

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT



SDG Pulse 2023

UNCTAD TAKES THE PULSE OF THE SDGS



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Geneva, 2023

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Foreword

In times of high uncertainty, credible data and statistics give us solid ground to shape debates and inform decisions. This 2023 edition of the SDG Pulse helps us understand and navigate our progress towards the 2030 Agenda at a time where global cascading crises are threatening its very survival. According to the SDG Progress Report (United Nations, 2023a), only 12 per cent of SDG targets are on track for achievement by 2030.

This SDG Pulse zooms into this alarming story. The fifth edition of SDG Pulse shows that too many countries have indeed fallen back from their targets due to several factors, including unrelenting economic shocks, worsening climate change impacts, and fragmenting international cooperation. Furthermore, we track how bleak conditions for financing for development – marked by insufficient ODA, growing debt distress, concentrated FDI flows, and the lack of multilateral development investments at scale – have led to rising inequalities between and within countries.

With this background, the 2023 SDG Pulse explores new sources for financing development, sharing the first-ever preliminary estimates for an SDG indicator on illicit financial flows, worked alongside the UNODC and the UN Regional Commissions. We also launched a global project to support interested countries of the South to report data on a new SDG indicator on development support, including South-South cooperation based on a voluntary framework developed by the countries.

This SDG Pulse also elaborates on the challenges of the energy transition. The world needs a 45 per cent cut in emissions by 2030, but early data indicate continued increase of emissions in 2022 after another record-breaking year in 2021. New technology has driven cuts in carbon intensity and most regions achieved a 5 per cent reduction in 2021. The boom in electric car sales and cleaner energy hold promise but remain out of reach for many. Investment in climate mitigation and renewables increased significantly in developed economies in 2021. But the poorest and most vulnerable were left behind in the green transition.

Lastly, this fifth edition of the SDG Pulse is structured according to the four transformations identified in UNCTAD15's Bridgetown Covenant (UNCTAD, 2021) – [multilateralism and trade](#), [sustainability and resilience](#), [development finance](#), and [diversification](#), with a particular focus on the most vulnerable and those furthest behind.

This year's In-Focus tackles the challenge of costing the achievement of SDGs through six transition pathways. This will be an important contribution to the SDG Summit that the UN Secretary General, Antonio Guterres, has called forth for this September. This costing exercise is based on official data reported by countries, and will be extended in collaboration with UNDESA, UNDP, as well as many other UN agencies, including UN Women who have enriched our analysis with a special focus on gender equality.

This SDG Pulse gives us the tools to understand the challenges ahead; let us harness this knowledge to recalibrate our efforts and get the 2030 Agenda back on track. SDGs are simply too big to fail.

Rebeca Grynspan

Secretary-General of UNCTAD

Introduction

Welcome to the fifth edition of *SDG Pulse* – UNCTAD’s annual statistical publication reporting on developments relating to the 2030 Agenda for Sustainable Development (United Nations, 2015) and the SDGs. The purpose of this report is threefold, to: provide an update on the evolution of a selection of official SDG indicators and complementary data and statistics; provide an update on progress in the development of new concepts and methodologies for SDG indicators for which UNCTAD is a global custodian agency; and to showcase how UNCTAD is supporting member States in the implementation of the 2030 Agenda. This year for the first time, *SDG Pulse* monitors progress according to four transformations identified by UNCTAD’s intergovernmental meeting held in Bridgetown.

The report also investigates thematic issues of relevance to the 2030 Agenda – this year, the report discusses, as In-Focus topic, a global perspective on SDG costing with synergistic approaches. Halfway through the 2030 Agenda, information on how much is still needed to reach the SDGs is still scarce. Understanding the costs of achieving SDGs and synergies of spending by sector can support the formulation of effective strategies and policies to accelerate progress towards sustainable development in all countries.

The report is arranged in a way that it can be read by theme, and by goal and indicator.

The list of acronyms and definitions is available online at <https://sdgpulse.unctad.org/glossary-2023/>

Theme

In the theme view, the indicators are browsable by the four transformations outlined in the Bridgetown Covenant (UNCTAD, 2021): [multilateralism and trade](#), [development finance](#), [diversification](#), and [sustainability and resilience](#). Through this thematic lens, progress towards a wide range of SDG indicators is discussed, including recent trends in trade, barriers to trade, and food security through trade; financial resource mobilization, investment, debt sustainability, illicit financial flows; sustainable industrialization, transport resilience, and digitalization; as well as risks to resilience, transition to sustainable economy and trade.

