Global Plastics Outlook

Policy Scenarios to 2060

POLICY HIGHLIGHTS

OECD

BETTER POLICIES FOR BETTER LIVES

Plastic pollution is one of the great environmental challenges of the 21st century, causing wide-ranging damage to ecosystems and human health. This OECD report, *Global Plastics Outlook: Policy Scenarios to 2060*, provides global projections of the sectoral and regional drivers and consequences of plastics use for the coming decades.

An earlier related report, *Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options*, released in February 2022, provided the first comprehensive global assessment of trends in plastics use, waste generation and leakage to the environment. It also identified four policy levers – markets for recycled plastics, innovation, domestic policies and international co-operation – to curb the environmental impacts of plastics.

Shortly thereafter, the United Nations Environmental Assembly adopted the landmark resolution to convene an intergovernmental negotiation committee to develop an internationally binding instrument on plastic pollution. Less than a month later, on 31 March 2022, the Declaration of the OECD Environment Ministerial Meeting committed to develop comprehensive and coherent life-cycle approaches to tackle plastic pollution and promote co-operation internationally.

This growing global momentum to address plastic pollution also faces headwinds, with the world still reeling from an uneven economic recovery from the COVID-19 pandemic, and with significantly heightened geopolitical tensions in the context of the war in Ukraine.

In such a complex environment, how can governments chart the course of global action to deliver on the ambitions set at the United Nations Environmental Assembly and beyond?

The *Global Plastics Outlook: Policy Scenarios to 2060*, provides such a roadmap. Leveraging the OECD's unique expertise in global environment-economy modelling, this Outlook quantifies both the consequences of "business as usual" on the leakage of plastics to the environment, and the benefits of more ambitious global policy action. The analysis in the report shows that in the absence of strengthened policies, plastics use and waste would increase almost three-fold, while plastic leakage to the environment would double.

Two policy packages – *Regional Action* and *Global Ambition* – present a set of policy instruments at two levels of international action which can both help flatten the plastics curve while substantially curbing plastic leakage. The Outlook also finds that combining policy action to mitigate both climate change and plastics challenges can enable countries to achieve their climate objectives while making the plastics lifecycle more circular.

I hope the findings presented in this report will serve as a reference for policy makers to underpin discussions on the path to zero plastic pollution. The OECD stands ready to assist governments in the design, development and implementation of the ambitious policy action required to address this challenge with a coordinated global approach.

Mathias Cormann, OECD Secretary General

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Key findings

The business-as-usual outlook is unsustainable

Plastic pollution is one of the great environmental challenges of the 21st century, causing wide-ranging damage to ecosystems and human health. The projections in OECD's *Global Plastics Outlook: Policy Scenarios to 2060* suggest that in the absence of additional policies, by 2060:

- Global plastics use is projected to nearly triple from 2019 levels, driven by economic and population growth. While OECD countries are projected to double their plastics use, the largest increases are expected in emerging economies in Sub-Saharan Africa and Asia.
- While recycled (secondary) plastics are projected to grow quicker than virgin (primary) plastics and double their market share, they are projected to make up only 12% of total plastics use in 2060.
- Plastic waste is on course to almost triple, with half of all plastic waste generated still being landfilled and less than a fifth recycled. Improvements in waste management partially mitigate increases in the amount of mismanaged waste, which however still nearly doubles.
- Plastic leakage to the environment is projected to double to 44 million tonnes (Mt) a year, exacerbating environmental and health impacts. Meanwhile, the stocks of accumulated plastics in rivers and oceans is projected to more than triple, from 140 Mt in 2019 to 493 Mt in 2060. Microplastic leakage is projected to increase in all regions, highlighting the need for better mitigation solutions.
- Greenhouse gas emissions (GHG) from the plastics lifecycle are projected to more than double, to 4.3 Gt CO2e. A range of other lifecycle impacts, including ozone formation, acidification, and human toxicity, are also projected to more than double.

Ultimately, while projections to 2060 are subject to uncertainties, plastic leakage is a major environmental problem. Flows to the environment are getting larger, continuing to amplify stocks in the environment and the magnitude of risks for ecosystems and human health. In the absence of significantly more stringent, ambitious and coordinated action, the global community is far from achieving its long-term objective of ending plastic pollution.

KEY TERMS

Mismanaged waste = waste that is not disposed of adequately, i.e. that is not recycled, incinerated or disposed of in sanitary landfills

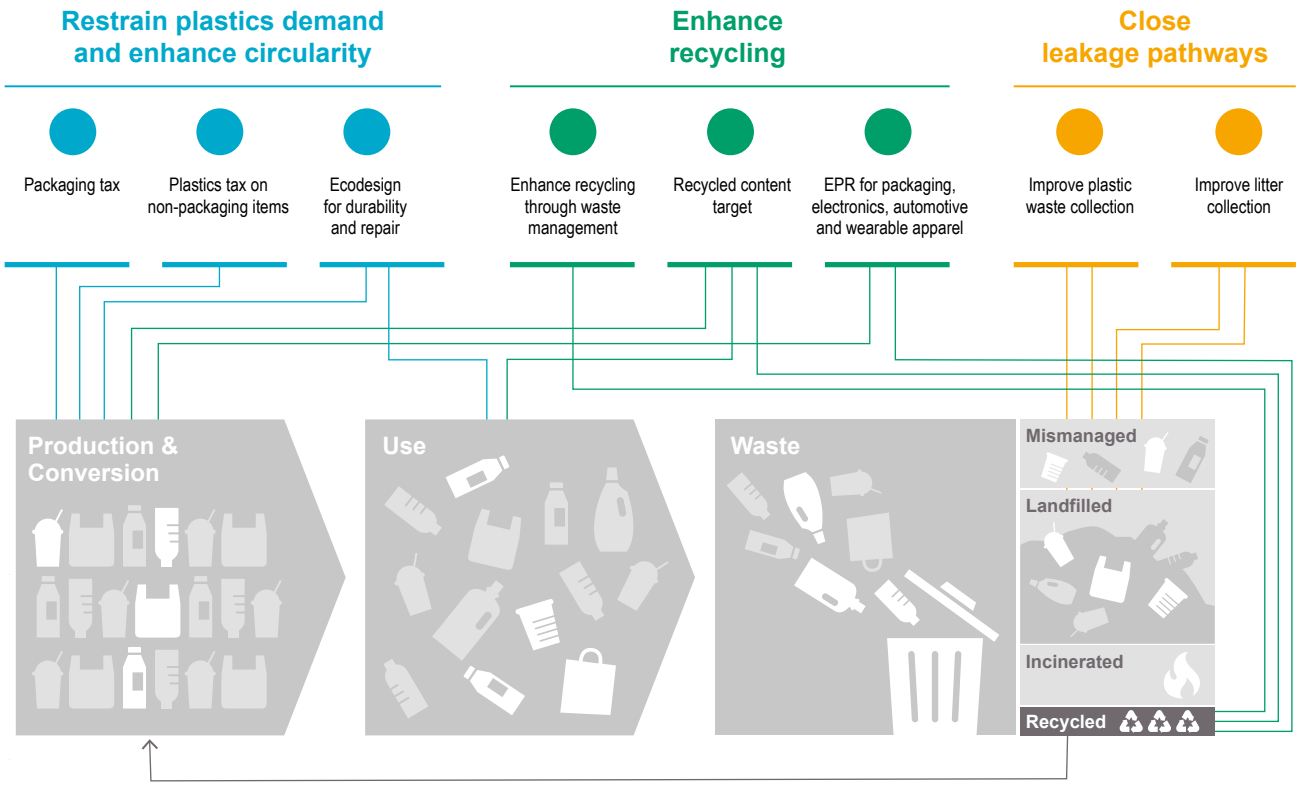
Leakage = plastics that enter the environment

A comprehensive policy package needs to take into account the whole plastics lifecycle

Achieving the global goal of eliminating plastic pollution, as articulated by the United Nations Environment Assembly in its resumed fifth session, requires shared objectives and co-ordinated efforts at the global level. Countries will need to implement comprehensive policy packages, combining measures that target all phases of the plastics lifecycle:

- Restraining plastics demand and enhancing circularity, including through more durable product design, is necessary to reduce the quantity of new plastics in the economy and thus reduce the scale of the severe environmental and human health problems that arise throughout the plastics lifecycle. Relevant policies include plastics taxes, which can be modulated to reduce the most polluting types of plastics and to incentivise circularity by decreasing the relative price of secondary plastics, as well as policies that incentivise the design of plastics that are more durable and repairable to extend product lifespans.
- Enhancing recycling is needed to ensure that any increase in plastic demand that cannot be avoided is met by recycled, second-hand, repaired or remanufactured products. Higher recycling rates can be achieved through policies such as recycled content targets, Extended Producer Responsibility (EPR) schemes for packaging and products such as electronics, motor vehicles and clothing, as well as recycling rate targets.
- Closing leakage pathways is a crucial part of a policy package aimed at eliminating plastic pollution. Interventions such as investments in waste collection and sanitary landfills as well as improved collection of litter are key to ensure that generated plastic waste is adequately managed and that it does not end up in the environment.

