action plans that identify synergies of actions at different stages of the plastics life cycle is an important step to then coordinate support provision, ensure that development co-operation reinforces local efforts and ultimately that development co-operation generates positive impact. In this respect, several internationally funded initiative support partner countries to develop integrated action plans addressing plastics-related issues in a holistic manner. Examples of these initiatives include the Global Plastics Action Partnership active in supporting Ghana, Indonesia, Nigeria, and Viet Nam to build National Plastic Action Partnerships in partnership with the UK's Blue Planet Fund and ADB's project on Promoting Action on Plastic Pollution from Source to Sea in Asia and the Pacific.

National Plastic Action Partnerships

National Plastic Action Partnerships (NPAP) are a concept developed by the Global Plastic Action Partnership (GPAP), which is a World Economic Forum-backed organisation whose aim is to translate commitments on plastics into action, both at the national and global scale. Since its inception, GPAP has been active in several developing countries (i.e., Ghana, Indonesia, Nigeria, and Vietnam) and worked with them to set up NPAPs. NPAPs are conceived as "impartial and inclusive platforms" bringing together key national stakeholder around the plastic issues, including policymakers, private sector actors and civil society organizations. Through intensive consultations, NPAPs develop and implement a unified national approach to tackling plastic pollution.

Indonesia's NPAP

The first NPAP was set up in Indonesia and brought together 150 actors, becoming a leading platform where plastic issues and policies are discussed. In Indonesia, the work is carried out through five locally led task forces focussing on different policy areas. The task force focus on behaviour change, financing, policy, innovation, and metrics. They play an influential role in informing and supporting the implementation of national policies.

As a result of the extensive work conducted through Indonesia's NPAP, the platform succeeded in developing an action plan entitled Radically Reducing Plastic Pollution in Indonesia: A Multistakeholder Action Plan. This action plan illustrated five critical interventions needed for the country to achieve its ambitious goal of reducing marine plastic leakage by 70% by 2025. These actions included:

- Reducing or substituting avoidable plastic usage to prevent the consumption of more than one million tons of plastics per year;
- Redesigning plastic products and packaging with reuse or recycling in mind;
- Doubling plastic waste collection to more than 80% by 2025;
- Doubling current recycling capacity by 2025; and
- Building or expanding controlled waste disposal facilities to safely manage non-recyclable plastic waste.

The main Action Plan was followed by several follow-up actions, including the publication of the Financing Roadmap (2020), the Behaviour Change Roadmap (2021), the Metrics roadmap (2021) and the Innovation Roadmap (2021).

Source: https://globalplasticaction.org/

A life-cycle approach to development co-operation interventions to reduce plastic pollution combines a variety of mutually reinforcing policy interventions along the plastics life cycle. These actions can be grouped around four key pillars which include reducing single-use plastic consumption, making plastic production more sustainable, developing effective and environmentally sound waste management systems, and implementing clean up and removal activities. The role that development co-operation can play in each of these areas is discussed in the sections below.

Pillar I: Supporting developing countries reduce plastic consumption

The largest environmental gains can be achieved by reducing excessive use of plastics (OECD, 2022[4]). While the volume of plastics produced in developing countries is still low compared to high-income economies, the rate of leakage as well as the projected growth in plastic consumption volumes suggest that Governments should start adopting policies specifically aimed at restraining plastics demand (World Bank, 2021[36]; OECD, 2022[5]).

Single-use plastic consumption can be reduced through a variety of instruments including command-and-control instruments such as bans and regulations, market-based economic instruments such as taxes on single use products, information-based instruments such as awareness raising campaigns and education, and voluntary approaches (Cornago, Börkey and Brown, 2021[37]). In this context, many countries introduced regulations to ban, regulate or tax the use of single-use plastics, including Antigua and Barbuda's ban on expanded polystyrene products in the food service industry, Kenya's ban on single-use plastic bags, and Zimbabwe ban on polystyrene food containers (WEF, 2020[38]; UNEP, 2018[39]). These bans are however often limited to small waste streams, such as plastic bags, which are effective at reducing littering but do not impact total plastic volumes in use (OECD, 2022[4]). The impact of plastic consumption can also be mitigated by household's awareness about consumption practices and their environmental implications.

Beyond single use plastics, measures exist to help reduce consumption of plastics in durable applications and through eco-innovation. For instance, waste prevention measures focussed on design for re-use, durability, and repairability and measures to incentivize re-use and repair can be effective in expanding product's lifetime and reducing overall plastic consumption. In addition, adopting innovation could enable the same output with lower input of plastic materials, or find ways to eliminate the need for plastic packaging entirely.

Development co-operation can provide support to the achievement of this goal by supporting awareness raising campaigns for citizens and policy makers and providing expert policy support to local and national governments in the adoption and implementation of new policies. ODA grants can for example fund policy support, dialogue and advisory services aimed at strengthening policy and legislative frameworks surrounding plastics and waste management at the local, national, or regional scale. Policies and policy instruments that have proven successful in other contexts can be promoted and adapted to the local context.

ODA grants can also support awareness raising campaigns targeting households and private sector actors and aimed at behaviour change. A few development co-operation flagship initiatives feature, among others, a dedicated objective to promote citizens awareness and behaviour change. For example, one of the main goals of the Rethinking Plastics Initiative is increasing awareness of public authorities and citizens about sustainable consumption and production of plastic and the impacts of littering on the environment. Similarly, USAID's Clean Cities Blue Ocean Initiative plans to build social, and behaviour change for 3R practices and sustainable waste management. To achieve this goal, USAID's initiative develops audience-specific messaging to promote awareness, address structural factors and lead to behaviour change in targeted countries.

Pillar II: Encouraging more sustainable plastic production

One key aspect for addressing the environmental effects of rapidly growing plastic waste volumes is ensuring that production becomes more sustainable. To achieve this goal, many policy instruments exist to achieve a higher level of circularity in plastic production, including to ensure that plastics are safe for human health and the environment by design. These instruments include, for instance, mandatory recycled content standards, extended producer responsibility schemes, R&D programs to develop alternative materials and reduce micro-plastics emissions (OECD, 2022[4]).

Development co-operation can support this goal in two main ways:

- by partnering with governments to promote policy reforms and dialogue; and
- by partnering with private sector actors and supporting their efforts to achieve higher levels of circularity in their value chain.

Engaging with local Governments on circular economy policies is an approach which can have major benefits to make plastics production more sustainable. In this context, a few agencies focus on spreading knowledge and expertise around policy instruments for sustainable production of plastic products. The Asian Development Project on Promoting Action on Plastic Pollution from Source to Sea in Asia and the Pacific has a specific component aimed at providing technical assistance to form policy and regulations to encourage a circular economy. Technical assistance in this domain can support partner countries to align regulatory incentives and ultimately incentivise the integration of circular economy approaches in their economic system.

The Rethinking Plastics initiative, for instance, has a dedicated component focussing on extended producer responsibility (EPR) for packaging and plastic products. The initiative translated an EPR toolbox into Chinese, Vietnamese and Bahasa and adapted its content to local contexts. This initiative can be useful to ensure that policy makers are informed about approaches that have been successful elsewhere and help them adapt them to their local context and needs.

Alongside policy support to Governments, development co-operation can help create incentives for the private sector to produce more sustainably and to enhance the financial viability of innovative, more sustainable production. Many of the development co-operation initiatives on plastics have a dedicated focus on the development and adoption of alternative materials as well as on product design for improved recyclability. For instance, the PROBLUE fund aims at transitioning to products that are designed for reuse and recycling and waste that is more valuable. Similarly, the Clean Ocean Initiative focusses on the development and production of plastics that can be more easily reusable, recyclable, or biodegradable plastics.

While private sector engagement is present in almost all the plastics-related initiatives of development agencies, interviews, and findings from previous research (UNEP, 2021[32]) have shown that private sector engagement is still low among bilateral agencies and often limited to awareness raising campaigns.

Pillar III: Supporting the development of effective and environmentally sound waste management systems

Globally, 2 billion people do not have access to basic waste collection services (UNEP, 2015[40]). Using development finance to support the development of effective and environmentally sound waste collection, sorting, and recycling infrastructure can generate the double benefit of leading to a significant decline in plastic leakage volumes and significantly increasing the amount of potentially recyclable materials collected, thus increasing cost efficiencies in the recycling industry.

To access the financing needed to develop or expand waste-related infrastructure, however, national, and sub-national governments need to put in place a significant amount of preparatory work. This includes, for instance, establishing a clear framework for waste management through conducive legislative arrangements and dedicated policy strategies, collecting data and information, building up capacity within administrations and private sector and defining affordable and financially sustainable waste management options (World Bank, 2021[36]).

Multilateral and bilateral providers of development co-operation are one of the few sources of finance available to set up the enabling environment and the initial policies and institutions needed to conduct this process (Caspary, 2019[41]). In particular, technical assistance grants can be disbursed for project preparation, implementation, and execution as well as for capacity building activities for public administrations and local private sector.

In addition to this, in developing countries cost of finance is on average higher and the lack of adequate access to capital at reasonable rates can slow down investment in environmental technologies (Ameli et al., 2021[42]). Multilateral and bilateral agencies can help mitigate the lack of finance challenges by providing financing below market terms for individual investments to public sector actors and corporates and facilitate investment in these technologies.

Debt and grants from development co-operation agencies can be used to finance the construction and upgrade of the infrastructure required to set up effective and environmentally sound waste management systems. This financing can happen in a variety of ways. Development finance for infrastructure can be disbursed in the form of long-term financing to national or sub-national public sector or corporate clients or through the support of project finance based on design build operate models. Investment grants can also be deployed to improve the financial viability of investments and share the risk associated with investing in specific frontier markets or technologies.

Support for waste management-related activities such as collection, treatment and recycling are common among all development co-operation plastic-related initiatives. An example of project aimed at enhancing the enabling conditions for effective waste management is the EU-funded PacWastePlus, which supports Pacific Island countries to achieve better waste management practices. To achieve this goal, the project focusses on several key areas including, improved data collection, policy & regulation, enhanced human capacity, infrastructure development and enhanced private sector engagement (PacWastePlus, 2022[43]). Some other initiatives, such as the Clean Oceans Initiative and Rethinking Plastics, focus specifically on waste management facilities in ports and harbours to increase the collection and treatment capacity of waste from commercial and fishing boats and avoid the connected environmental and biodiversity impacts.