Goals and indicators

In the goals-and-indicators view, the content is presented by SDGs and their related indicators. The goals and indicators selected reflect UNCTAD’s mandate in trade and development, investment, finance, and technology. The SDG indicators are supplemented with other data and official statistics to complement the picture. The SDG indicators presented in this report are:

GOAL 1

Goal 1: No poverty

- Indicator 1.5.1: Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population.
- Indicator 1.5.2: Direct economic loss attributed to disasters in relation to global gross domestic product (GDP).

GOAL 2

Goal 2: Zero hunger

- Indicator 2.1.1: Prevalence of undernourishment.
- Indicator 2.1.2: Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES).
- Indicator 2.b.1: Agricultural export subsidies.
- Indicator 2.c.1: Indicator of (food) price anomalies.

GOAL 6

Goal 6: Clean water and sanitation.

- Indicator 6.1.1: Proportion of population using safely managed drinking water services.

GOAL 8

Goal 8: Decent work and economic growth

- Indicator 8.9.1: Tourism direct GDP as a proportion of total GDP and in growth rate
- Indicator 8.a.1 Aid for Trade commitments and disbursements

GOAL 9

Goal 9: Industry, innovation and infrastructure

- Indicator 9.1.2: Passenger and freight volumes, by mode of transport.*
- Indicator 9.2.1: Manufacturing value added as a proportion of GDP and per capita
- Indicator 9.2.2: Manufacturing employment as a proportion of total employment
- Indicator 9.4.1: CO2 emission per unit of value added
- Indicator 9.5.1: Research and development expenditure as a proportion of GDP
- Indicator 9.5.2: Researchers (in full-time equivalent) per million inhabitants
- Indicator 9.b.1: Proportion of medium and high-tech industry value added in total value added
- Indicator 9.c.1: Proportion of population covered by a mobile network, by technology

GOAL 10

Goal 10: Reduce inequality

- Indicator 10.a.1: Proportion of tariff lines with zero-tariff*
- Indicator 10.b.1: Total resource flows for development

GOAL 12

Goal 12: Responsible consumption & production

- Indicator 12.5.1: National recycling rate, tons of material recycled.
- Indicator 12.6.1: Number of companies publishing sustainability reports*

GOAL 14

Goal 14: Life below water

- Indicator 14.4.1: Proportion of fish stocks within biologically sustainable levels

GOAL 15

Goal 15: Life on land

- Indicator 15.1.1: Forest area as a proportion of total land area
- Indicator 15.5.1: Red List Index

GOAL 16

Goal 16: Peace, justice and strong institutions

- Indicator 16.4.1: Total value of inward and outward illicit financial flows*

GOAL 17

Goal 17: Partnership for the goals

- Indicator 17.2.1: Net official development assistance, total and to LDCs
- Indicator 17.3.1: Additional financial resources mobilized for developing countries from multiple sources*
- Indicator 17.4.1: Debt service as a share of exports of goods and services
- Indicator 17.5.1: Implement investment promotion regimes for LDCs*
- Indicator 17.6.1: Fixed Internet broadband subscriptions
- Indicator 17.8.1: Proportion of individuals using the Internet
- Indicator 17.10.1: Worldwide weighted tariff-average*
- Indicator 17.11.1: Developing countries and LDCs' share of global exports*
- Indicator 17.12.1: Tariffs faced by developing countries, LDCs and SIDS*

* Indicator for which UNCTAD is a custodian or co-custodian agency.

The indicators for which UNCTAD is a custodian or co-custodian fall under goals 9, 10, 12, 16 and 17, covering topics related to trade, tariffs, development finance, debt, investment, sustainable transport, illicit financial flows, and enterprise sustainability.

Custodian agencies of SDG indicators, including UNCTAD, are responsible for developing international standards and recommending methodologies for monitoring SDG indicators. They are also tasked with compiling and verifying country data and metadata, and for submitting the data, along with regional and global aggregates, to the global SDG report and database updated by the United Nations Statistics Division.

To see UNCTAD custodian indicators and find related SDG Pulse sections, click on the graph.