Figure 1. The policy packages target the entire plastics lifecycle



Key findings *(continued)*

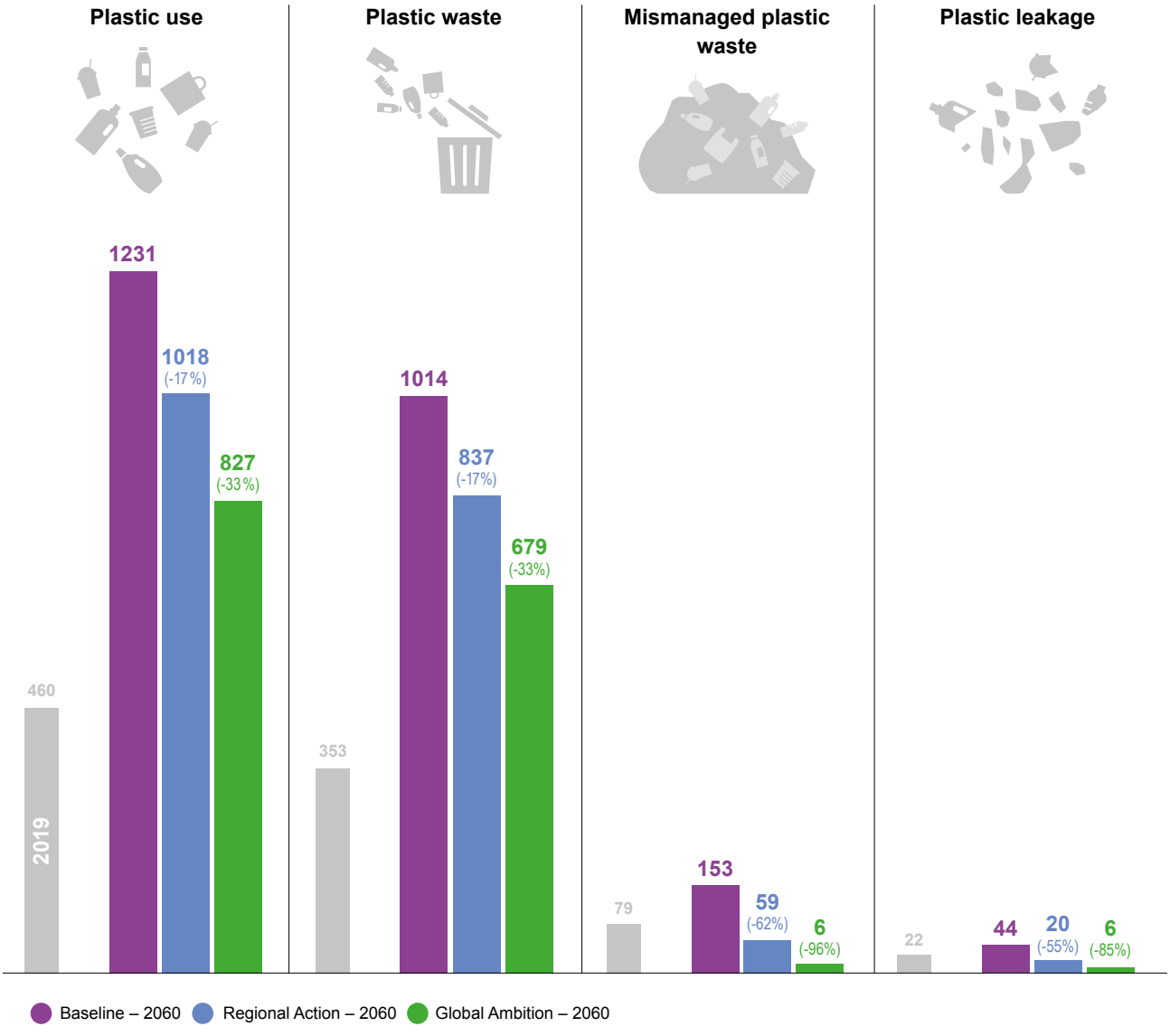
Eliminating plastic pollution is possible but requires strong global action

The level of ambition of the policies and of international engagement will determine the extent to which plastic pollution is reduced. This Outlook compares two policy scenarios with different levels of stringency:

- the ***Regional Action*** policy scenario reflects regionally differentiated engagement, with more ambitious targets for OECD countries than for non-OECD countries
- the ***Global Ambition*** policy scenario explores a very stringent policy package that aims to reduce plastic leakage to near zero by 2060 globally.

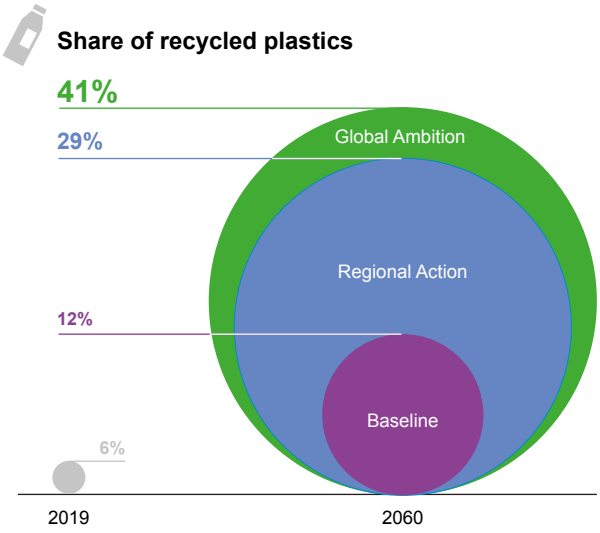
Figure 2. Combining policies that target different lifecycle stages can drastically reduce plastics leakage to the environment

Yearly value in million tonnes (Mt), percentage change compared to *Baseline*



The scenario analysis shows that additional policies can increase the level of circularity of the economy and reduce the environmental impacts of plastics, at modest economic costs:

- **Regionally differentiated levels of policy ambition can substantially reduce plastic pollution by 2060.**
  The *Regional Action* policy package reduces plastic leakage to the environment which is more than halved by 2060, compared to the *Baseline*. The market-share of recycled plastics increases to 29% and mismanaged waste falls below 2019 levels, largely thanks to improved waste management in non-OECD countries. Despite these positive impacts, plastics use and waste are projected to still more than double from 2019 levels.



- **Co-ordinated and ambitious global efforts can almost eliminate plastic pollution by 2060.**
  The *Global Ambition* policy package almost completely eliminates plastic leakage to the environment by 2060. Nearly 60% of waste is projected to be recycled and the market share of recycled plastics to surge to 41% by 2060. In this scenario, mismanaged waste and plastic leakage to the environment fall to near zero.

- **The economic consequences of the policy packages will be modest at the global level.**
  Both the *Regional Action* and *Global Ambition* policy packages can be implemented at relatively modest costs to GDP. Compared to the *Baseline*, global GDP is projected to be only 0.3% lower in the *Regional Action* scenario and 0.8% lower in the *Global Ambition* scenario by 2060.

- **Developing economies will face higher costs than the global average**. The scenarios show that there are important regional differences in the economic consequences of the policy scenarios, with the highest costs projected to be in Sub-Saharan Africa in the *Global Ambition* scenario, where GDP would be reduced by 2.8% below the *Baseline*. Official development assistance (ODA) is already used to support action to address plastics leakage in developing countries, but the financial flows are only a fraction of what is needed; additional sources of funding will be required. Furthermore, capacity development and technology transfer will also be needed to support rapidly developing countries in improving their waste management systems.

- **Even if ambitious action can eliminate plastics leakage, stocks of plastics continue to accumulate in rivers and oceans.**
  Although plastics use and waste are projected to decouple in relative terms from economic growth in the policy scenarios, stocks of plastics in aquatic environments continue to build up, almost tripling from 2019 to 2060 in the *Regional Action* scenario and doubling in the *Global Ambition* scenario. More urgent and stringent policies would therefore further slow down the build-up of plastics in the environment, while clean-up efforts will be required for the plastics that are already present in the environment. The costs for clean-up interventions to remove plastics from the marine environment, while large in absolute terms, are projected to be on average a third of the economic and environmental costs caused by plastic pollution.

A scenario analysis for plastics projections

The scenario approach used in this Outlook provides a range of possible future developments that are both plausible and internally consistent. It allows for a quantitative evaluation of key economic and environmental developments and in particular the assessment of plastics policies. The modelling provides plastics projections by carefully linking plastic volumes for 14 different polymer categories to the consumption and production of plastics in the economy, focusing on the evolution of the sectoral and regional economic drivers of plastics use.

Creating a global Outlook to 2060 for plastics use at the sectoral and regional level consists of four main steps, replicated for each policy scenario:

Figure 3. Modelling framework of the *Global Plastics Outlook*

Projecting the regional and sectoral drivers of plastics use
The dynamic global general equilibrium model ENV-Linkages is used to represent the complex dynamics of economic activities across sectors and regions.

Projecting plastics use
Plastics are included in the ENV-Linkages model by categories of polymers and linked to the most relevant economic activities to obtain projections of plastics use.

Projecting plastic waste
Plastic waste is calculated in ENV-Linkages based on the projections of plastics use, the life span of products and international trade patterns. Plastic waste is then differentiated by end-of-life fates.

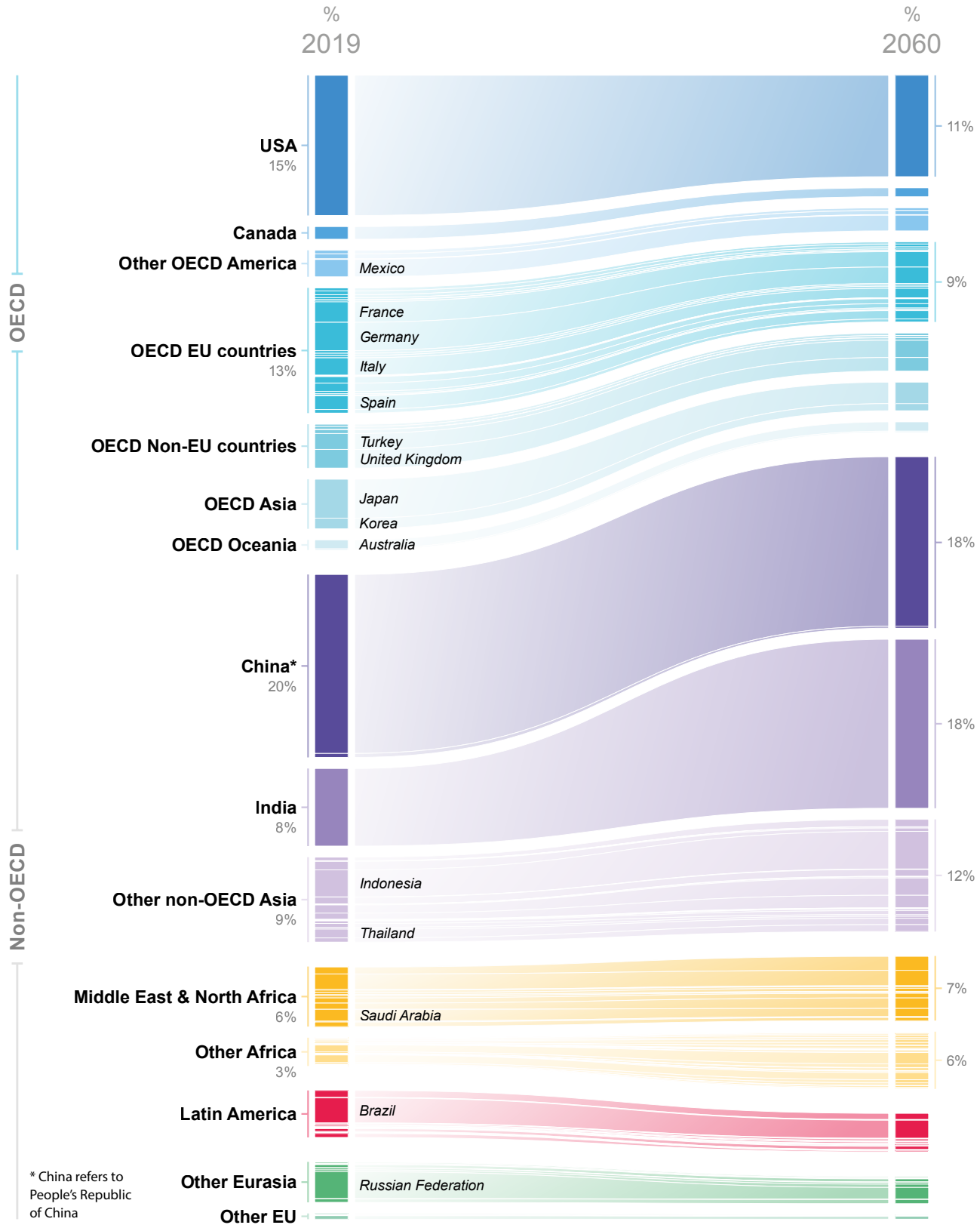
Projecting environmental impacts from plastics use and waste
Different methodologies are used to calculate environmental impacts of plastics, including plastic leakage to the environment, emissions of microplastics from transport, plastic-related emissions of greenhouse gases, the environmental consequences of biobased plastics, and the global lifecycle impacts of plastics.