Most plastics-related development co-operation initiatives see private sector development as a key factor for setting up effective waste management systems in developing countries. For this reason, many initiatives focus on building private sector capacity and enabling it to scale up its operations. For example, USAID-backed Circulate Capital Fund provides debt and equity financing to waste management, recycling, and circular economy start-ups and SMEs in India, Indonesia, Thailand, Vietnam, and the Philippines to intercept ocean plastic at the source. As another example of this kind, the World Bank commercial arm, IFC, in 2020 committed a USD 300 million blue loan to Indorama Ventures Global Services Limited (IVGS), a subsidiary of Indorama Ventures Public Company Limited (IVL), a leading global manufacturer and recycler of PET resin. This loan will allow the company to scale up its recycling capacity in Thailand, Indonesia, Philippines, India, and Brazil.

Pillar IV: Implementing clean-up and removal activities

Clean-up and the deployment of technologies to collect plastics from rivers and oceans as well as end-of-pipe capture technologies for stormwater are remedies of last resort of plastic pollution. While prevention at the source should always be prioritised and despite often not being particularly cost-effective and moderately impactful in terms of volumes of waste removed (OECD, 2022[4]), some clean-up activities may be necessary, for instance to avoid that plastic pollution severely affects key infrastructures (e.g. clogging of drains), to reduce economic impacts on tourist destinations (Jain, Raes and Manyara, 2021[44]), to protect specific ecosystems, and to prevent the leaching of toxic substances into the environment. Clean-up activities involving citizens and youth are also seen as an effective way to build public awareness around plastic issues.

Only a few development co-operation initiatives engage in clean-up and removal programs. One of them is NORAD's marine litter programme, which lists clearing coastal areas and rivers from litter as one of its main objectives. However, in 2019 none of NORAD's projects exclusively contributed to this goal while the clean-up of coastal areas and beaches was a component in eleven projects and was primarily employed as an awareness raising instrument (NORAD, 2020[45]).

The importance of tracking development finance to curb plastic pollution

Despite the urgency and ambition of the fight to curb ocean plastic pollution, there is no internationally agreed and shared mechanism to track financial resources allocated to this goal.

Some of the few attempts to provide a comprehensive overview of the international financial resources and mechanisms available are UNEP's *Report on the Inventory of Technical and Financial Resources or Mechanisms for Supporting Countries in Addressing Marine Litter and Micro plastics* (UNEP, 2021[32]) and the annual *G20 Report on Actions against Marine Plastic Litter* (G20, 2021[46]). UNEP's report reviewed 138 technical resources and mechanisms currently available to address marine plastic litter and micro plastics. The G20 report provides a comprehensive reporting of G20 domestic and international co-operation initiatives/projects. The third report in 2021 extended the reporting scope beyond the G20 community.

These resources however are not meant to provide a detailed overview of financial resources attached to specific initiatives. Moreover, their goal is not to track the evolution of plastics-related financing across time and therefore cannot assess to which extent financial resources committed represent additional funding on top of business-as-usual funding.

A new OECD methodology tracks development finance to curb plastic pollution

As part of the OECD Sustainable Ocean for All Initiative, initial estimates of Official Development Assistance (ODA) to tackle plastic pollution were developed in 2021 and featured in the OECD Global Plastics Outlook as well as in the OECD Sustainable Ocean for All Data Platform on ocean-relevant development finance (OECD, 20222[47]; OECD, 2022[4]).

These estimates are based on the OECD/DAC Creditor Reporting System (CRS) database, which provides activity-level data on ODA projects and offers the opportunity to track financial flows to curb ocean pollution in a comprehensive and comparable manner. CRS data are the unique source for official, standard, and comparable statistics on development finance tracking concessional and non-concessional development finance flows from the 30 Development Assistance Committee (DAC) member countries, multilateral providers, and other non-DAC bilateral providers (Box 3.2).

The OECD Sustainable Ocean for All estimates on ODA to tackle plastic pollution based on the OECD/DAC CRS rely on text analysis of project descriptions directly provided by reporting development co-operation

entities. This methodology was developed building on an analogous methodology designed to track ODA support for ocean-related initiatives (OECD, 2020[23]).

The methodology to estimate ODA to tackle plastic pollution has been further refined for the analysis in this paper. These estimates are articulated around two main indicators (Figure 3.2):

- **Development finance flows specifically targeting plastics and recycling** (henceforth "plastics-specific projects")**:** this indicator captures only projects that make explicit reference to the management, reduction, recycling and cleaning up of plastic. As such, support for all types of recycling infrastructure would be captured, as would policies to reduce plastic usage or coastal and marine clean-up projects.
- **Development finance flows for other waste management projects** (henceforth "other waste-related projects")**:** this indicator broadly captures projects related to improving infrastructure and practices of waste management in recipient countries. The broad classification is deemed relevant as solid waste management and collection infrastructure, e.g., for household waste collection, play an important role to reduce plastic leakage in developing countries - even if the project does not target plastic in particular[5].

The sum of these two indicators provides an estimate of total **development finance to curb plastics pollution.**

Figure 3.2. Development finance to curb plastics pollution: indicators

Overall, tracking development finance flows addressing ocean plastic pollution holds significant policy insights regarding the evolution of financial allocations, geographical focus of initiatives and providers' individual contributions. What the measurement of financial allocations cannot provide is an estimate of the ultimate effectiveness and impact of these financial disbursements, which can only be assessed through dedicated ex post evaluations.

[5] Wastewater and storm water collection and treatment infrastructure are also crucial to avoid ocean pollution from microplastics and other sources. For many development co-operation initiatives, including the Clean Ocean Initiative, addressing ocean pollution wastewater treatment is one of the key areas of investment. Since these activities, however, are not primarily conceived to address plastic pollution they are outside the scope of this analysis

Box 3.2. Defining the perimeter of development finance

To characterize the role of development finance in combatting marine plastics pollution, it is important to first define its perimeter. Official development finance (henceforth "development finance") refers primarily to developing countries' official receipts for developmental purposes and includes other related expenditures by donor countries (e.g., refugees in donor countries and administrative costs of donors).

Development finance resources can differ with respect to their concessionality level, the disbursing agencies and target entities.

Development finance flows

Development finance flows include bilateral official development assistance (ODA), bilateral other official flows (OOF) except grants and loans for commercial purposes (e.g., export credits), and all grants and loans by multilateral development institutions, irrespective of the grant element of the loans.

ODA resources are concessional flows, i.e., financial resources to which recipient countries have access below market terms. The first requirement for flows to qualify as ODA is that resources must be administered with the promotion of the economic development and welfare of developing countries as their main objective. Secondly, ODA flows need to fulfil certain minimum "softness" requirements compared to a loan at market rate. In the development finance jargon, a loan softness level is commonly referred to as "grant element". The OECD DAC ODA definition determines the minimum grant element for a credit to qualify as ODA. The minimum grant element to qualify as concessional depends on the recipient county's income group.

Non-concessional flows include non-concessional flows (except export credits) by bilateral agencies and multilateral international finance institutions. These flows are transactions of the official sector with countries on the DAC List of ODA Recipients which do not meet the conditions for eligibility as ODA, either because they are not primarily aimed at development, or because they have a grant element of below the minimum requirement set by the ODA definition. While not satisfying the concessionality definition as defined by the DAC Guidelines, most of these resources are still issued below market terms and key sources of financing in contexts where other sources of investment might be inaccessible.

Actors

Development finance is provided by official bilateral agencies, including state and local governments, or by their executive agencies and by multilateral providers of development co-operation (e.g., multilateral development banks, regional development banks, UN entities, etc.).

Beneficiaries of concessional development finance flows are countries and territories on the DAC List of ODA Recipients. Countries and territories remain ODA-eligible until they reach high-income status.

Private philanthropy for development

To provide a broader picture of concessional resource flows to developing countries, this report also includes private philanthropy for development among development finance flows.

Private philanthropy for development comprises activities of philanthropic foundations aimed at sustainable development. The OECD database on Private Philanthropy for Development collects activity-level information from 41 of the largest private philanthropic foundations working for development.

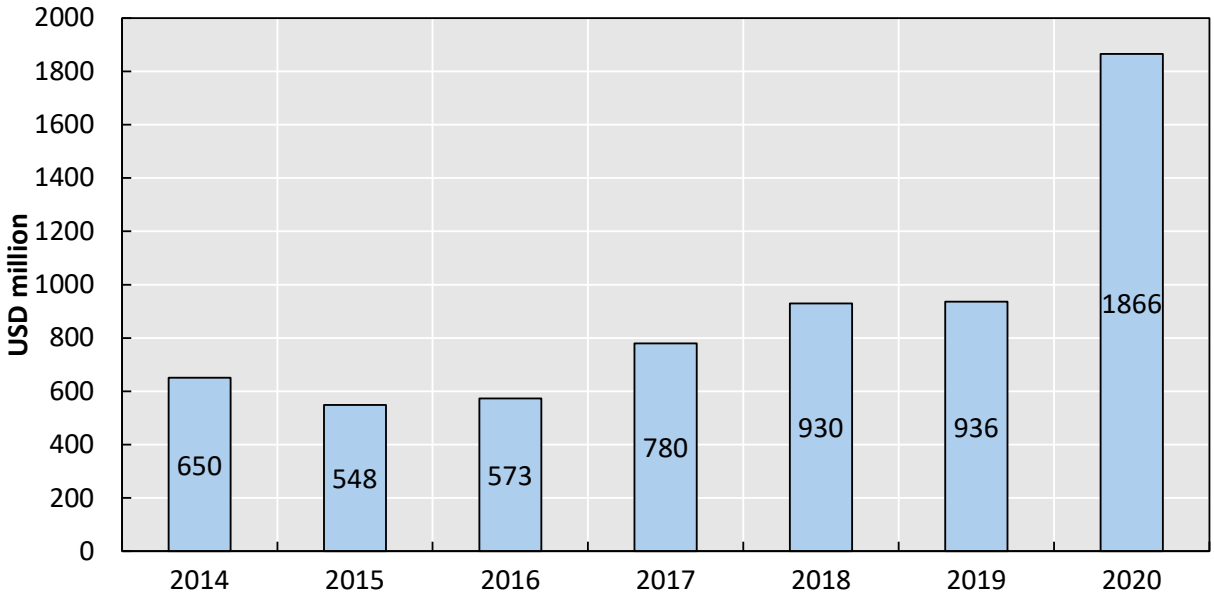
Source: DAC (2022[48]), DAC Glossary of Key Terms and Concepts, https://www.oecd.org/dac/dac-glossary.htm

Main trends in development finance flows to curb plastic pollution

Development finance flows to address plastic pollution are increasing

Development finance flows to curb plastics pollution[6] have been on an increasing trend in recent years (Figure 3.3)**.** The sum of development finance resources to curb plastic pollution reached a record high of USD 1 866 million in 2020, up from USD 650 million in 2014 (+24% per year on average). Development finance resources to tackle the issue have consistently increased since 2015 and moved from an annual average of USD 561 million in the 2015-16 biennium to an annual average of 1.4 billion over 2019-20[7]. Over 2018-2020, development finance for this purpose represented 0.4% of total development finance. The bulk of these resources was channelled through recipient countries governments (61%), followed by private sector and civil society organisations (12%), multilateral organisations (11%) and donor or third-party governments (10%).