UNCTAD in Action

This part presents some case studies from UNCTAD's development programme from a statistical perspective – presenting UNCTAD's activities and successes in hard numbers. These case studies are important as they also illustrate the Results Based Management approach adopted by UNCTAD – helping us to improve our responsiveness and accountability to member states. In 2023, new insights into UNCTAD's activities in supporting member States are provided, e.g., in measuring South-South cooperation (SDG indicator 17.3.1), promoting ICT as a tool for development, and UNCTAD's biotrade initiative.

In Focus

First experimental estimates of the cost of achieving selected SDG indicators across [SDG transition pathways](#) are discussed in this year's In-Focus, as a contribution to a UN-wide effort. Each year, the SDG Pulse highlights a specific aspect of the 2030 Agenda and discuss this issue from the perspective of statistics.

Note

The designations “developing” and “developed” are intended for statistical convenience and do not necessarily express a judgement about the stage reached by a particular country or area in the development process. UNCTAD’s grouping of developing and developed economies is based on the former development status classification of the M49 standard, with some recent updates. For more details, see the [UNCTADstat classification page](#).

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THEME 1

Multilateralism for trade and development

“UNCTAD remains committed to providing the data and analysis policymakers need to take informed decisions and ensure trade growth benefits all people and the planet.”

– Mr. Pedro Manuel Moreno, UNCTAD Deputy Secretary-General
at the UN Trade Forum, 8 May 2023, Geneva

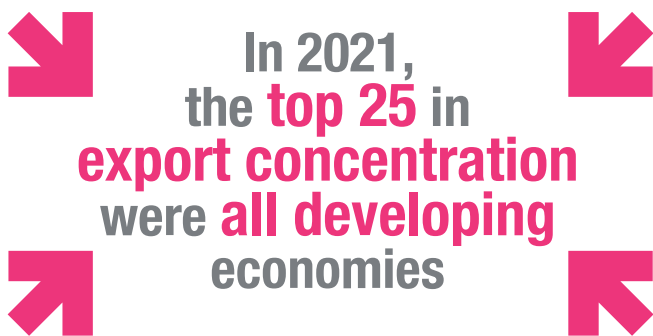
Multilateralism and trade

The world is interdependent and interconnected. Globalization has resulted in rapid change, creating both challenges and opportunities. Tackling the common challenges facing humanity and harnessing opportunities require collective action. A strong multilateral trading system is more important now than ever as the world builds back from the economic impact of the COVID-19 pandemic. Trade is an important engine for inclusive economic growth, sustainable development, and poverty reduction. These goals were stated in the UNCTAD Bridgetown Covenant (2021), and global progress towards them is reviewed in the following sections based on SDG indicators and other official statistics:

1. [Economic transformation and progress towards the SDGs through trade](#)
2. [Tackling global inequality through collaborative trade](#)
3. [Trade – a key ingredient to food security](#)

“ UNCTAD remains committed to providing the data and analysis policymakers need to take informed decisions and ensure trade growth benefits all people and the planet.

— Mr. Pedro Manuel Moreno, UNCTAD Deputy Secretary-General at the UN Trade Forum, 8 May 2023, Geneva ”

 In 2021, the **top 25** in export concentration were **all developing economies**

 **Two thirds** of international trade is **free of tariffs**

Globally, **45%** of the **food supply** is met by **cereals**



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Economic transformation and progress towards the SDGs through trade

SDG indicators

Goal 8: Decent work and economic growth

Target 8.9: By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.

Indicator 8.9.1: Tourism direct GDP as a proportion of total GDP and in growth rate (Tier II)

Goal 17: Partnerships for the goals

Target 17.11: Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020.

Indicator 17.11.1: Developing countries' and least developed countries' share of global exports (Tier I)


Global trade can be a powerful source for economic transformation. As underlined by the Bridgetown Covenant, its rapid expansion has enabled the emergence of some nations from the periphery of the world economy and into the global spotlight and ...significant reduction of poverty (UNCTAD, 2021a). However, the impressive expansion of global trade, investment and technology registered over the past decades has unfortunately not resulted in benefits for all (UNCTAD, 2021a). Since 2011, the LDCs have hardly increased their share of global trade. Almost two thirds of developing economies remain commodity dependent¹ or tied to lower-value activities in manufacturing or services sectors.