A tripling of the global economy by 2060 will drive plastics use

Economic growth and improvements in living standards are the main drivers of plastics use. The global gross domestic product (GDP) is projected to more than triple between 2019 and 2060, with living standards increasing in all countries. However, as non-OECD countries grow faster, the share of OECD countries in global GDP is projected to fall from 44% in 2019 to 31% in 2060. In particular, the importance of the non-OECD Asian countries is projected to increase at the global level (increasing from 37% in 2019 to 48% in 2060).

Figure 4. Asia and Sub-Saharan Africa increase their weight in the global economy

Share of global GDP by region, *Baseline* scenario



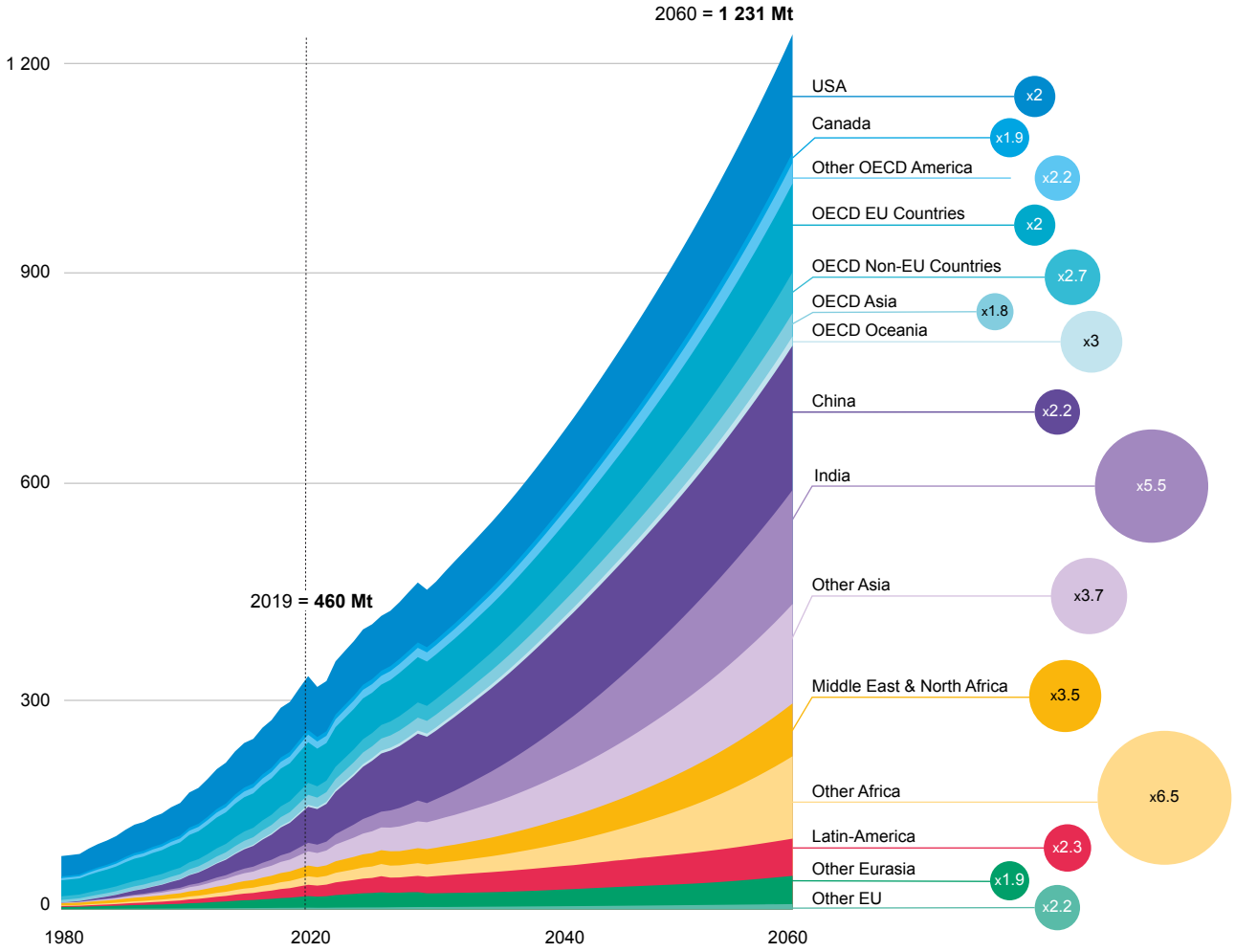
Under business-as-usual…

1. Global plastics use is on course to almost triple by 2060

Plastics use is projected to grow from 460 Mt in 2019 to 1231 Mt in 2060. While plastics use largely tracks economic growth, future structural changes in the economy puts some downward pressure on plastics use and waste generation. Recycled (secondary) plastics are projected to grow at a faster rate than primary plastics, however they are projected to only make up 12% of total plastics use in 2060, up from a share of 6% in 2019.

Projected growth in plastics use varies significantly by region. While OECD countries are projected to double their plastics use, emerging economies are expected to see drastic increases, from a six-fold increase in Sub-Saharan Africa to a tripling in Asia. Still, OECD countries are set to remain the largest consumers of plastics on an average per capita basis in 2060.

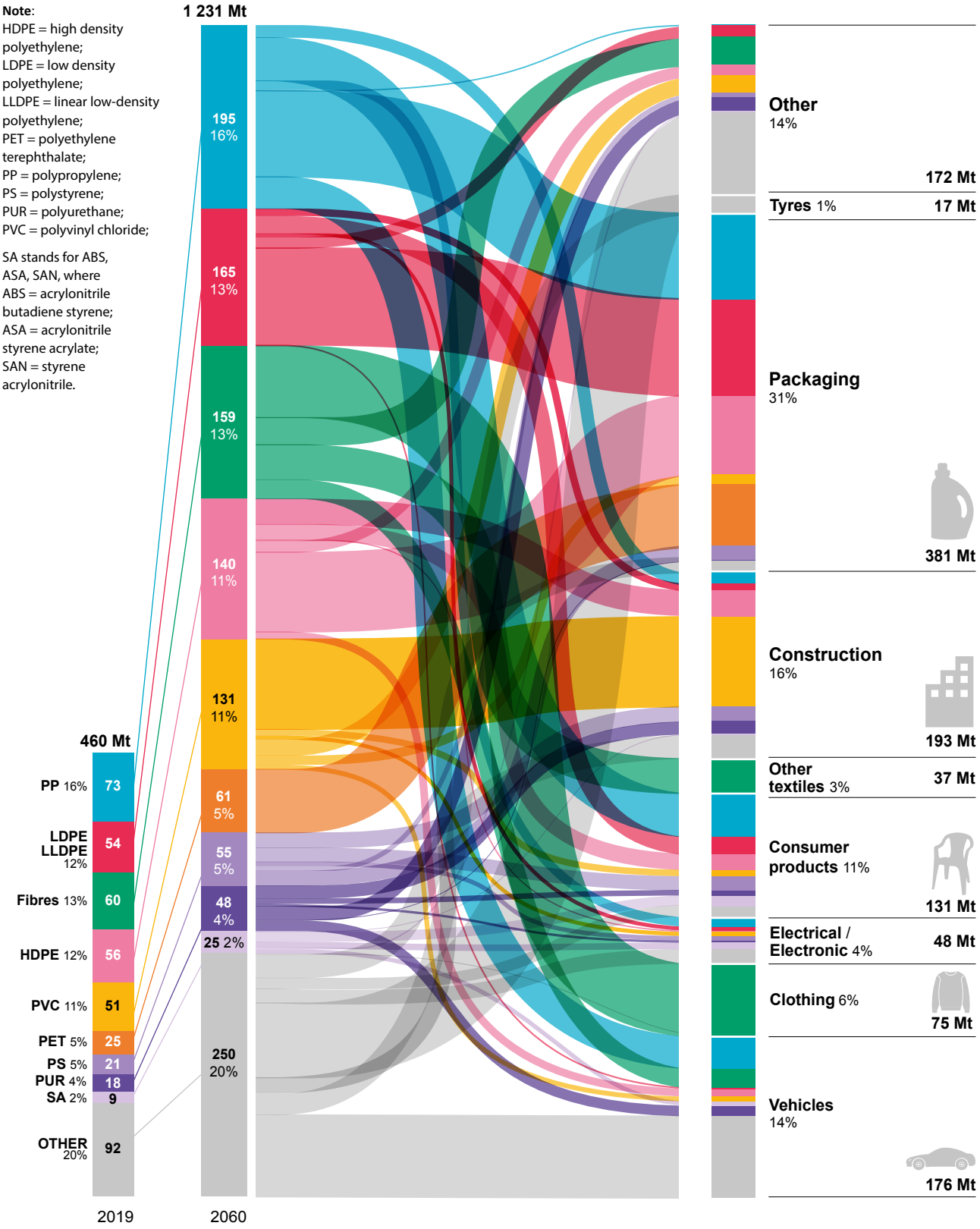
Figure 5. Plastics use is projected to grow fastest in emerging economies in Asia and Sub-Saharan Africa
Plastics use in million tonnes (Mt), *Baseline* scenario



Projected growth in plastics use also varies across polymers and applications. The strongest growth is projected to occur in transportation, construction and packaging, that together currently constitute 60% of total plastics use. Consequently, while plastics use increases for all polymers, the largest increases are expected in polymers that are used for these applications, such as PET (polyethylene terephthalate) and PE (polyethylene) that are used for packaging.