Figure 3.3. Development finance to curb plastic pollution



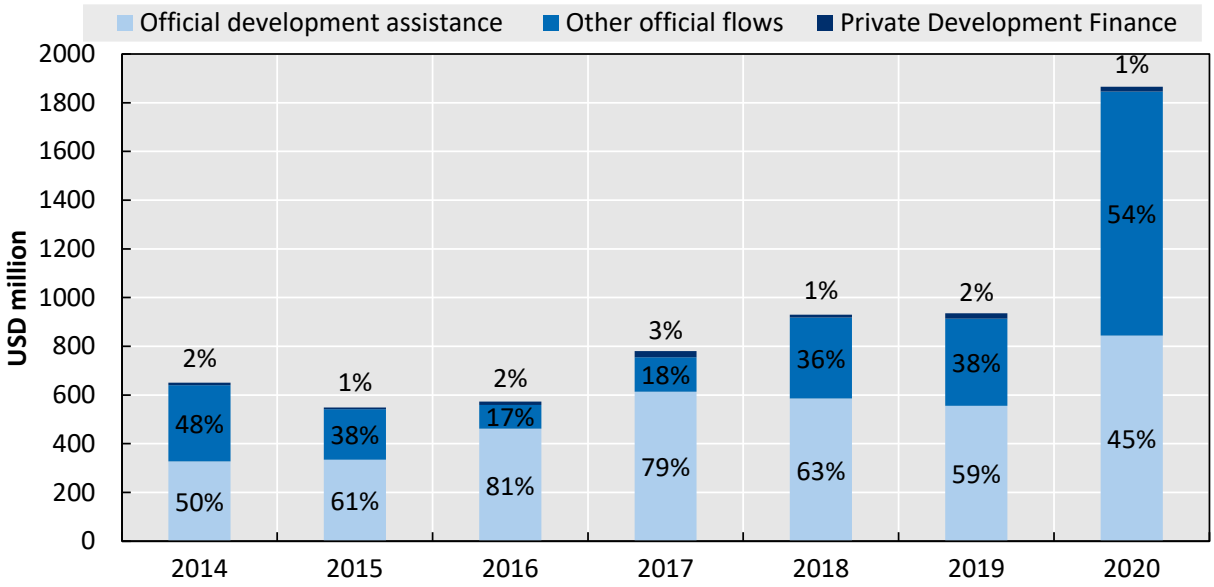
Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/

ODA flows have been the most common source of development finance to curb plastics pollution. Over the period 2014-20, ODA resources contributed 59% of total development finance, followed by other official flows (39%) and philanthropic funding (2%). Throughout the years, ODA flows have been consistently on an increasing trend and more than doubled from an annual average of USD 331 million in 2014-15 to USD 700 million in 2019-20. Other official flows, on the other hand, have displayed a more volatile trend in terms of annual commitments and was marked by a decline in 2015 and 2016, followed by a consistent increase in allocations starting in 2017 (Figure 3.4).

[6] including flows specifically targeting plastics and recycling and other waste management projects

[7] Bi-annual averages are used to mitigate annual fluctuations in ODA commitments.

Figure 3.4. Development finance to curb plastic pollution by flow type



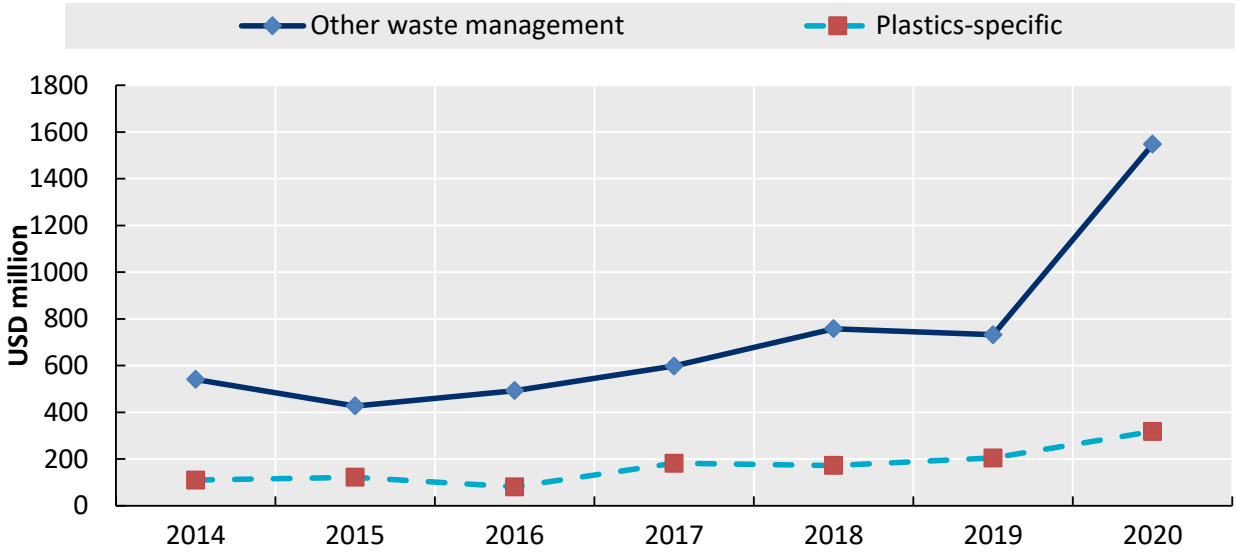
Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/

Most of the development finance to curb plastics pollution targets waste management systems in general and does not target plastics specifically. In 2014-2020, 81% of development finance resources targeted waste management projects which did not have a specific component focused on plastic. The amount of development finance targeting waste management has increased over the years and reached a record high of USD 1.5 billion in 2020[8]. While the 2020 upsurge in other waste-related financing is mainly driven by a few large infrastructure investment projects, the overall trend in financing to the sector appears to have increased by approximately 50% between 2014 and 2019. Financing for other waste management projects beyond plastics is mainly provided via ODA. In 2014-20, 54% of resources originated from ODA, while 44% came from other official flows. Private philanthropy contributed the remaining 2%.

Nonetheless, increasing amounts of development finance resources are allocated to projects targeting plastics or recycling specifically. In 2020, development finance projects including a plastic- or recycling-specific component represented a total financing of USD 318 million. Development finance allocated to projects with a plastics-specific component increased almost three-fold between 2014 and 2020 (Figure 3.5). More than 80% of resources provided to plastics-specific projects were in the form of ODA, while less than 20% originated from non-concessional flows or private philanthropy. Non-concessional flows were used by some institutions to scale up private sector's plastics manufacturing capacity, but these projects were not included in the estimates if not also combined with activities to reduce plastics pollution.

[8] Projects were identified as waste management-relevant using a keyword search to be able to capture waste management projects outside the sector category "Waste management/disposal".

Figure 3.5. Development finance to curb plastic pollution by project goal

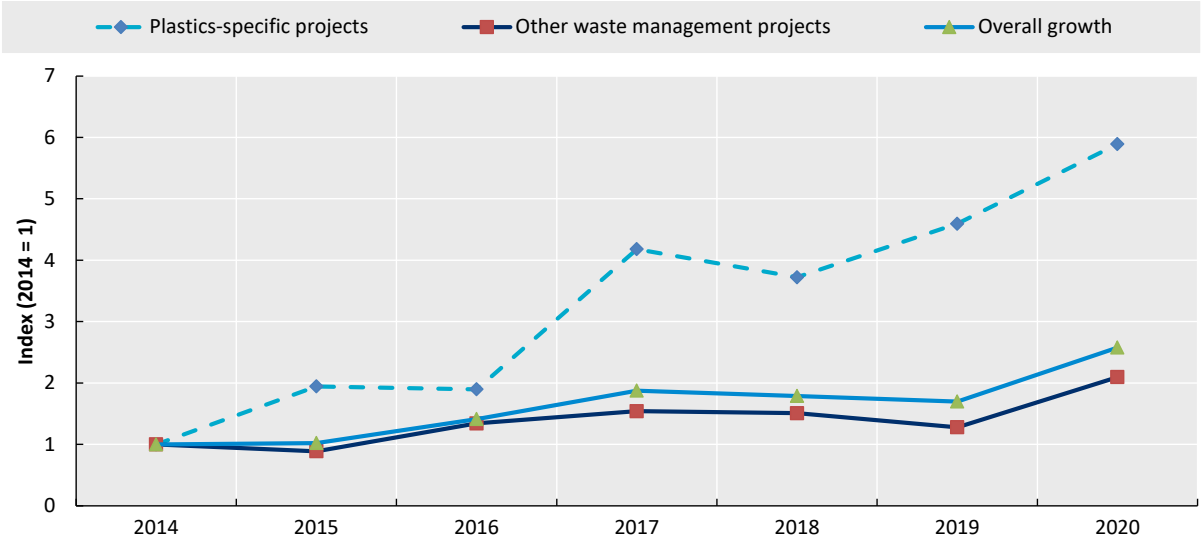


Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/

The increase in development finance flows was mainly driven by a growth of ODA to the sector. ODA to curb ocean plastics pollution – including flows specifically targeting plastics and recycling and other waste management projects - has increased substantially since 2014, from an annual average of USD 331 million in 2014-2015 to USD 700 million in 2019-20. ODA allocated to projects with a plastics and recycling-specific component has shown the most consistent increase in resources, experiencing a six-fold increase between 2014 and 2020 (Figure 3.6). Projects targeting other waste management projects not related to plastics or recycling have also increased over the period but at a lower rate. The rapid growth in plastics and recycling-related projects might be a signal of the increasing mainstreaming of recycling practices in development projects targeting the waste sector as well as, to some extent, of improved reporting practices.