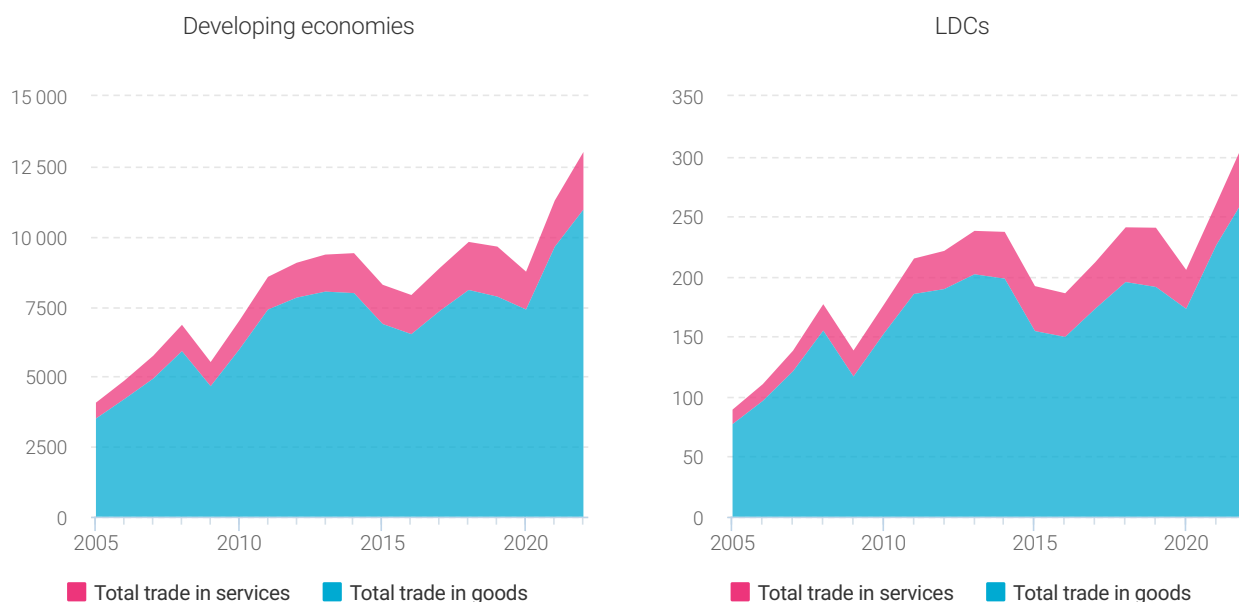
Trade in goods and services in developing economies and LDCs reached a record level in 2022

The COVID-19 pandemic has hampered international trade and led, in 2020, to the drop of exports of goods and services of developing economies and LDCs by about 9 per cent and 15 per cent, year-on-year, respectively. Since then, total trade recovered and, in 2022, hit a record high of US\$13 trillion for developing economies and US\$317 billion for LDCs (Figure 1). Trade in goods for both groups expanded at a faster pace than trade in services, registering, in 2022, 40 per cent growth from 2019. It was worth US\$11 trillion for developing economies and US\$268 billion for LDCs. In contrast, trade in services of developing economies remained relatively small and grew by 15 per cent compared to pre-COVID-19 levels, while for LDCs, trade in services dropped by about 1 per cent.

In 2022, trade in goods of developing economies and LDCs recovered faster post-COVID-19 than trade in services



 **Figure 1. Positive trends in goods and services trade in developing economies and LDCs**
(Billions of current US\$)



Source: UNCTADstat (UNCTAD, 2023a).
Note: Year 2022 figures are estimates.

LDCs' participation in world trade lags further behind other developing economies