Figure 6. The use of all polymers is projected to significantly increase by 2060

2019-60 increase in plastics use by polymer and application



Under business-as-usual… *(continued)*

2. A near tripling in plastic waste generation outpaces improvements in waste management

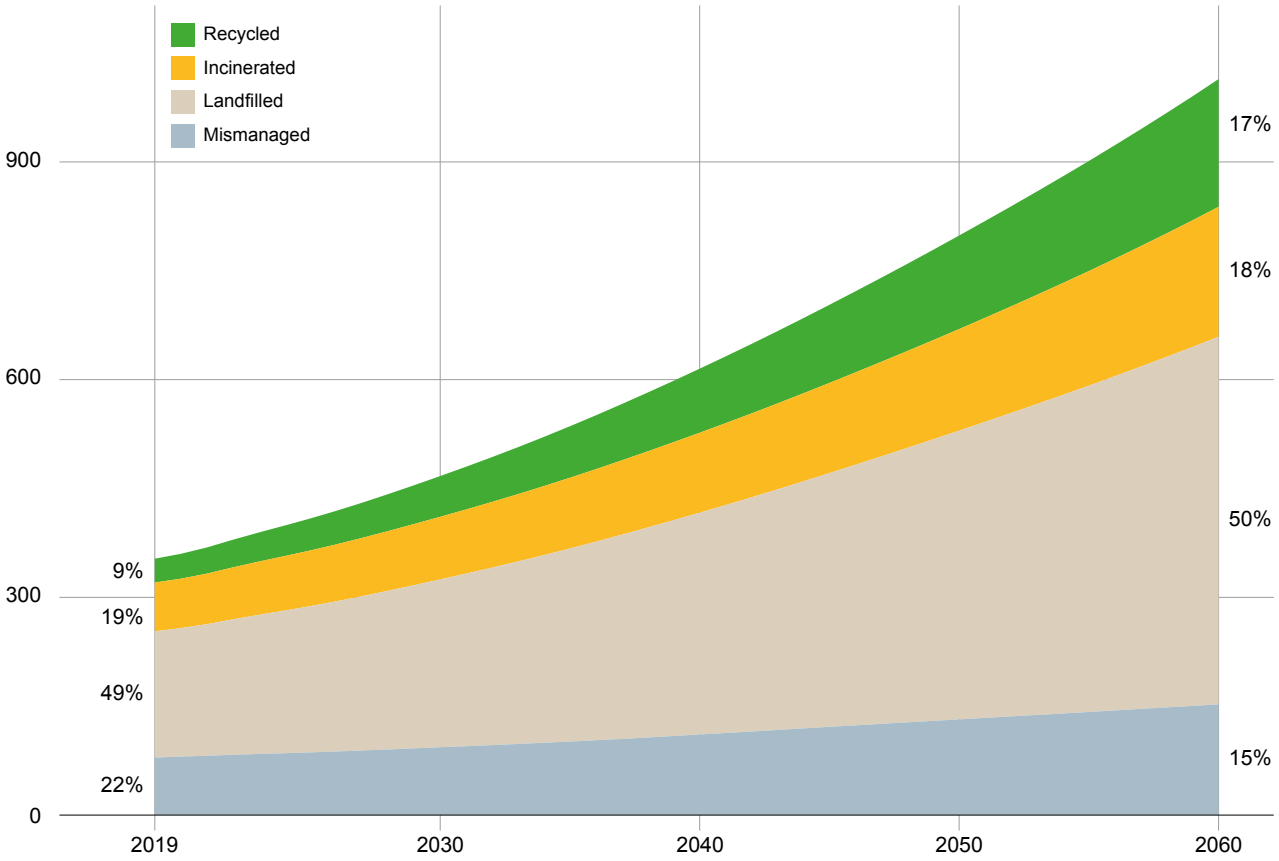
Plastic waste is projected to almost triple, from 353 Mt in 2019 to 1014 Mt in 2060. Short-lived applications, such as packaging, consumer products and textiles are projected to continue to dominate plastic waste streams representing nearly two-thirds of all plastic waste in 2060 (their share is projected to decrease slightly from 63% in 2019 to 59% in 2060). Plastic waste from construction and transport applications also remain important contributors, especially given the rapid economic development in many developing and emerging economies. In 2060, non-OECD countries generate around two-thirds of plastic waste. Emerging economies in Asia and in Sub-Saharan Africa in particular are projected to see the fastest growth rates in plastic waste generation.

Despite improvements in waste management infrastructure and litter collection, the amount of waste not managed through recycling, landfilling or incineration is projected to increase in absolute volumes from 79 Mt in 2019 to 153 Mt in 2060. Mismanagement rates of plastic waste decrease to 1% by 2060 in OECD countries, but remain at relatively high levels in non-OECD countries (23%). Large increases in mismanaged plastic waste are due to strong economic growth in fast-growing economies in Sub-Saharan Africa and Asia, where infrastructure improvements are unable to evolve quickly enough to prevent mismanagement of plastic waste.

Recycling is projected to grow at a faster pace than all other waste management approaches, with recycling rates increasing from 9% in 2019 to 17% in 2060. However, recycling is projected to represent a smaller share of waste management compared to incineration (18%) and sanitary landfilling (50%).

Figure 7. Despite a decreasing share, mismanaged waste volumes double

Plastic waste in million tonnes (Mt) by waste management category, after disposal of recycling residues and collected litter, *Baseline* scenario



3. Leakage of plastics to the environment doubles

Although the world will likely see a relative decoupling between plastics use and leakage into terrestrial and aquatic environments, the latter is projected to double from 22 Mt in 2019 to 44 Mt in 2060. The leakage of macroplastics continues to represent the largest share of leakage (87%), with the vast majority (almost 99%) originating from mismanaged waste, i.e. waste not managed through recycling, landfilling or incineration. Littering is likely to experience the fastest growth rate among all sources of leakage.

While plastic leakage falls in OECD countries (from 3.2 Mt in 2019 to 2.5 Mt in 2060), it increases significantly in non-OECD countries (from 18.9 to 41.6 Mt). This is because plastics use, waste generation and leakage initially increase with rising incomes. However, as incomes increase further, there is demand for better waste management systems and more willingness to deal with environmental impacts that visibly alter the environment, such as macroplastics leakage.

Meanwhile, microplastic leakage seems to follow a different trajectory: it keeps increasing in all countries and **it is projected to more than double in absolute weight between 2019 and 2060**. Interventions to address emissions of microplastics (e.g. from tyre abrasion) are generally less advanced, as this form of leakage has not yet received the same level of scrutiny as macroplastics, it occurs all along the lifecycle of products, the cost-effectiveness of mitigation interventions is not yet fully understood, and policy action remains limited currently. Even though some saturation occurs at higher levels of income, OECD countries are expected to continue to contribute to nearly a third of global microplastics leakage.

Figure 8. The bulk of macroplastics leakage is projected to come from non-OECD countries, while microplastics leakage wll increase everywhere

Volumes of plastic leakage to the environment by region in million tonnes per year (Mt/year), *Baseline* scenario

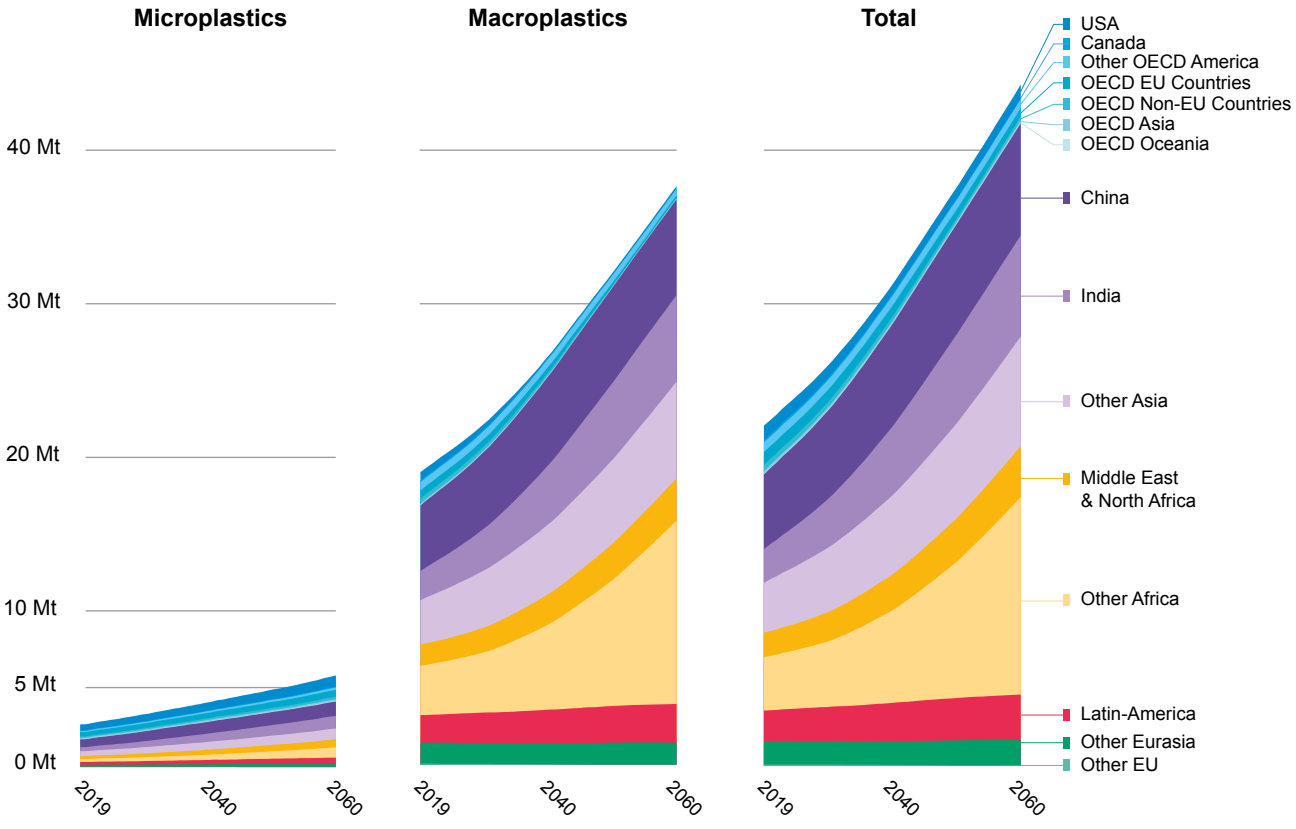
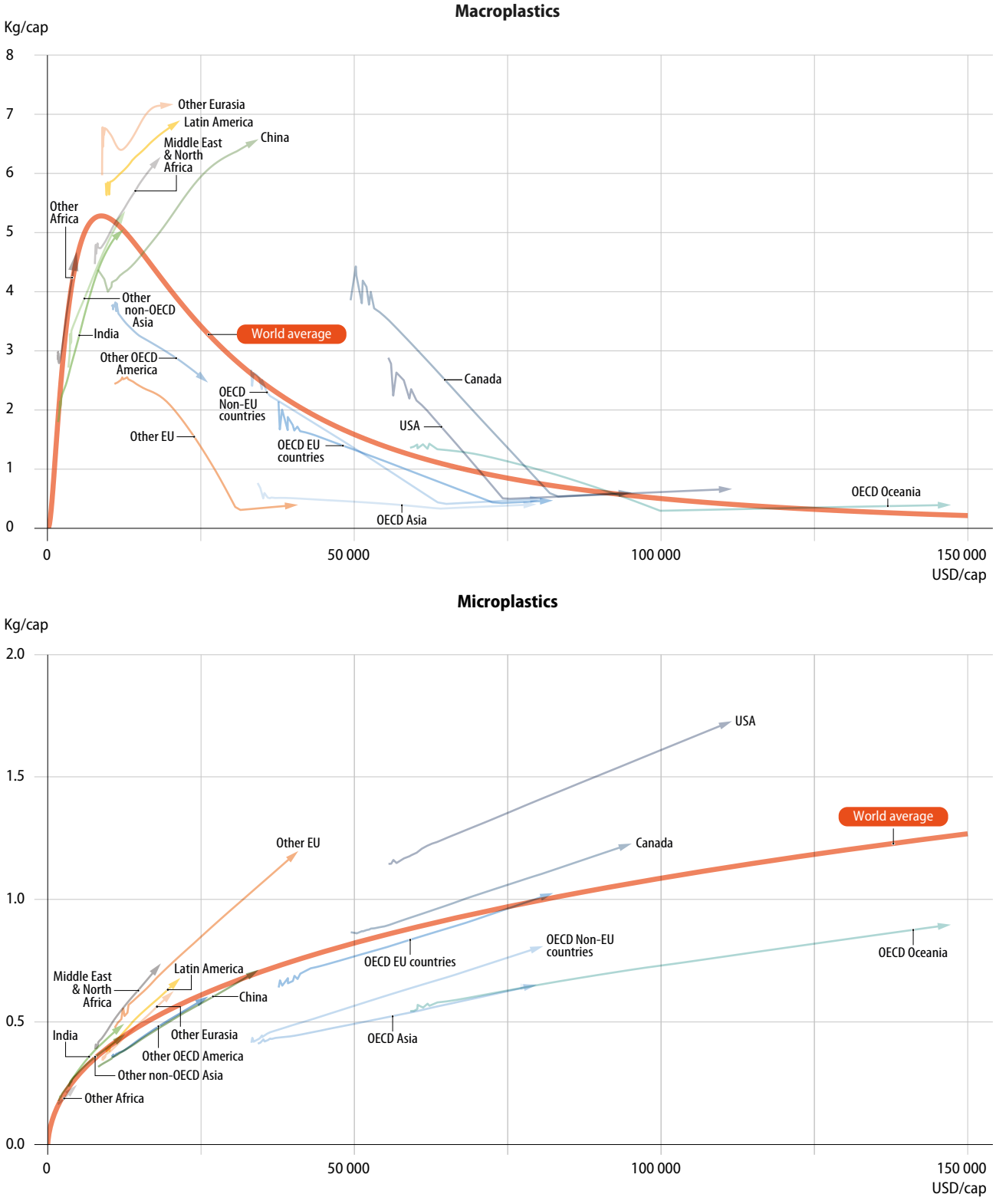