Figure 3.6. ODA to curb plastic pollution: evolution over time

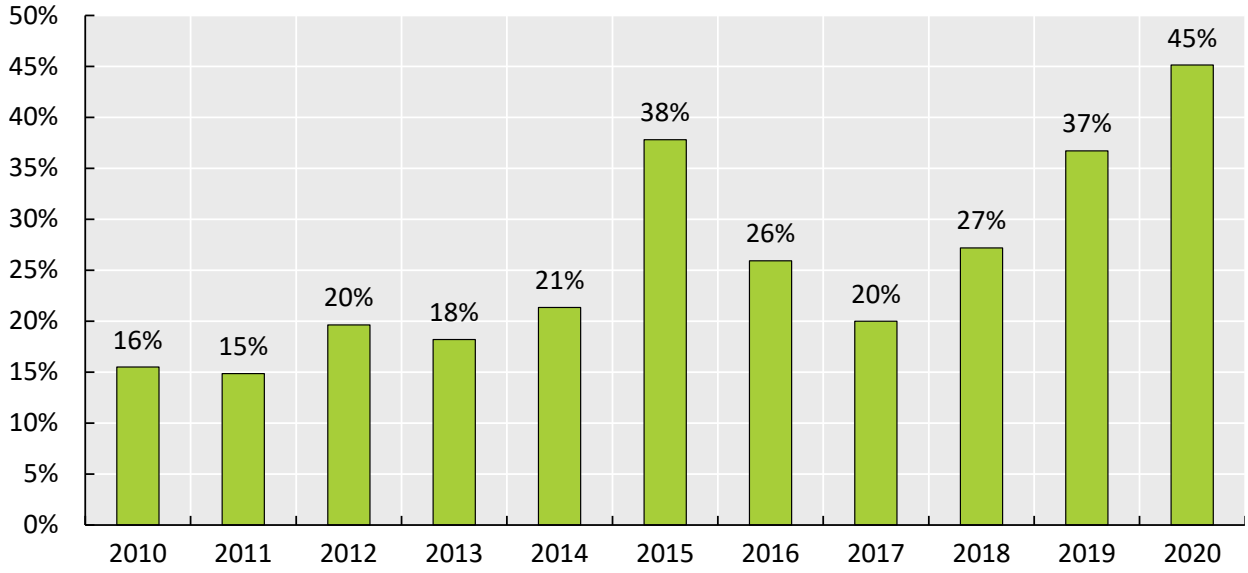
Growth compared to 2014 values



Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/

Circular economy approaches are also more frequently included in project descriptions than in the past. The share of development finance projects integrating circular economy language in their descriptions has increased from 15% in 2010 to 45% in 2020 providing a useful proxy that points to circular economy mainstreaming into project design. Figure 3.7 illustrates estimates on the share of waste and plastics related projects integrating a circular economy component in the project description.

Figure 3.7. Share of plastics and waste-related projects that contain a circular economy component



Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/

Financing instruments used by bilateral and multilateral providers differ significantly

Supporting such a wide variety of activities demands the deployment of a range of development co-operation instruments. Depending on the activity they plan to engage in. Table 3.2 provides a stylised outline of some instruments that can be deployed. These range from grant-based or in-kind interventions - such as policy support and advice in the design of integrated strategies and technical assistance - to more significant financial allocations in the form credit, or credit enhancement mechanisms to finance infrastructure development.

Table 3.2. Main development co-operation instruments to combat plastic pollution

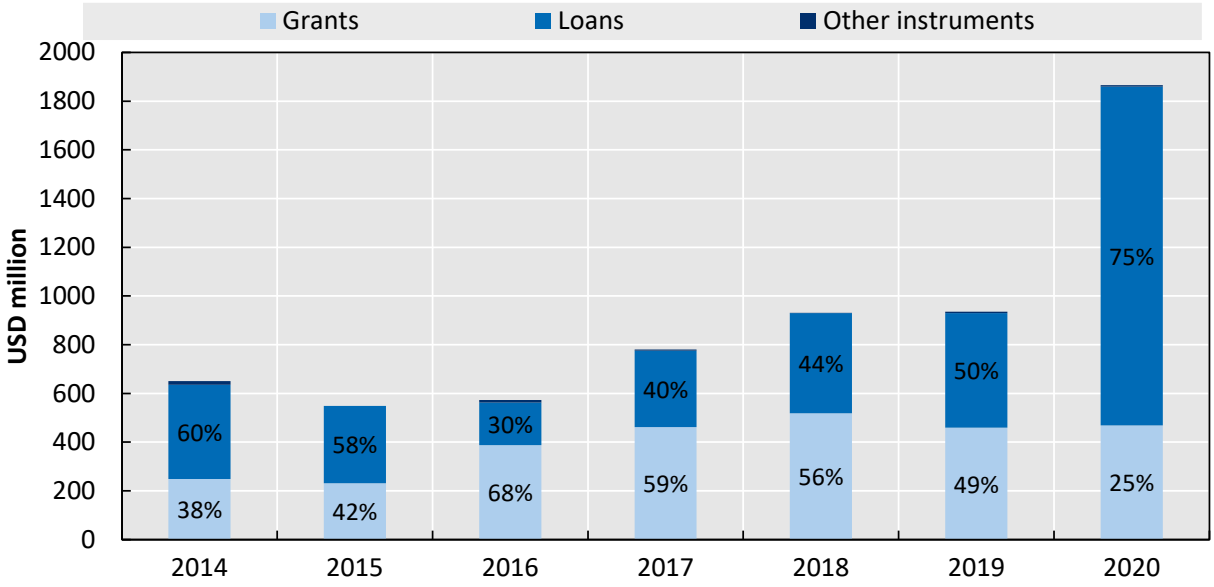
Instrument		Main objective	Example of projects	Life cycle stage
Grants/in kind support	Policy support/advice	Strengthen policy framework surrounding plastics and waste management	Increasing awareness of public authorities regarding specific policy instruments. Supporting preparation of dedicated strategies national plans.	Product design, packaging, and distribution, use and maintenance, recycling, reuse, waste management and disposal, clean-up
	Research grant	Foster innovation and technology adoption	Support the development/adoption of alternative materials Support data collection and analysis	Product design, packaging and distribution, recycling, clean-up
	Technical assistance	Support project preparation, implementation, and execution, build capacity of public and private sector and provide specific technical support.	Data collection and analysis; trainings Support the adoption of specific policies through technical assistance Technical assistance for improving urban solid waste management	Product design, packaging, and distribution, use and maintenance, recycling, reuse, waste management and disposal, clean-up
	Investment grant/guarantees	Improve financial viability of investments and share the risk associated with investing in specific frontier markets or technologies	Support private sector investment in recycling technologies Support private sector adoption of alternative materials	Product design, packaging and distribution, recycling, waste management and disposal
Debt instruments	Long term financing to public sector	Provide access to finance in a context of high cost of capital	Construction of waste treatment plant and recycling facilities	Recycling, waste management and disposal
	Long term financing to corporate	Provide access to finance in a context where private sector entities lack adequate access to capital at reasonable rates	Expansion of waste-related business operations	Product design, packaging, and distribution, use and maintenance, recycling, reuse, waste management and disposal, clean-up
	Co-financing	De-risk financing for private sector investors in specific technologies/infrastructure and mobilise additional financing	Establishment, expansion, and update of waste management infrastructure	Recycling, waste management and disposal
	Project finance	Support public-private partnerships in the waste sector	Design build operate (DBO) contract between public sector and private sector	Recycling, waste management and disposal

Source: Authors' elaboration based on EIB (2018[49]), Clean Oceans Initiative, https://www.eib.org/attachments/press/facsheet_coi_final.pdf

Most funding to curb ocean pollution comes in the form of debt instruments. In the period 2014-2020, debt instruments represented 55% of total development finance funding for the sector, followed by grants (44%) and other instruments (1%), such as equity and guarantees (Figure 3.8).

The way in which development finance flows are presented often fails to capture the importance of grant funding. While in quantitative terms, large infrastructure investment in waste management mainly financed through debt instruments dominate as a share of total commitments for the sector, grant funding plays a crucial role in supporting the institutions and policies that enable and catalyse public and private sector investment.

Figure 3.8. Development finance to curb plastic pollution by instrument



Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/

Grant funding is the most common financing instrument for projects that tackle plastics specifically. In 2018-20, 80% of funding targeting plastics-specific projects was in the form of grants. On the other hand, if also other waste-related projects are considered non-concessional loans represented 45% of total development finance funding for the sector, followed by grants (37%) and concessional loans (16%).

The diversity in financing instruments employed reflects the division of labour between multilateral and bilateral agencies. Multilateral providers tend to be more focused on infrastructure investment and private sector financing, while bilateral providers focus their activities on technical assistance and capacity building.

Bilateral providers are the largest providers of grant financing to curb plastics pollution, extending 85% of the total in 2018-20. Grants are the most common financing instrument used by bilateral providers, which commit approximately 71% of all their resources to curb plastics pollution in the form of grants. A few providers account for the bulk of grant funding to curb ocean pollution. The top 10 providers of grant funding committed 86% of total grant funding. The largest grant providers are mainly bilateral providers, such as the EU (20% of total), Germany (18%), Japan (9%) and Norway (8%), and a few multilateral providers such as the Asian Development Bank (7%) and Global Environment Facility (GEF) (5%).

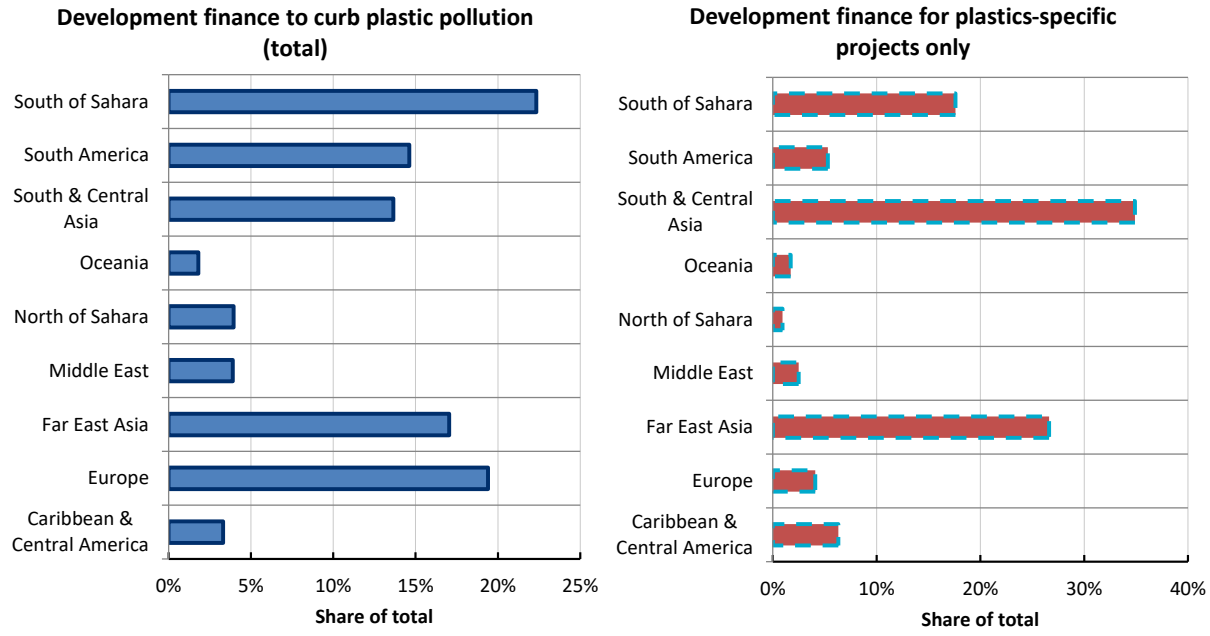
Multilateral institutions mainly base their financing on loans, with grants representing only 10% of their funding. Non-concessional loans are the most common financing instrument used by multilateral institutions, which in 2018-20 committed 83% of total resources through this channel as they are more active in supporting waste projects and infrastructure unrelated to plastics (e.g., waste management infrastructure), while the bulk of activities on plastics is supported by bilateral providers.