LDCs' share in global trade of goods and services remained at just 1% in 2022

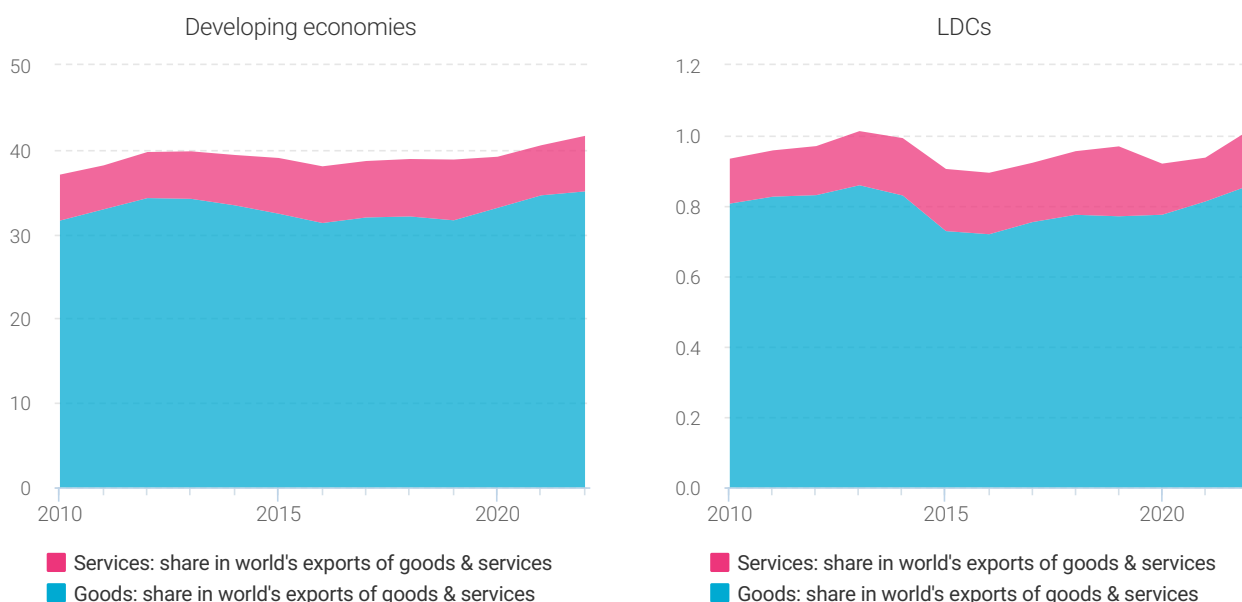


exports and 0.2 per cent of world services exports.

In 2022, developing economies' share in world exports has risen to about 42 per cent, compared to 37 per cent in 2010 (Figure 2). For LDCs, the SDG target 17.11 of doubling their share of global exports by 2020 from 2011 (2 per cent target) was not met. Despite the growth of their exports in absolute terms during the period, LDCs' share in world exports of goods and services has hovered around 1 per cent since 2011. In comparison, the indicator averaged 39 per cent in the same period for developing economies. LDCs accounted for about 0.9 per cent of world goods

Figure 2. LDCs are not on a track to reach SDG Target 17.11 as to significantly increase their share in global exports

(Percentage, SDG 17.11.1)



Source: UNCTADstat (UNCTAD, 2023a).
Note: Year 2022 figures are estimates.

Only a few developing economies significantly increased their share in world exports of goods and services from 2011 to 2022 (Map 1). There was a tenfold increase for Timor-Leste and a ninefold for Djibouti. Armenia, Cambodia, Benin, Lao People's Democratic Republic, Niue, Sao Tome and Principe, and Viet Nam also more than doubled their shares. Guinea increased its share in global exports from the small base of 0.006 per cent in 2011 to 0.04 in 2022. As for China, it increased its share by 1.4 times during the same period. The share in exports of goods and services declined in Lesotho, Malawi, and Vanuatu.

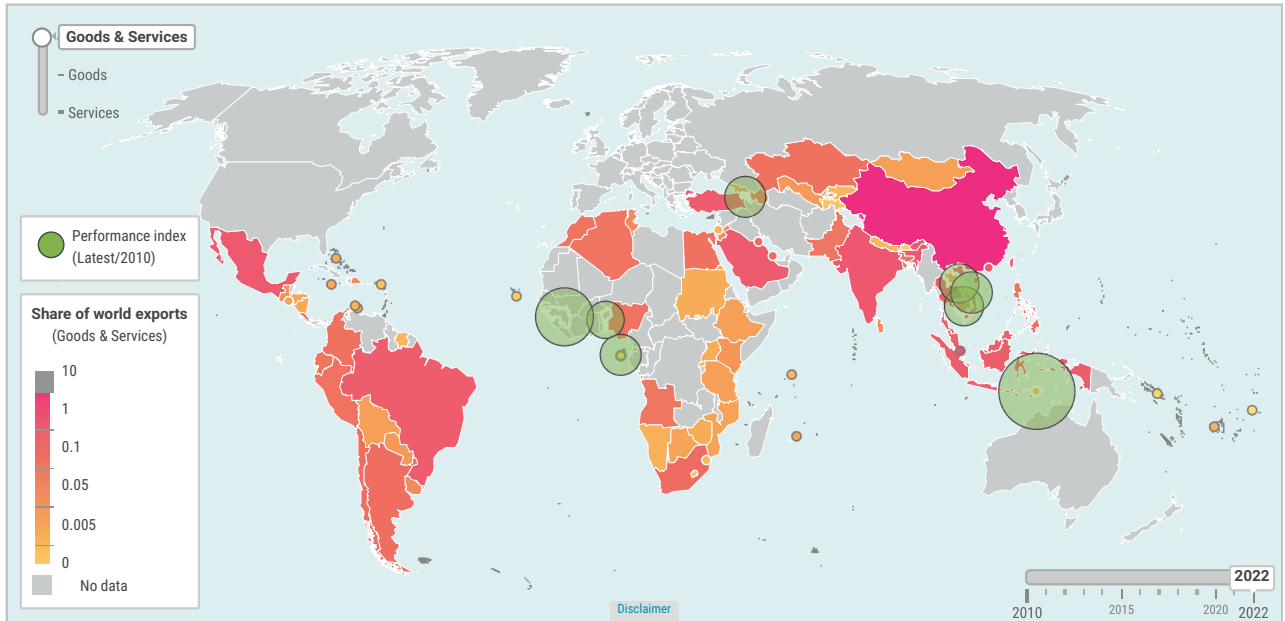
By 2022, Timor-Leste, Djibouti, and Guinea sharply increased their shares in world exports of goods and services