Figure 9. Macroplastic and microplastic leakage show different trajectories when income per capita increases

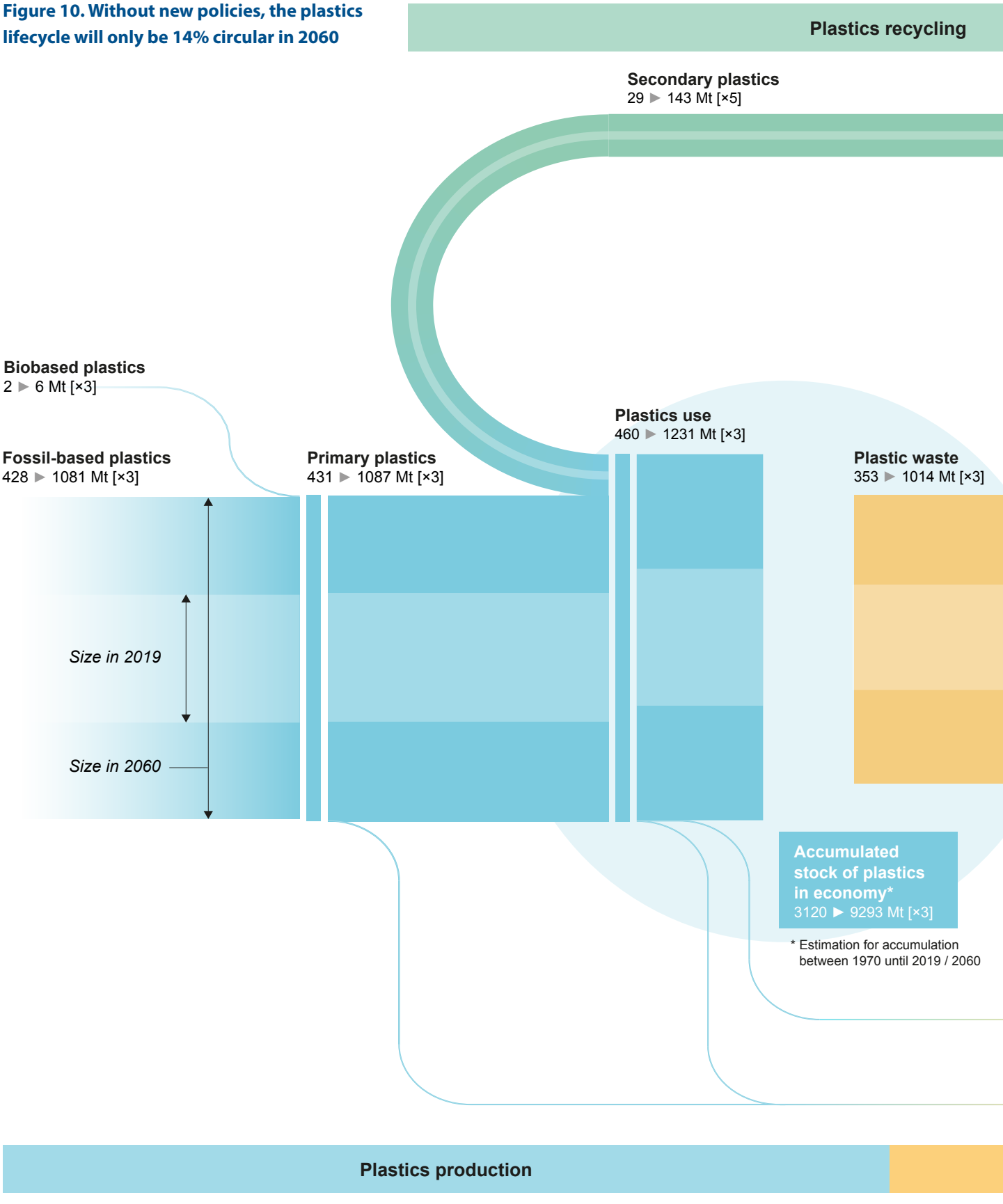
Per capita leakage (in kg, on y-axis) vs. GDP per capita (in USD, on x-axis), *Baseline* scenario



Note: The "World average" line represents regression across time and regions.

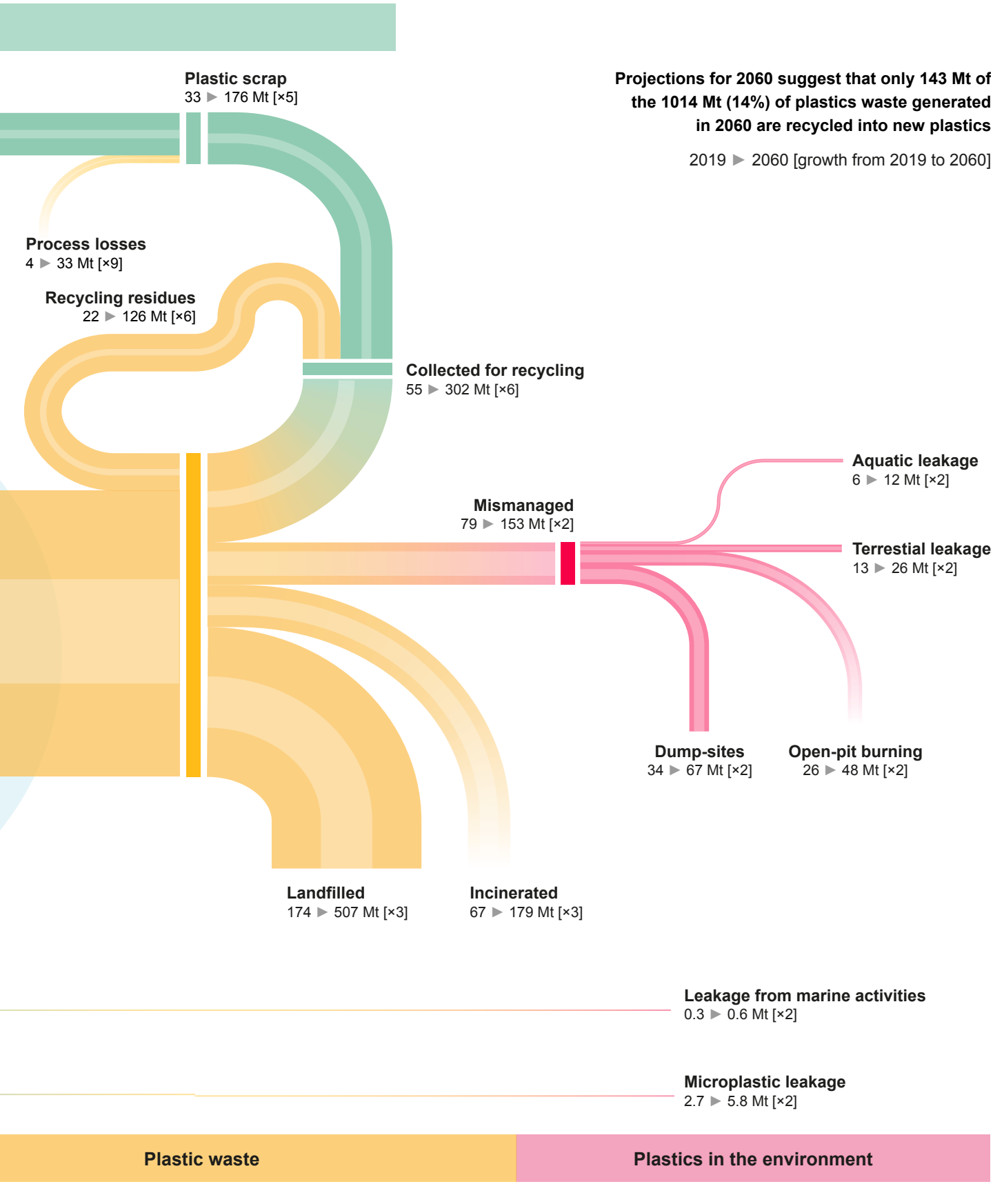
Under business-as-usual… *(continued)*

Figure 10. Without new policies, the plastics lifecycle will only be 14% circular in 2060



Projections for 2060 suggest that only 143 Mt of the 1014 Mt (14%) of plastics waste generated in 2060 are recycled into new plastics

2019 ▶ 2060 [growth from 2019 to 2060]