Development finance to curb plastics pollution could be better targeted

The geographical focus of development finance is driven by a multitude of factors, including the assessed need for support, the preparedness of local authorities to engage on the issue and the potential impact of the intervention. Plastics-focussed initiatives by development agencies can include a specific geographical focus to channel resources to regions considered in special need of support. In recent years and following the publication of the influential paper by Jambeck et al. (2015[50]), many initiatives have placed particular attention on Southeast Asia, a region estimated to be one of the most important sources of plastic leakage into the ocean. While Southeast Asia will witness a substantial increase in plastics use in the next 40 years (x 3.7), other regions such as Sub-Saharan Africa will experience larger increases in plastics use (x 6.5) and will merit similar attention and donor mobilisation in the future (OECD, 2022[5]).

The analysis of development finance data shows that official development finance for plastics and waste management is mainly concentrated in a few countries. In 2018-20, the top 10 recipients of development finance to curb ocean pollution received 55% of total funding. Plastics-specific projects are even more concentrated, with the top 10 recipient countries receiving 74% of total resources. Sub-Saharan Africa is the region that received the largest amount of support for waste management and plastics in 2018-20, followed by Europe, Southeast Asia and China (Figure 3.9). These three regions together received 59% of total development finance to curb plastics pollution – including both projects for waste management in general and plastics-specific projects. When focussing only on projects having a specific focus on plastics and recycling, Asia is the region receiving most development finance allocations. This can point to two trends affecting development finance allocations in Africa and Asia. First, Asia is home to a significant number of initiatives targeting technical assistance and the plastics lifecycle, including projects to create the enabling conditions for private sector action. Since Asia has been long characterised as the hotspot of plastics pollution, this seems to have driven up the amount of allocations for plastics-specific projects, which are more commonly in the form of grant funding.

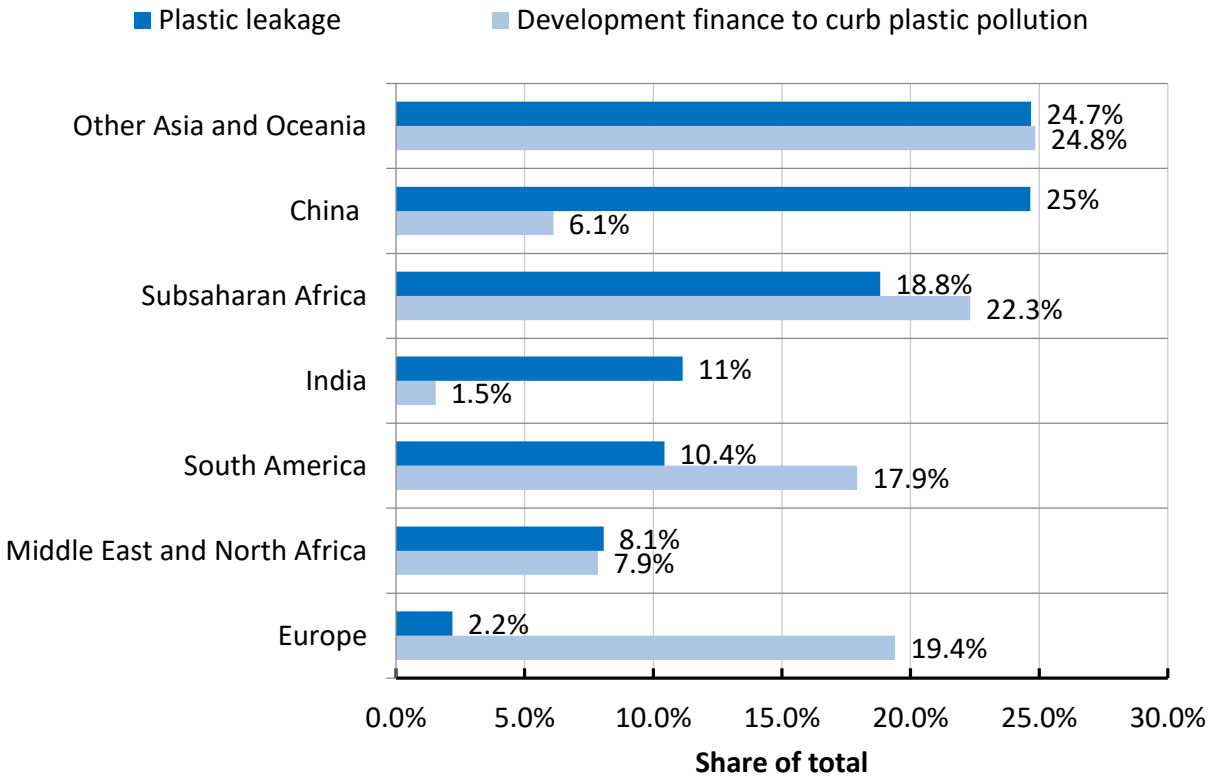
Figure 3.9. Development finance to curb plastic pollution by region (2018-20)



Note: Development finance to curb plastic pollution consists of the plastics-specific component and other waste management projects.
Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/

Development finance to curb plastic pollution could be more aligned with where the main sources of leakage are. Figure 3.10 compares development finance flows with data on plastic leakage. While in regions such as Other Asia and Oceania and Sub-Saharan Africa flows are relatively aligned, in other regions they could be better targeted. In 2019, for instance, China and India contributed respectively 25% and 11% of plastic leakage, while they received only 6% and 2% of development finance to curb ocean pollution respectively (over the triennium 2018-2020). On the contrary, ODA-eligible European countries, which contributed 2.2% of total plastic leakage in 2019, received 19.4% of development finance to curb ocean pollution. When development finance flows are compared to population size, the picture is similar: countries with large population size like India and China are significantly under-targeted, while Europe and Oceania are above average. While China and India both represent approximately 22% of ODA-eligible countries population, they received 6% and 2% of total development finance to curb plastic pollution respectively. This discrepancy is likely driven by a multitude of factors, including the existence of dedicated EU programmes directed at neighbouring countries driving allocations to Europe up.

Figure 3.10. Plastic leakage concentration and development finance to curb plastic pollution



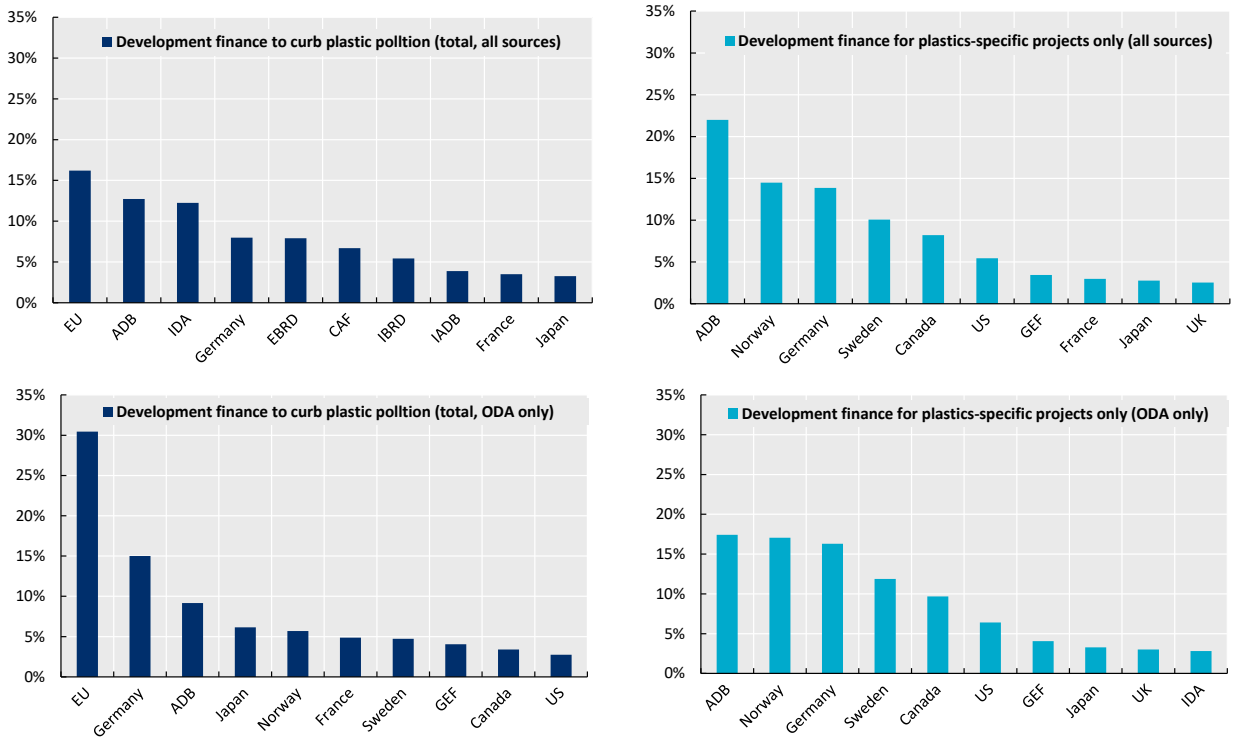
Note: The share of plastic leakage is calculated among non-OECD countries and OECD ODA-eligible countries in 2019 based on the OECD Global Plastics Outlook Database indicator "Plastic leakage from mismanaged and littered waste". Development finance to curb plastic pollution consists of the plastics-specific component and other waste management projects over the period 2018-2020.
Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/ and OECD (2022[2]), Global Plastics Outlook Database, https://doi.org/10.1787/c0821f81-en

More support from a greater set of providers could help meet the growing needs of developing countries

The number of providers that support projects to improve waste management and reduce plastics pollution has significantly increased in recent years, yet funding remains highly concentrated. As mentioned in previous sections, an increasing number of bilateral and multilateral providers has set up dedicated waste and plastics-related initiatives in recent years. While this trend can be found in the number of development co-operation providers active in the space - which moved from 37 in the period 2015-17 to 52 in 2018-20 - the bulk of funding is still quite concentrated among a few institutions. In 2018-20, the top 10 providers of development finance to curb plastic pollution (both waste management and plastics-specific projects) provided 80% of total funding. EU institutions, Asian Development Bank and International Development Association were the top three providers over the period, providing respectively 16%, 13% and 12% of total funding in this area (Figure 3.11, left graphs). This trend is confirmed also when only considering plastics-specific projects, in which the top 10 providers account for almost 85% of total funding (Figure 3.11, right graphs).