Map 1. Only a few developing countries' cover a significant share of global exports of goods and services

(Percentage, SDG 17.11.1)



Source: UNCTADstat (UNCTAD, 2023a).

Note: Year 2022 figures are estimates.

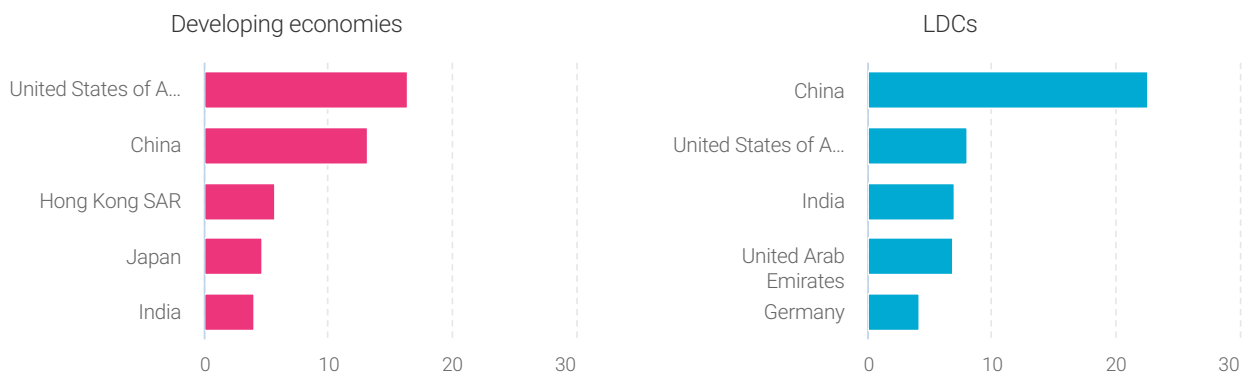
In 2021, top export destinations for developing economies and LDCs included the United States of America, with about 17 per cent for developing economies and 8 per cent for LDCs, China with about 13 per cent and 23 per cent, respectively, and India with 4 per cent and 7 per cent, respectively (Figure 3).

For developing economies and LDCs, the United States and China are the main export markets



Figure 3. China and the United States of America remain major exports destinations for developing economies and LDCs

(2021, percentage)

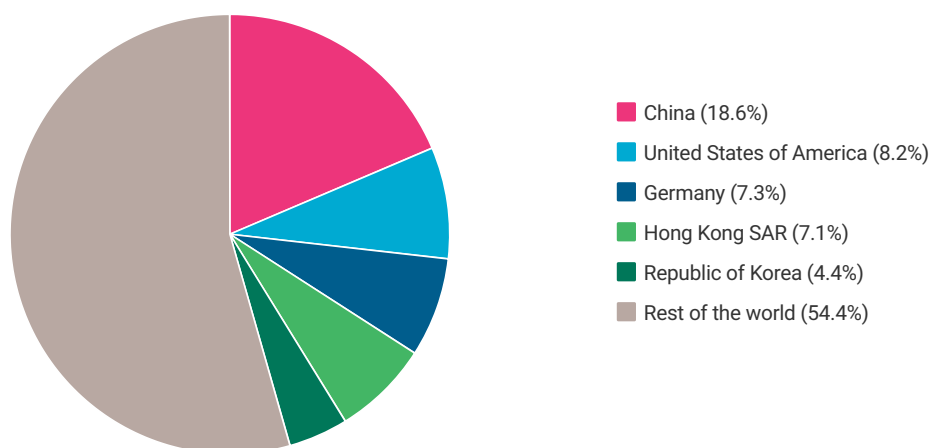


Source: UNCTADstat (UNCTAD, 2023a).