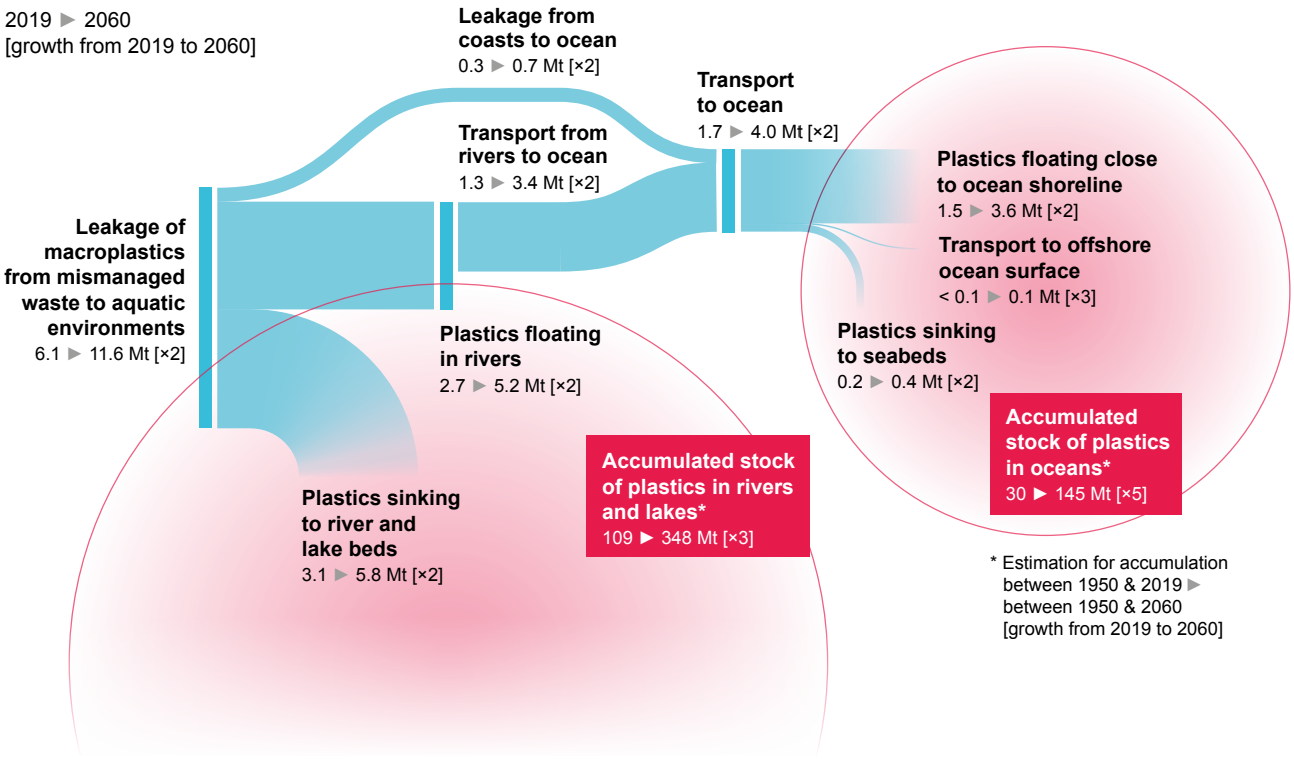


Under business-as-usual… *(continued)*

4. Environmental, climate and human health impacts related to plastics considerably worsen

Stocks of plastics accumulating in aquatic environments, such as streams, rivers, lakes, seas and ocean, is projected to more than triple from 140 Mt in 2019 to 493 Mt in 2060. Flows into aquatic environments are also projected to double in this time period, aggravating an already serious environmental challenge. Geographical differences in contributions to aquatic leakage are expected to evolve further. China, India, other non-OECD Asia and Sub-Saharan Africa are projected to contribute to 79% of all aquatic leakage. While China is the largest emitter of plastic into freshwater environments, emerging economies in Asia significantly contribute to plastic leakage into marine environments.

Figure 11: Leakage into aquatic environments is projected to double between 2019 and 2060

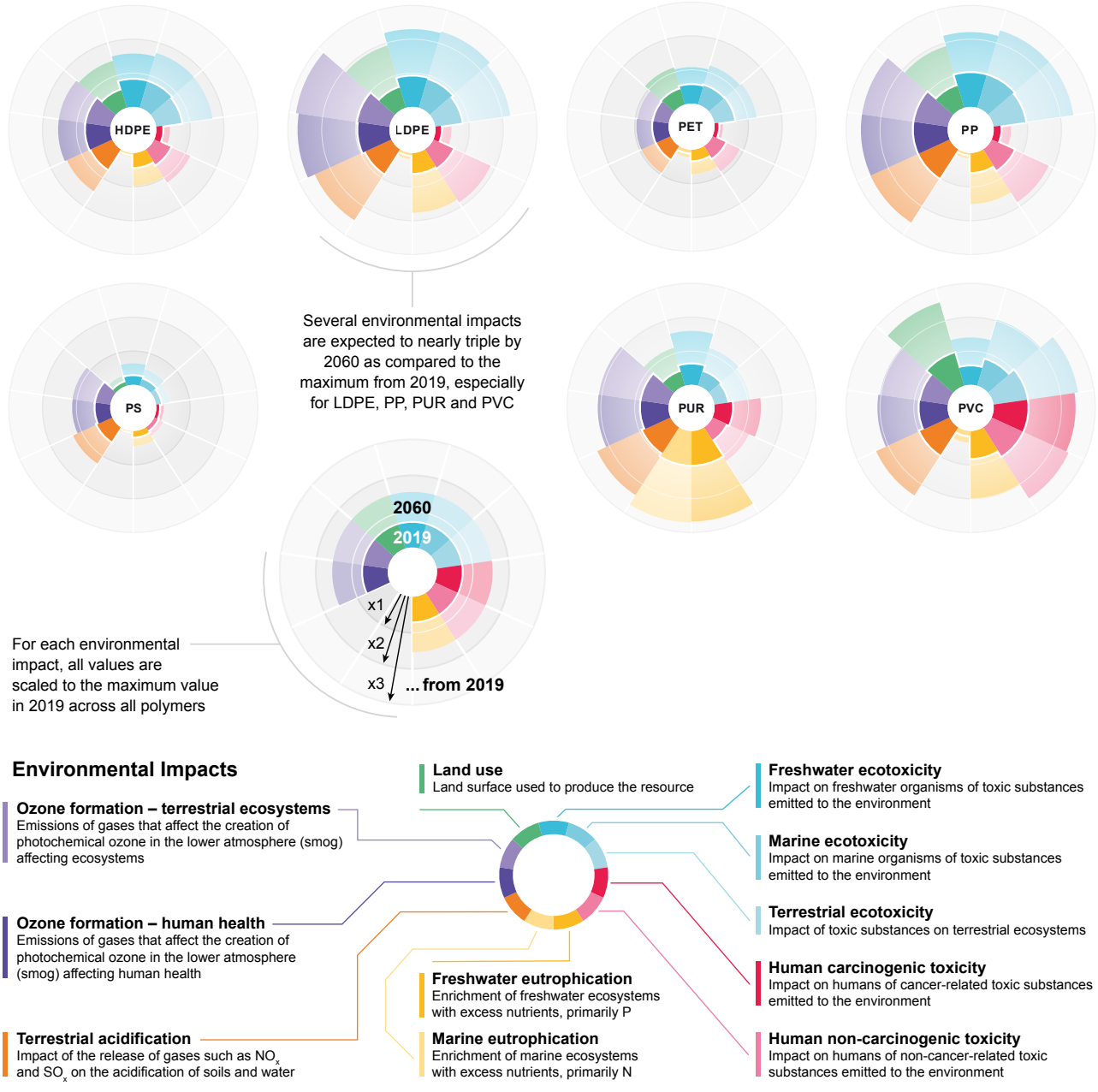


In the absence of new policies, the entire lifecycle of primary plastics is set to continue to contribute in significant ways to increased greenhouse gas (GHG) emissions. In 2019, 1.8 gigatonnes of CO_2 equivalent (Gt CO_2e) of emissions can be attributed to primary plastics, but this is projected to more than double to 4.3 Gt CO_2e by 2060. About 90% of these emissions originate from production and conversion, with important differences across polymers: fibres used for textiles are the most important contributors, followed by polypropylene (PP) and low-density polyethylene (LDPE), which are used for applications such as packaging and vehicles.

A shift to biobased plastics marginally reduces GHG emissions, but only if land use impacts are mitigated. Without new policies, biobased plastics is projected to represent only a fraction of total plastics use, at around 0.5% by 2060. Even if policy measures succeed in increasing the market share to 5% by 2060, the impact on GHG emissions remains ambiguous. When biobased plastics substitute fossil-based plastic production, the direct GHG emissions decrease, however the additional land used for growing feedstock may lead to the conversion of natural areas into arable land which induces one-off GHG emissions.

Beyond leakage and GHG emissions, a wide variety of environmental and human health impacts associated with plastics are also projected to amplify. Reductions in environmental impacts from improved waste management practices are by far outpaced by the increase in plastics use that occurs to 2060. Cradle-to-gate and end-of-life lifecycle analysis (LCA) projects that lifecycle impacts are on course to double on average, with land use impacts as well as marine and freshwater eutrophication seeing the largest increase. Impacts tend to differ across polymers: for example Polyurethane (PUR) negatively affects marine eutrophication, while polyvinyl chloride (PVC) impacts human carcinogenic toxicity.

Figure 12. Without new policies, environmental and health impacts of plastic polymers are projected to double by 2060



Note: PP=polypropylene; HDPE=high-density polyethylene; LDPE=low-density polyethylene; PVC=polyvinyl chloride; PS=polystyrene; PET=polyethylene terephthalate; PUR: polyurethane.

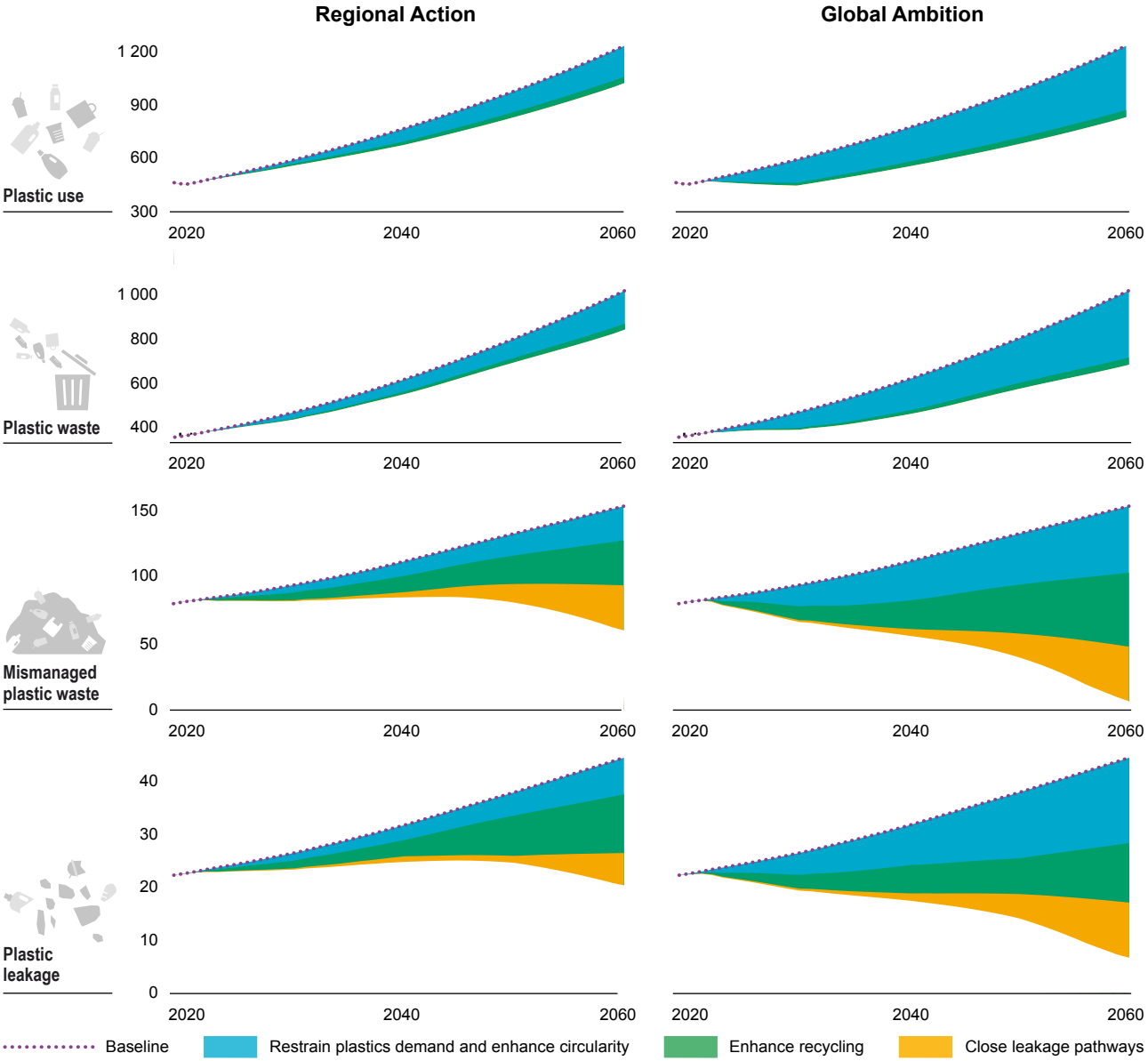
What can policymakers do to reduce or eliminate plastic pollution?