Figure 3.11. Development finance to curb plastics pollution: by provider (2018-20)

Share of total



Note: Development finance to curb plastic pollution consists of the plastics-specific component and other waste management projects.
Source: Authors based on OECD Sustainable Ocean for All database, which uses OECD-DAC CRS data. Full dataset available here: https://oecd-main.shinyapps.io/ocean/

More support from a greater set of providers could help meet the growing needs of developing countries. However, this also demands enhanced co-ordination to avoid duplication and ensure that opportunities for funding are clear for developing countries.

Looking ahead

In a context of scarce development co-operation resources, it is paramount to allocate resources strategically and maximise their impact. Tools that can help providers better allocate their resources to maximise impact include:

- **Enhancing policy dialogue at the global level to bring together providers and recipients of development co-operation to discuss specific issues slowing down progress**. Such a forum would allow to foster dialogue, mutual learning, and the exchange of good practices. In this context, the OECD through its Sustainable Ocean for All initiative is working to advance dialogue in the development co-operation community with the aim to develop guidance on good development co-operation approaches to tackle plastics pollution in developing countries. In addition to this, tools that could be developed to help inform developing countries of resources and how to access/leverage them.
- **Ensuring the effectiveness of development co-operation activities to reduce plastics pollution by grounding all projects in the aid effectiveness principles**. These principles include (i) country ownership in setting strategies, (ii) alignment of development co-operation activities behind country objectives, (iii) harmonisation of development co-operation providers activities to avoid duplication and simplify procedures, (iv) strong focus on results and (v) shared accountability between providers and recipients (OECD, 2005[51]).
- **Encouraging data analysis on current as well as projected growth in plastics use and leakage that can support development co-operation providers and partner countries to better target support needed in different contexts**. For example, the OECD Global Plastics Outlook (OECD, 2022[4]; OECD, 2022[5]) provides interesting insights not only on current levels of plastics leakage in 15 different world regions but also projections on their likely evolution in the next 40 years.

4 Approaches and opportunities to scale up action

Development co-operation providers are testing new ways to address plastic pollution, with a view to both increase the volume of resources available and enhance their impact. This Chapter provides an initial mapping of innovative approaches and instruments developed with support from development co-operation providers. These approaches provide examples that could be further explored and scaled up.

Policy approaches to scale up impact of development co-operation projects

Supporting the adoption of plastics-related policy instruments

Depending on local conditions and feasibility, several promising policy approaches can help Governments in developing countries reduce plastic pollution and encourage circularity. These approaches include, among others, EPR schemes[9], recycled content standards, taxes on single use products and the removal of fossil fuel subsidies. While these approaches hold the potential to advance a more circular use of plastics, they need to be integrated in a broader and phased national plan to advance circularity of plastics (OECD, 2022[4]).

Many developing countries have not yet adopted many of these policy approaches. For example, OECD (2022[4]) documented that EPR, landfill taxes and incineration taxes are adopted at the national level only in a few countries, covering 11% of the global population covered by the inventory. Despite a few exceptions of countries having effective mandatory EPR schemes (e.g., South Africa), developing countries are the ones where these policy instruments are less widespread (OECD, 2022[4]; Prevent Waste Alliance, 2021[52]).

Low- and middle-income countries face specific challenges to the adoption of plastics-related policy instruments. These challenges include:

- Absence of well-established, formal waste management systems;
- Existence of a large informal sector, whose livelihoods could be undermined by un-coordinated formalisation of waste management services;
- Underdeveloped recycling infrastructure leading to difficulties in waste processing;
- Low regulation enforcement capacity;
- More sensitivity to price increases related to EPR or deposit-refund schemes in low-income contexts;
- Reduced leverage power on product designs (e.g., packaging) due to small market size;
- Bans on recycled content in specific items (e.g., food packaging in Thailand and India).

[9] EPR schemes are “an environmental policy approach in which a producer’s responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product’s life cycle” (OECD, 2016[86])

The introduction of plastics-related policy instruments in developing countries needs therefore to closely consider several additional aspects compared to higher income countries. In this context, development agencies have a role to play particularly in providing technical assistance and capacity building to central and regional Governments willing to implement such approaches and in catalysing enablers.

In recent years, various development agencies have started to explore the possibility to support the implementation of plastics-related policy instruments in developing countries. Development agencies and programmes such as USAID, GIZ and PROBLUE have focussed on advancing discussions on EPR schemes in specific Asian countries.

GIZ and the Prevent Waste Alliance, for instance, developed an EPR toolbox for packaging with various training materials covering EPR establishment, financing mechanisms, informal sector involvement and specific practical country examples (Prevent Waste Alliance, 2022[53]). GIZ and Expertise France, through the Rethinking Plastics Initiative, have disseminated this tool and translated it into various languages, including Chinese, Vietnamese and Thai.

USAID through its Clean Cities Blue Ocean Initiative provided a USD 390 000 grant to Ceylon Chamber of Commerce in Sri Lanka to support its circular economy initiatives, including to support their plan to pilot key voluntary components of an EPR Roadmap. These components include developing a governance mechanism and involving the informal sector to enable market-based collection and recycling schemes (USAID, 2021[54]).

Fostering the creation and adoption of plastics-related innovation

Innovation in environmentally relevant plastics technologies has increased rapidly over the last 30 years. Between 1990 and 2017, the number of patents filed increased by a factor of 3.4, mainly targeting technologies for plastics prevention and recycling (OECD, 2022[4]; Dussaux and Agrawala, 2022[55]). Plastics-related innovation, however, has been shown to be significantly concentrated in a few countries**.** Of all plastics-related technologies for waste prevention and recycling patented in 2010-14, 85% were in six countries, i.e., Japan, the United States, China, Korea, Germany, and France (OECD, 2022[4]). This means that while technological solutions to many plastics-related challenges exist, they are not accessible to all countries equally. Developing countries which are often late adopters of technologies due to low absorptive capacity and financial constraints can find more challenges in benefitting from recent technological improvements.

To scale up plastics-related innovation in developing countries, development co-operation providers should both support technology transfer (i.e., the diffusion of innovative approaches and technologies) as well as the development of local innovation (i.e., the creation of innovation), particularly well adapted to local circumstances.

Encouraging the production of local innovation can lead to solutions more adapted to the local context and more financially viable, while at the same time strengthening local innovation systems with spill overs on other sectors beyond plastics. Instruments that development co-operation providers can use include providing research grants to local research centres, universities and private sector actors through innovation challenges to reward and incubate innovative solutions to combat plastic pollution. The World Bank, for instance, organised a Plastic Circularity Innovation Challenge in Bangladesh targeting collection and recycling of low-valued plastics and single use plastics and digital technology solutions to cope with plastic pollution (World Bank, 2021[56]). Similarly, the G7 launched the innovation challenge to address marine plastic litter, which is designed to stimulate innovations, raise awareness of how to address marine plastic litter or facilitate much needed improvements to the management of plastic, especially plastic waste, in developing countries (G7, 2018[57]). Finally, Canada provide USD 6.7 million over 2018-2023 to the Incubation Network to engage with local private sector in in South and Southeast Asia and

optimize land-based plastic waste management and advance innovative circular economy solutions (The Incubation Network, 2022[58]).

Alternatively, existing technologies developed elsewhere can be locally deployed to provide solutions to local problems. The process can often be financially challenging for many local governments in developing countries. In this context, development co-operation can play a key role in building bridges between expertise from different countries and to demonstrate the feasibility of the deployment of specific new technologies in new markets. One of the examples in this field is the Prevent Waste Alliance's "Creating value in plastics through digital technology" project. The aim is to support Indonesia to establish a digital recycling value chain for plastics through the use of digital technologies, including blockchain, to enhance the amount of plastics that are collected, recycled and traded on global markets. The project intends to adapt digital technologies for recycling to the local context by partnering with an Indonesian social enterprise and involving local waste collectors, households and waste banks (Prevent Waste Alliance, 2021[59]).

Adopting gender-sensitive approaches in waste management projects

Gender and other personal characteristics have a significant impact on project results and this applies to the waste sector as well. For this reason, it is important that development co-operation projects adopt gender lenses when addressing waste management issues.

Integrating gender-lenses into waste-related development co-operation projects is important for two main reasons. First, gender differences in roles and responsibilities permeate the waste sector. As such, successful implementation of projects needs to take into consideration the needs and responsibilities of both women and men. For example, different household responsibilities based on gender tend to influence consumption patterns, with women holding the main responsibility for the purchase of short-term use products (OECD, 2020[60]). In Ghana, for instance, it is estimated that 70-80% of consumer purchasing decisions are made by women (WEF, 2021[61]). Women are also more exposed to hazardous materials contained in plastics, for instance, through the use of cosmetic products and female hygiene products (UNEP, 2021[62]). In many countries, women also predominantly take care of educational tasks, therefore playing a crucial role in imparting knowledge and awareness about correct waste management practices. Ensuring that women are targeted by programmes and understanding how to better achieve this should be a priority for all development co-operation providers active in the waste sector.

Secondly, development co-operation projects also hold the potential to accelerate women empowerment in the waste sector. Studies in Southeast Asian countries have shown that the formal waste sector is often dominated by men, while female participation is predominantly limited to informal and unregulated employment (Ocean Conservancy, 2019[63]). Gender-structured barriers also limit women's upward mobility and opportunities in the waste management value chain. While achieving pollution reduction and environmental goals is an objective per se of plastics-related development co-operation projects, they can also generate other positive spill overs in the social and economic sphere. In this context, development co-operation projects can play a key role to ensure that women have equal access knowledge, finance, and job opportunities. Some development co-operation providers started to adopt gender-lenses and gender sensitive approaches in their waste management projects.

USAID's Clean Cities Blue Ocean Programme, for instance, features "Further Gender Equality and Women's Economic Empowerment" as one of its main goals, seeking to advance women participation and economic empowerment across the waste management value chain (USAID, 2021[64]). To achieve this goal, USAID partnered with The Plastic Credit Exchange to develop the Aling Tindera network in Manila. The initiative engages with women micro-entrepreneurs in home-based convenience shops and enables them to increase their income by becoming local waste collectors. Community Members can bring plastic waste to these shops and sell it for cash. Women owning the shop are equipped with the adequate tools to prepare plastics for recycling (USAID, 2021[65]).

The World Bank's PROBLUE also seeks to address gender-related challenges in the waste management sector. The initiative financed a study that identified job opportunities for women in retrieving abandoned, lost, or otherwise discarded fishing gear. The programme is also mainstreaming gender into its operations and in 2021 90% of activities under PROBLUE facilitation included gender-sensitive elements in their design.

Beside gender, a number of other social aspects should be considered when implementing plastics-related projects. Differences in income, employment status, belonging to marginalised communities (e.g., indigenous, displaced, refugees) can all influence waste management habits and responsibilities, as well as the exposure to the hazardous impacts of plastic pollution.

Financing approaches to mobilise more resources for waste management in developing countries

While many governments in developing countries have demonstrated high ambition to tackle plastic waste mismanagement and leakages, concrete actions and implementation are often constrained by the financing gaps and challenges they face.

Solid waste management is often predominantly financed through municipal resources. Local governments in developing countries, however, often face capacity constraints that can slow down the process of setting up effective waste management systems and limit their access to crucial financing resources. City governments in developing countries, for example, often face un-creditworthiness challenges which can reduce their access to finance or increase financing costs to unsustainable levels. According to World Bank estimates, out of the 500 largest cities in developing countries only 4% are considered creditworthy on international markets and 20% in local markets (World Bank, 2013[66]). In turn, private sector initiatives too are often constrained by challenges to access to finance, including high financing costs faced by businesses in many developing countries. In this context, interventions targeted at better public financial management capacity are crucial to enable sustainable waste management systems (Box 4.1).

ODA and other resources coming from development institutions will not be enough to fill this financing gap affecting the waste management sector in developing countries. However, ODA is one of the most stable sources of external financing for developing countries and it can play an important role to help prevent and address the leakage of plastics litter into the ocean and the environment. ODA can both finance actions directly as well as leverage a variety of other sources of expertise and financing across both public and private actors.

To achieve this goal, development agencies are exploring a variety of new and innovating financing models aimed at increasing the impact of their interventions and ensuring that more financial resources are mobilised for waste management and the circular economy in developing countries. Among others, these approaches include a variety of blended finance approaches, blue bonds, and result-based financing.

Box 4.1. Enhancing local governments capacity to access financing

To address the financing gap in the waste management sector, it is important that development co-operation providers enhance local governments' capacities to access the financial resources needed to finance local infrastructure and improve waste management services at the local level. In this regard, the World Bank developed the City Creditworthiness Initiative which aims at providing technical assistance to city Governments to make finance management more efficient, improve transparency and achieve overall higher level of financial sustainability (World Bank, 2017[67]). While public finance-related competences are key, technical, and operational capacity gaps also play a key role in limiting access to resources and require specific attention through capacity building and technical assistance activities (World Bank, 2021[36]).

Aligning future development finance flows with circularity principles

To scale up the impact of policies and interventions aimed at reducing plastic pollution, it is crucial to mainstream the lifecycle approach across multilateral and bilateral agencies' portfolios. Approaches and guidelines to ensure that financing flows are channelled towards sustainable solutions rather than towards activities that are contributing to the problem can already help re-orient part of the financial flows to developing countries towards more sustainable pathways. Similarly to Paris Climate Accord alignment efforts common among multilateral institutions (Fuchs et al., 2021[68]), applying sector-specific alignment criteria focussing on resource efficiency and the circular economy could help address the issue of plastic pollution in a more systemic way.

In this context, the United Nations Environment Programme Finance Initiative (UNEP FI) has developed guidance for financial institutions to enable them to apply the *Sustainable Blue Economy Finance Principles* to the waste prevention and management sector (UNEP FI, 2022[12]). The guidance offers sector-specific investment criteria based on different scenarios and provides recommendations on investment to "avoid", due to the severity of a specific scenario, to "challenge" via further engagement with the client, or to "seek out", where financing is encouraged to support best practices.

Adopting blended finance approaches for tackling plastic pollution

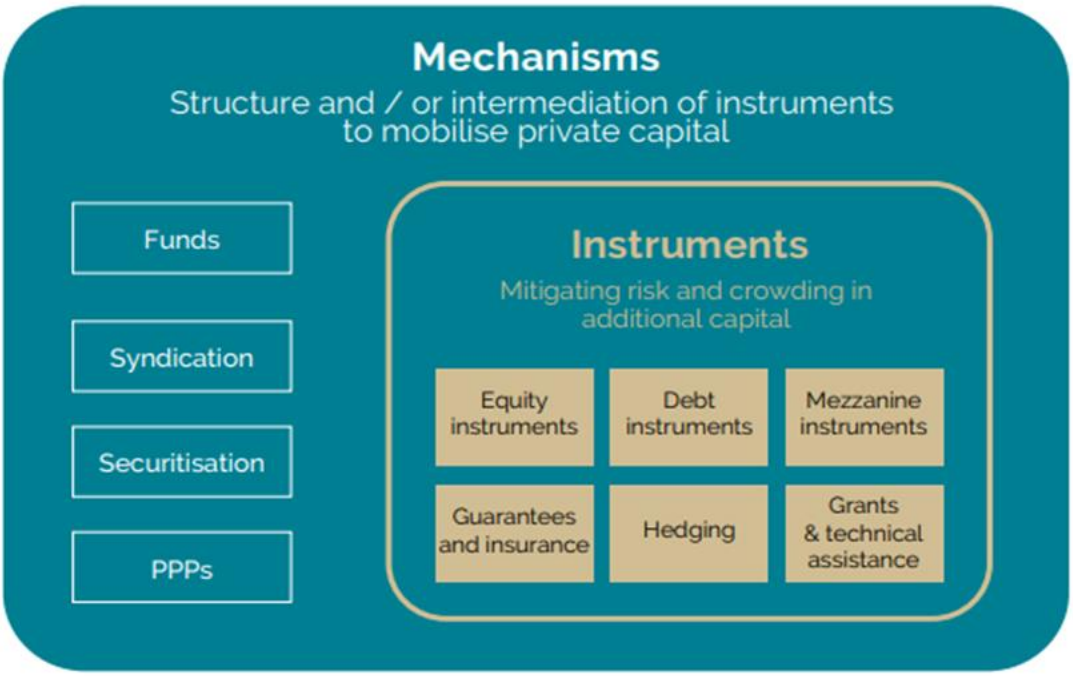
Blended finance is defined as the strategic use of development finance for the mobilisation of additional finance towards sustainable development in developing countries (OECD, 2018[69]). Blended finance can help leverage commercial capital towards projects that contribute to sustainable development, while providing financial returns to investors. The main objective of blended finance is to help diminish perceived and real risks associated with investment projects to attract investors (Ocean Conservancy, 2021[70]). This innovative approach can help enlarge total resources available to developing countries, complementing their own investments and ODA inflows to fill their SDG financing gap.

Blended finance can help mobilise additional finance towards sustainable ocean economies in developing countries. Blended finance should be deployed with a development objective, and with the aim to change the market and achieve scale. Rather than being a permanent feature in private investments, it should be a time-bound intervention that is part of a broad, ambitious, and strategic approach for mobilising additional resources. Beyond attracting commercial capital in a transaction, the ambition of blended finance is to be catalytic, i.e., to spur the replication of similar projects via demonstration and build sustainable markets and products.

Investments in circular economy innovations and new business models in developing countries are still considered to be high risk compared to similar initiatives in more developed economies.

Thus, the need to use public resources, including from development agencies to de-risk investments for circular business models (Schröder and Raes, 2021[71]). Blended finance approaches can be categorised according to mechanisms and instruments (Figure 4.1).

Figure 4.1. Blended finance mechanisms and instruments



Source: OECD (2018[69]), Making Blended Finance Work for the Sustainable Development Goals, https://dx.doi.org/10.1787/9789264288768-en

Structuring a blended finance transaction is a complex task, which requires substantial project preparation and solid governance arrangements. A blended finance transaction requires not only efforts in the design and issuance of the financial instrument but first and foremost efforts in project preparation and pipeline development.

In this context, development agencies can provide support at two different stages. First, in the project preparation phase, they can provide technical assistance and grants to conduct the preparatory work, including for analytical studies, business plans, and funding model's design. Secondly, in the financial instrument issuance phase they can provide credit enhancement through a variety of financial instruments and mechanisms, including guarantees and insurance, to address unfavourable risk-return profiles of investment. The presence of development finance providers also contributes to investor confidence overall (OECD, 2018[69]).

While blended finance is a growing practice in SDG financing, blended finance transactions in waste management and recycling infrastructure are still at a nascent stage (Ocean Conservancy, 2021[70]). Over the period 2000-21, it was estimated that 16 blended finance transactions were closed. Of this, 25% targeted waste infrastructure and 38% water infrastructure (Convergence, 2022[72]). Similarly, data collected by the OECD-DAC on private finance mobilised through development finance interventions shows that in 2018-19 only 3% of private finance mobilised belonged to the water and sanitation sector (under which waste projects are included), amounting to a total of USD 1.5 billion a year (OECD, 2020[73]). Of this, USD 113 million targeted waste management and disposal (OECD, 2022[74]).

Among donor-backed initiatives in the space of waste management and the circular economy Circulate Capital is an interesting example of blending public and private resource to increase

financing in developing countries. Circulate capital is an impact-focused investment management firm founded in 2018 financing innovations, companies, and infrastructure that scale solutions to the plastic waste. It supports start-ups and SMEs developing waste management and recycling solutions and promote the circular economy in India, Indonesia, Thailand, Vietnam, and the Philippines to scale up their operations.

To de-risk private investors, USAID through the Development Credit Authority (DCA) provided a USD 35 million loan portfolio guarantee, which will compensate financial intermediaries up to a maximum of 50% of the losses they incur on the loans in the portfolio. In 2019, Circulate Capital announced the first close of the Circulate Capital Ocean Fund, which raised USD 106 million in private investment.

Another example of blended finance is represented by the co-financing arrangement led by the World Bank in the waste management sector in China (World Bank, 2021[75]). In 2021, the World Bank developed the *China plastic waste reduction project* whose aim is to "to improve plastic waste management at the national and sub-national level, and to reduce plastics pollution from municipal solid waste". To achieve this goal the World Bank will disburse a USD 430 million loan over 7 years, the majority of which will address the improvement of municipal solid waste management systems in Chongqing and Ningbo. In Ningbo, three special purpose vehicles established with government investment and private capital to build, operate, and maintain loan-financed waste management operations are expected to mobilize additional USD 82 million in private capital investments in the facilities financed through the World Bank project.

Scaling up green and blue bonds for plastics

Several green or sustainable bonds (Box 4.2) **have been used to finance actions to address plastics pollution**. In 2019, the World Bank launched a Sustainable Development Bond to address plastic waste pollution in the ocean (World Bank, 2019[76]). The instrument took the form of a 3-year fixed rate bond and raised USD 10 million in private capital with Morgan and Stanley & Co as sole distributor of the bond. The instrument allowed private sector capital to scale up World Bank lending in developing countries.