5. Combining policy interventions all along the plastics lifecycle is the most effective way to reduce plastic pollution

More ambitious and co-ordinated policy action is needed along the entire plastics lifecycle, as set out in the policy roadmap in the OECD's first *Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options*. Building on the roadmap, this Outlook develops a range of policy packages that can alter the foundations of the current plastics economy. Policies are categorised into three main pillars: *Restrain plastic demand and enhance circularity*, *Enhance recycling* and *Close leakage pathways*. This *Outlook* models two scenarios based on the above policies, but with different levels of stringency, to understand their environmental and economic impacts by 2060: the *Regional Ambition* and the *Global Ambition* Scenario.

Figure 13. Policies targeting different steps of the plastics lifecycle all contribute to reducing plastic leakage to the environment

Quantities of plastics in million tonnes (Mt)



6. Strengthening domestic policies, even with differentiated regional ambition levels, can deliver substantial environmental gains, but falls short of eliminating leakage

The *Regional Action* policy package reduces global plastics use by almost one-fifth from the *Baseline* level, from 1231 Mt to 1018 Mt by 2060. This is achieved largely thanks to the effects of taxing plastics use on restraining plastic demand and production, especially on applications with short lifespans. Plastic waste also decreases by about a fifth below *Baseline*, from 1014 Mt to 837 Mt, mainly due to reductions in demand. Despite these reductions, plastics use and waste are still projected well above 2019 levels.

The *Regional Action* scenario varies the level of ambition in the policy package to reflect the different circumstances and challenges of OECD versus non-OECD countries. This policy package aims to reduce the plastics volumes at all stages of the lifecycle by 2060, while limiting economic costs.

As waste management systems significantly improve, the global recycling rate increases to 40%. Policies that boost demand for plastic scrap and increase the supply of recycled plastics boost the market share of secondary plastics, from 12% to 29%. Meanwhile, **waste not managed through recycling, landfilling or incineration declines** to 59 Mt in 2060, falling below 2019 levels, largely thanks to improved waste management in non-OECD countries.

The *Regional Action* policy package more than halves plastic leakage to the environment, including leakage to aquatic environments. **Leakage of macroplastics decreases by nearly two thirds compared to *Baseline* projections**, from 38 Mt to 15 Mt, and also decrease compared to 2019 levels (19 Mt). All pillars contribute to reducing significantly leakage of macroplastics. On the other hand, **microplastics leakage hardly decreases relative to the *Baseline* scenario**. Overall, this policy package does not completely eliminate leakage: additional action and more stringent policies would especially be needed in non-OECD countries, highlighting the importance of global ambition and co-operation.

What can policymakers do to reduce or eliminate plastic pollution? *(continued)*

7. Globally coordinated ambition is required to drastically boost recycling and eliminate leakage to the environment

The *Global Ambition* policy package leads to a reduction in both plastics use and waste by one-third compared to the *Baseline*. Plastics use decreases to 827 Mt from 1231 Mt in the *Baseline* scenario by 2060. Again, taxes induce re-alignments of economic activities away from plastic-using sectors, especially in non-OECD Eurasia and Sub-Saharan Africa. As plastic demand and production is restrained, plastic waste also decrease to 679 Mt, from 1014 Mt under the *Baseline* scenario.

The *Global Ambition* scenario reflects more co-ordinated effort at the international level, building on recent initiatives (e.g. the United Nations Environment Assembly's resolution to develop an international legally binding instrument on plastic pollution, the G20 "Osaka Blue Ocean Vision," voluntary action by the industry).

Recycling increases to almost 60%, becoming the most favoured waste management option. The market share of secondary plastics is projected to surge to 41% by 2060, primarily due to important demand pull policies, such as increased recycled content targets. **Mismanaged waste** (which excludes microplastic releases) **reaches near-zero levels** at 6 Mt by 2060 compared to 153 Mt in the *Baseline* scenario. The large decrease can be attributed to massive improvements in reducing leakage in non-OECD countries (where mismanaged waste falls to 4 Mt).

By 2060, leakage of macro and microplastic to the environment is also substantially curbed by the *Global Ambition* policy package, reducing leakage from 44 Mt to 6 Mt, with **macroplastic leakage almost completely eliminated**. This is due to the increased ambition in non-OECD economies, leading to substantially reduced losses of macroplastics to the environment. Leakage to aquatic environments is also almost completely eliminated, from 11.6 Mt in the *Baseline* projections to 0.2 Mt. Microplastic leakage is also reduced, but only by 9% compared to *Baseline* projections.

Box: How does climate mitigation interact with policies to reduce plastics leakage?

The plastics lifecycle is fundamentally linked to climate change: plastics are largely derived from fossil fuels, and plastics production and waste management lead to greenhouse gas (GHG) emissions. The *Climate Mitigation* scenario was developed to explore synergies that policymakers could exploit by tapping into the complementarity of plastics and climate policies.

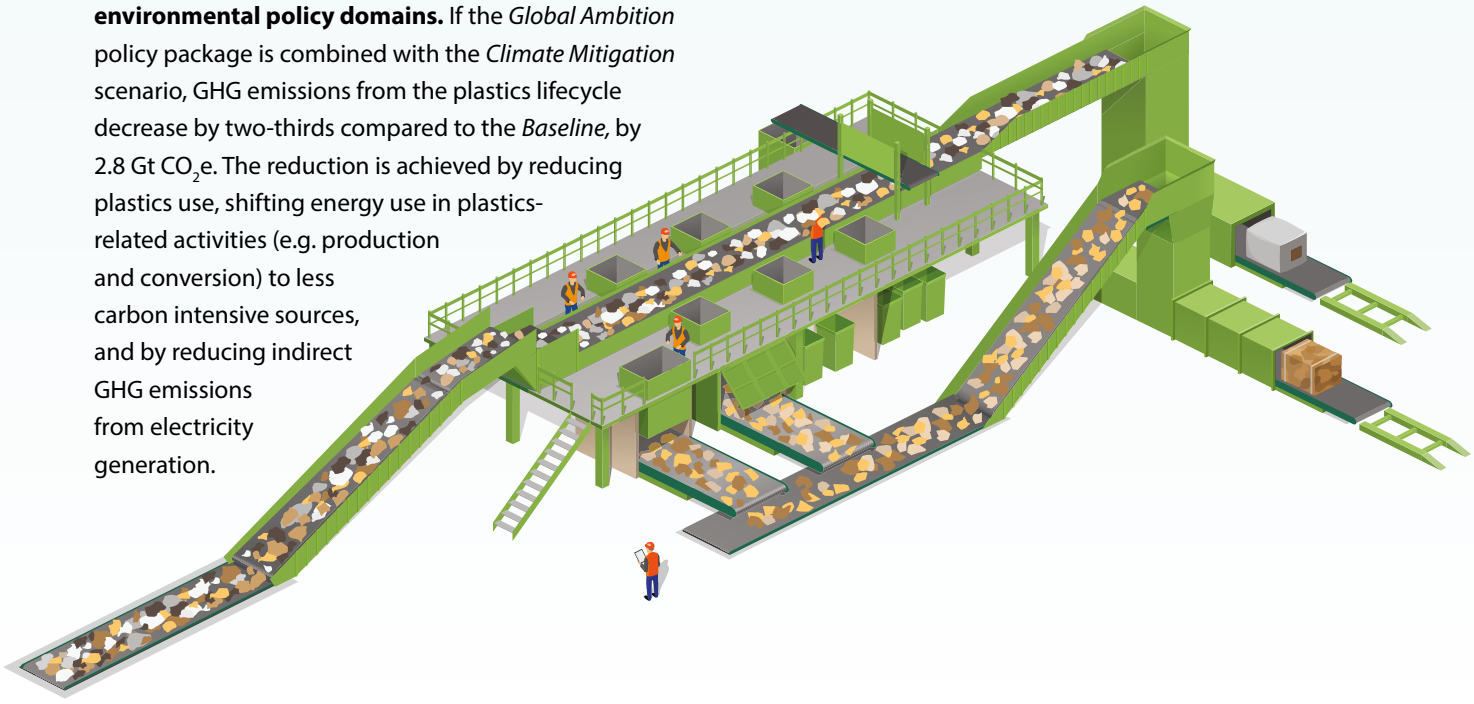
The scenario models the impact of a policy package composed of two instruments: i) a carbon price that progressively rises to USD 69 per tonne of CO_2 equivalent in 2060 (USD 155 in OECD, USD 42 in non-OECD countries), and ii) a structural transformation of the power sector that reduces the share of fossil-based power generation from 69% in 2019 to 15% in 2060 (compared to 62% in the *Baseline*).

The *Climate Mitigation* scenario reduces global GHG emissions by a third compared to the *Baseline*, corresponding to 63 Gt CO_2e of gross emissions. However, this scenario alone has limited effects on plastics use, because plastics demand is linked to all sectors, including less GHG-intensive ones.

Combining plastics and climate mitigation policies better exploits the complementarity of the two environmental policy domains. If the *Global Ambition* policy package is combined with the *Climate Mitigation* scenario, GHG emissions from the plastics lifecycle decrease by two-thirds compared to the *Baseline,* by 2.8 Gt CO_2e. The reduction is achieved by reducing plastics use, shifting energy use in plastics-related activities (e.g. production and conversion) to less carbon intensive sources, and by reducing indirect GHG emissions from electricity generation.

Although the combined package does not decrease plastics use further compared to the *Global Ambition* scenario, it helps to increase circularity: because primary plastics production is more energy intensive, its use decreases more than that of secondary plastics.