In the context of the ADB's Action Plan for Healthy Oceans, ADB developed a Green and Blue Bonds Framework (ADB, 2021[77]). In the Framework, ADB defines eligible blue projects, and, among others, it includes projects aimed at pollution control. Pollution control activities, as defined in the framework, include solid waste management (within 50 km distance from the ocean or river that drains to the ocean), resource efficiency and circular economy, wastewater treatment (within 100 km distance from the ocean) and non-point source pollution control (within 50 km distance from river that drains to the ocean). In 2021, ADB issued its first dual-trance blue bond. The first tranche included an AUD-denominated USD 151 million bond with a 15-year maturity and an NZD-denominated bond with a 10-year maturity (ADB, 2021[78]).

Development co-operation can play an important role in supporting developing countries tap into the nascent blue bond market to mobilize additional resources from private financial markets, whose appetite for green, social, sustainability and transition (GSS+) instruments is increasing (Climate Bonds Initiative, 2022[79]). Development co-operation providers can provide support in several ways (OECD, 2020[23]). They can:

- **Provide expertise** for structuring and developing the bond, and **provide technical assistance** to enhance domestic capacities to manage complex financial structuring and potential implications, especially in developing countries with no or limited experience borrowing in the global capital markets;
- **Extend concessional finance for credit enhancement**, as guarantees and other instruments can allow to reduce the price of the bond by partially de-risking the investment for the investors and to reduce the interest rate paid by the borrowing country;

- **Support the development of a pipeline of projects** that can effectively contribute to sustainable investments.

Box 4.2. Green and blue bonds explained

The green bond market has been growing fast since the World Bank issued the first green bond from fixed-income investors in 2008, to finance climate-related investment in developing countries. Since then, an increasing number of governments and private companies have entered the space and Fiji was the first developing country to issue a sovereign green bond in 2017 (OECD, 2022[80]). In 2021, Climate Bonds estimated that Green, Social, Sustainability, Sustainability-Linked and Transition (GSS+) new debt amounted to USD 1.1 trillion in 2021, with the green component accounting for 49% of the total (Climate Bonds Initiative, 2022[79]).

Blue bonds are a relatively new type of sustainability bonds issued to finance projects related to the conservation and sustainable use of the ocean and the transition towards a sustainable ocean economy (OECD, 2020[23]; World Bank, 2018[81]). Blue bonds are an instrument that can be issued by Governments, Development Banks, or corporates to raise capital to finance activities addressing ocean-related issues. Among many other activities proceeds from Blue Bonds can also be allocated to preventing ocean plastics pollution through the improvement of solid waste management systems.

The first sovereign blue bond was issued in 2018 by the Republic of the Seychelles, in partnership with the World Bank and The Global Environment Facility (World Bank, 2018[81]). The bond raised USD 15 million, and the proceeds targeted marine and ocean-based projects that have positive environmental, economic and climate benefits. The blue bond issuance was facilitated by credit enhancement though a USD 5 million guarantee from the World Bank and a USD 5 million concessional loan from the Global Environment Facility to subsidize the coupon repayment (World Bank, 2018[81]). These credit enhancements reduced the effective interest rate paid by the Government of the Seychelles from 6.5% to 2.8% (BNCFF, 2019[82]). Investors included three US-based impact funds, namely Calvert Impact Capital, Nuveen, and Prudential.

More blue bonds are expected in the coming years. Several countries are actively exploring the feasibility of blue bonds, especially small island developing states (SIDS) that have a big stake in a more sustainable ocean economy but where perceived high investment risks and small size of operations significantly constrain investors' appetite. Blue bonds are under consideration by Fiji Cabo Verde, Caribbean countries, and the Pacific islands through a 'Pacific Ocean Bond (OECD, 2022[80]). In partnership with several other institutions, the Asian Development Bank is also developing guidance to support the issuance of blue bonds at a greater scale (ADB, 2021[83]).

Exploring results-based financing for waste management

One of the approaches piloted by development agencies in several developing countries is results-based financing (RBF) for municipal solid waste. Results-based financing is an innovative development finance approach which envisages the provision of payments or in-kind contributions to service providers (e.g., local governments) conditional on the achievement of specific pre-determined actions or targets (World Bank, 2014[84]).

Results-based financing in the municipal waste management sector combines the provision of additional financing to address weaknesses in solid waste management with the efficient and transparent use of public resources. Linking payments to the achievement of performance targets can be effective in improving service delivery, improving fees collection, stimulating behaviour change, improve recycling and source separation and expanding services to underserved communities (World Bank,

2014[84]). Waste management projects based on results-based financing scheme have been piloted across different countries (World Bank, 2014[84]).

In the city of Ningbo in China, for example, the World Bank set up an output-based neighbourhood incentive programme to improve waste separation (World Bank, 2014[84]). The scheme gave local governments responsibility for the overall implementation, including for the instruments used for mobilising residents' behaviour. Experience highlights, however, that RBF for solid waste management is not well suited to address all municipal solid waste management challenges and works best when combined with other support mechanisms such as infrastructure investment, policy support and technical assistance (World Bank, 2014[84]).

Developing financing instruments that leverage synergies across sectors

Several economic sectors, such as tourism and fisheries, depend on pristine and well-functioning ecosystems. Therefore, preventing and tackling plastic leakages in the ocean and on land is essential to maintain natural ecosystems and the value that economic sectors derive from them.

For these reasons, in recent years, **governments around the world have experimented new financing instruments to use resources generated in these sectors to restore, protect, and enhance the resilience of natural ecosystems.** For instance, the government of Mexico has developed, in partnership with The Nature Conservancy, the United Nations Development Programme and other development partners, a parametric coral reef insurance that is financed by taxes collected from the tourism industry and would offer up to USD 3.8 million to cover hurricane-related damage to coral reefs (OECD, 2020[23]). The Government of Fiji had established, until 2022, the Environment and Climate Adaptation Levy (ECAL) to mobilise funding for environmental protection, carbon footprint reduction and climate change adaptation. Conceived as a consortium of taxes on prescribed services, the main source for the ECAL related to tourism businesses. The 2021/22 revised budget removed the ECAL on prescribed services, personal income, motor vehicles, superyacht charters and plastics. The ECAL on prescribed services was incorporated into VAT. The ECAL on plastic bags was renamed as "plastic bag levy". Similarly, in 2019 New Zealand also set up an International Visitor Conservation and Tourism Levy (IVL) of NZD 35, whose proceeds are allocated to protect the environment and develop the tourism industry in the country.

These examples illustrate that public finance instruments, such as taxes and levies, are currently being used to channel resources from economic sectors that depend on clean and pristine natural ecosystems, to invest in actions that protect, restore, and clean those ecosystems. These examples also illustrate that there is scope to develop public finance instruments that can be employed to channel resources towards activities to tackle plastic pollution, from clean-up actions to waste management infrastructure.

5 Conclusion

In light of the findings of this report, development co-operation providers could consider adopting the following measures in order to enhance their efforts to curb plastic pollution.

Scaling up total resources available to curb plastic pollution in developing countries

Aligning future development finance flows with circularity principles: While this paper mapped development finance flows targeting the reduction of plastics pollution, another important aspect is ensuring that all development finance interventions - and particularly those targeting upstream stages of the plastics life cycle – are helping to minimise plastic pollution issue, or at least designed in a way that does not increase it. To achieve this goal, all economic support by development co-operation providers should be tested for their level of alignment with plastic pollution reduction objectives.

Exploring new financing instruments: While official development finance to address ocean plastic pollution is on an increasing trend, alone it will not suffice to fill the gap in infrastructure investment in developing countries. For this reason, new sources of finance, in particular from the private sector, should be mobilized. Current financing volumes associated with innovative instruments such as blended finance and blue bonds remain very limited. Multilateral development banks and bilateral agencies have so far been pioneers and should continue exploring opportunities and feasibility of such instruments.

Facilitating access to private financing: Grant funding can play a key role in support local governments to scale up their capacity in project preparation and financial management. These activities are crucial to increase local government access to finance for infrastructure development and upgrade.

Enhancing global targeting of resources and their alignment to country needs and priorities

Better targeting of development co-operation resources based on an evidence-based analysis of country needs: There seems to be a mismatch between development finance allocations and country needs, as flows are often not concentrated where plastic leakages are the greatest. Data analysis and evidence on current and projected growth in plastics use and leakage can enhance the targeting of development finance to better align where needs are the greatest.

Greater alignment of resources to country needs and plans: In an increasingly crowded landscape of plastics-related initiatives by different actors, enhancing donor engagement at the country level and rooting it into county strategies is crucial. This can be achieved through enhanced donor-donor co-ordination and donor-partner country engagement. When country strategies are absent, donors should consider promoting the development of such integrated plans for plastics management.

Adopting international good practices and fostering innovation

Integrated life-cycle approaches: Incorporating a lifecycle approach into development co-operation policies and strategies, which considers the plastics issue not only at the end-of-life stage but also at earlier stages of the life cycle. To achieve this goal, development co-operation providers need to engage both with Governments and the private sector. On the government side, opportunities exist to further encourage the adoption of policy instruments for plastics based on the polluter-pays-principle, such as EPR schemes, and other policies to favour alternative materials and recycling. On the private sector side, it is important that development banks provide financing for the adoption of new technologies and approaches favouring eco-design and the phasing out of substances of concern.

Making inclusivity a core principle in all waste management projects: This involves adopting gender- and minority- sensitive lenses and involving the informal sector in the project design and implementation as well as tapping into economic opportunities in the waste sector to advance women empowerment and poverty reduction goals.

Promoting innovation: Development co-operation providers can foster the creation and adoption of new technologies for recycling, waste management and clean up by promoting technology transfer and the development of innovations responding to local contexts and needs.

Promoting mutual learning and developing guidance for effective development co-operation in this area

Knowledge exchange: Development co-operation providers could encourage opportunities for mutual learning and for sharing best practices, both in countries and at the international level.

Guidance for effective development co-operation in this area: As part of the OECD Development Assistance Committee (DAC) Declaration on a new approach to align development co-operation with the goals of the Paris Agreement on Climate Change (OECD DAC, 2021[85]). Subsequently, DAC members have agreed to develop guidance on effective development cooperation in support of sustainable ocean economies, which is foreseen to cover plastic pollution. DAC members and other development co-operation providers could consider the evidence and suggestions in this paper as a basis for agreeing on development co-operation guidance for tackling plastic pollution.

Scoping the role of development co-operation in the upcoming plastics treaty

Looking ahead, one important element is what role development co-operation will play in supporting the implementation of the legally binding instrument to end plastic pollution. While the rapid increase in plastics-related initiatives among providers of development co-operation is a positive sign in terms of donor prioritisation, understanding how to better mobilise development finance resources so that they can most effectively help close the financing gap faced by many countries still requires further examination.

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