Overall, identifying synergies between climate and plastics policies can enable countries to get closer to achieving their climate objectives, while also reducing the environmental impacts of plastics. At the same time, potential conflicts will require careful consideration, such as the possible increase in GHG emissions through greater use of recycling technologies.



8. *Regional Action* and *Global Ambition* policy packages can be delivered at modest GDP costs, but their implementation will require mechanisms for financial support

Compared to the *Baseline*, global GDP is only 0.3% lower if the *Regional Action* policy package is implemented, showing that this policy package can be achieved at modest economic costs. However, there are important regional differences, with China slightly benefitting (less than 0.1%) but higher costs in other regions: 1.1% in Sub-Saharan Africa and 1.8% in non-OECD European Union countries. As plastics are linked to many economic activities, the shift away from plastics can become particularly costly in some cases.

The *Global Ambition* policy package is estimated to reduce world GDP by 0.8% below the *Baseline*, again showing the rather modest economic cost of even highly ambitious policy action. Macroeconomic costs remain small for OECD EU countries and China, although they are larger for non-OECD EU countries and Sub-Saharan Africa (Figure 15). Differences in macroeconomic costs are mainly explained by differences in the plastics intensity of production and shifts in evolving comparative advantages across regions. Comparative advantages emerge as policies that foster eco-design improve efficiency and shift economic activity from less productive sectors.

Figure 14. The costs of both regional and globally coordinated action are lower than 1% of global GDP
Percentage change in GDP from *Baseline*

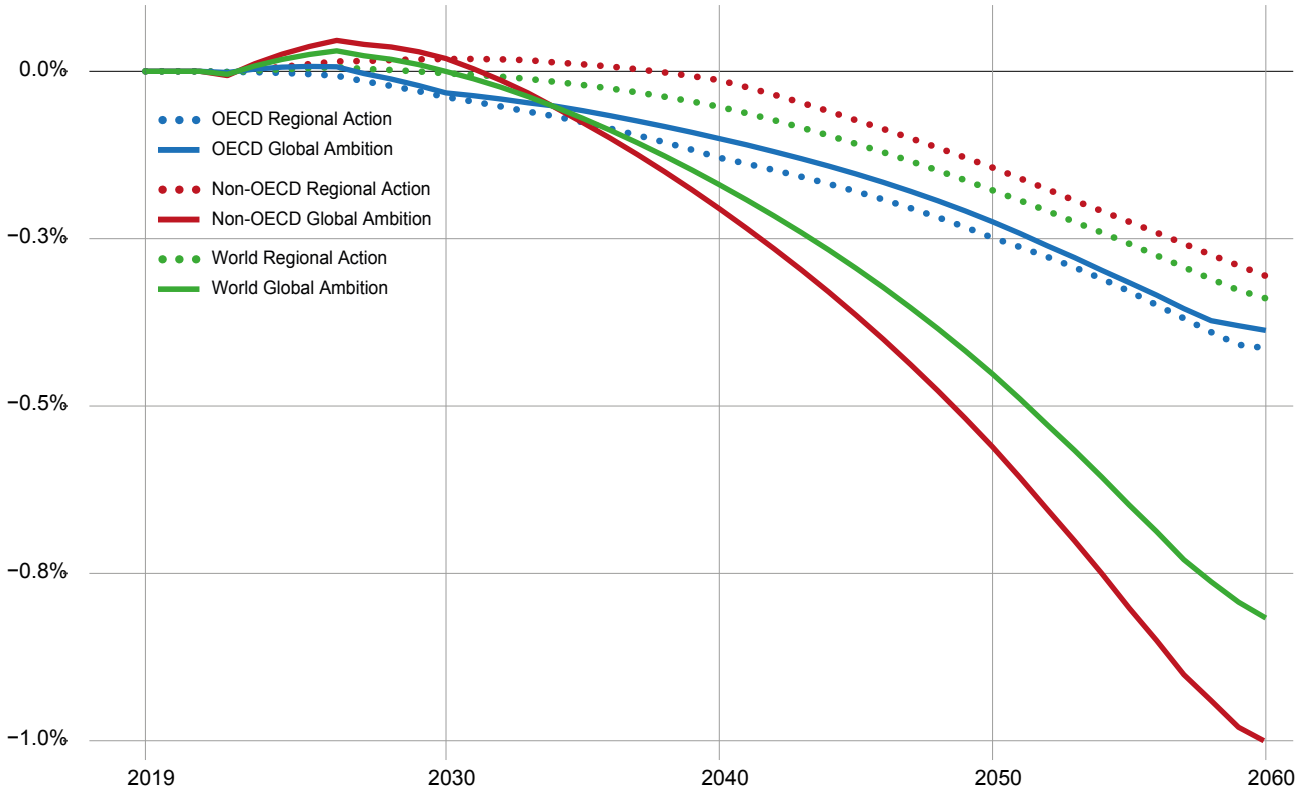
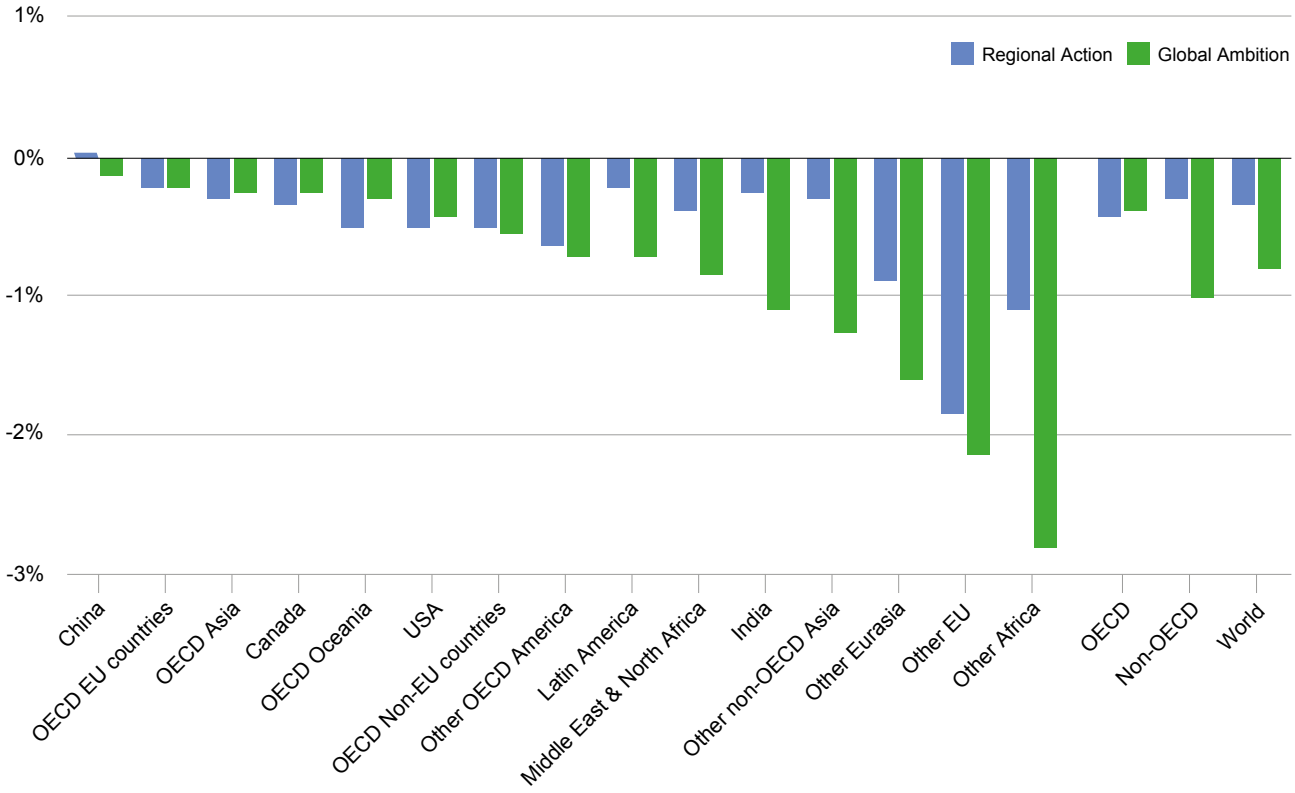


Figure 15. The costs of the *Regional Action* and *Global Ambition* scenarios on regional GDP are higher in non-OECD countries

Percentage change in GDP from *Baseline*, 2060



A substantial share of the costs of these policies is in the investment required in waste management systems. In the *Regional Action* policy package, these amount to USD 320 bn globally. In OECD countries, the bulk of investments mainly go towards improvements of recycling capacities, while non-OECD countries primarily need investments in both recycling and waste mismanagement.

Developing economies face higher costs than the global average. Official development assistance (ODA) is already used to support action to address plastics leakage in developing countries, but the financial flows are only a fraction of what is needed and additional sources of funding will be required. Further support will be needed in the form of sharing best practices and existing technologies to support rapidly developing countries in improving their waste management systems.

Meanwhile, despite the drastic reduction in leakage to nearly zero, even in the *Global Ambition* policy package, the stocks of plastics already leaked into the environment need to be cleaned up. The environmental benefits of clean-up activities are clear, and the damage avoided could be substantial, including in monetary terms. At the same time, it emerges clearly that pollution prevention makes more economic sense than cleaning up afterwards: having to clean up the full stock of almost 500 Mt plastics in the aquatic environment in 2060 in the *Baseline* scenario, at costs of more than 1000 USD per tonne, would be much more costly than eliminating leakage via improved waste management. Overall, more ambitious policies that prevent plastic leakage are much more cost-effective than allowing plastics to leak to the environment; however, cleaning up is still more cost-effective than allowing plastics to pollute natural environments.

Further reading

OECD (2022), "Declaration on a Resilient and Healthy Environment for All", *OECD/LEGAL/0468*, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0468 (accessed on 11 April 2022).

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This Policy Highlights is based on the OECD publication *Global Plastics Outlook: Policy Scenarios to 2060.*

The global community is far from achieving its long-term objective of ending plastic pollution, unless significantly more stringent and coordinated policies are implemented rapidly. A key question in this context is: what are the plausible scenarios for the evolution of plastics use, waste and environmental impacts in the coming decades in the absence of additional measures and, as well, with scaled-up policy action to address plastic pollution?

The *Global Plastics Outlook: Policy Scenarios to 2060* provides such a forward looking perspective. The report provides a set of coherent projections on plastics to 2060, including plastics use and waste as well as the environmental impacts linked to plastics, especially leakage to the environment. Such an outlook on plastics for the coming decades can help policy makers understand the scale of the challenge to transition to a more sustainable and circular use of plastics and the need for additional policy action to address plastic leakage. By identifying two policy packages to bend the plastic curve, the Outlook allows for a better understanding of the environmental benefits and economic consequences of adopting more stringent policies.

This second report is a follow-up to the first report – *Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options* – released in February 2022, which quantified current trends (up to 2019) in plastics use, waste generation and leakage, as well as identified four policy levers to curb the environmental impacts of plastics.

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