China's exports growth of high-tech manufactured goods slows

Over the past decade, China has emerged as a prominent force in the exportation of high-tech manufactured goods. In 2021, China alone accounted for an impressive 19 per cent of global exports of high-skill and technology-intensive manufactures (Figure 4). To put this into perspective, the United States of America and Germany each held approximately 8 per cent share in the global exports of these goods.

 **Figure 4. China alone accounted for almost one fifth of global exports of high-tech manufactures, 2021**
(Percentage)



Source: UNCTADstat (UNCTAD, 2023a).

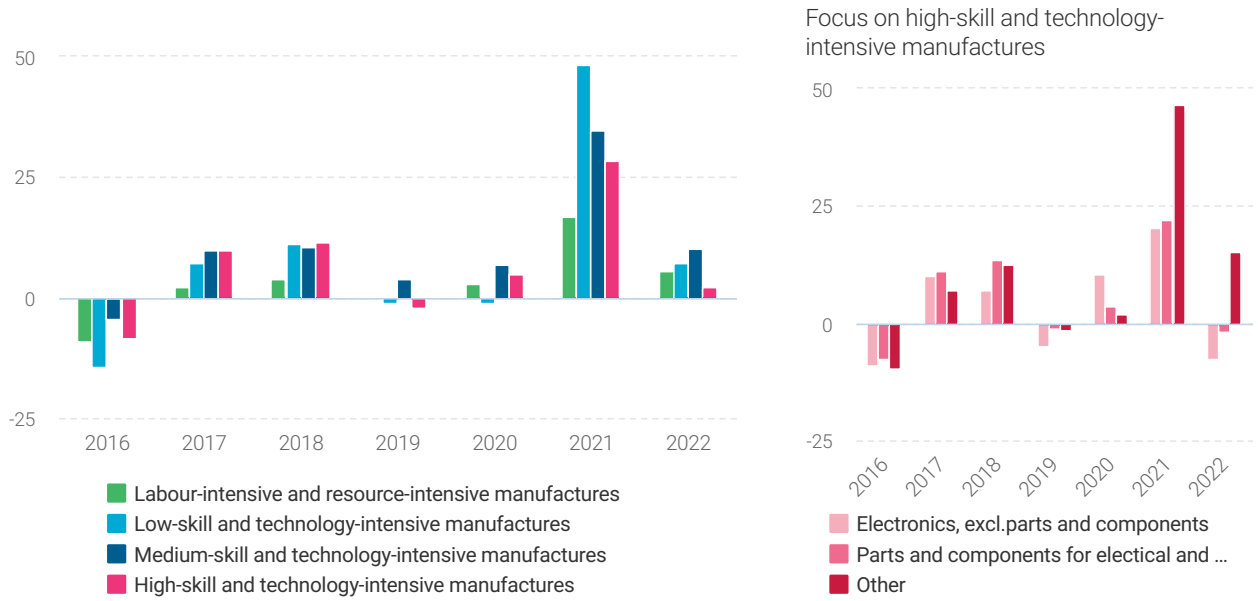
Note: Manufactured goods by degree of manufacturing groups refers to the April 2023 classification, as specified in UNCTAD (2023b) and is according to the three-digit level of SITC Revision 3.

After an unusually high export growth of 29 per cent in 2021, year-on-year, the growth of China's exports of high-skill and technology-intensive manufactured goods slowed to 2 per cent in 2022 (Figure 5). On-going geopolitical tensions and global trends of supply chain diversification drive this slowdown. While exports of high-skill electronics and parts and components for electrical and electronic goods declined (about 8 per cent and 2 per cent, respectively), the exports of other high-skill goods, excluding electronics grew (15 per cent), including goods like miscellaneous chemical products and inorganic chemical elements.



Figure 5. Growth of China's exports of high-tech manufacturers slows after an unusual expansion in 2021

(Growth rate, percentage)



Source: United Nations (2023).

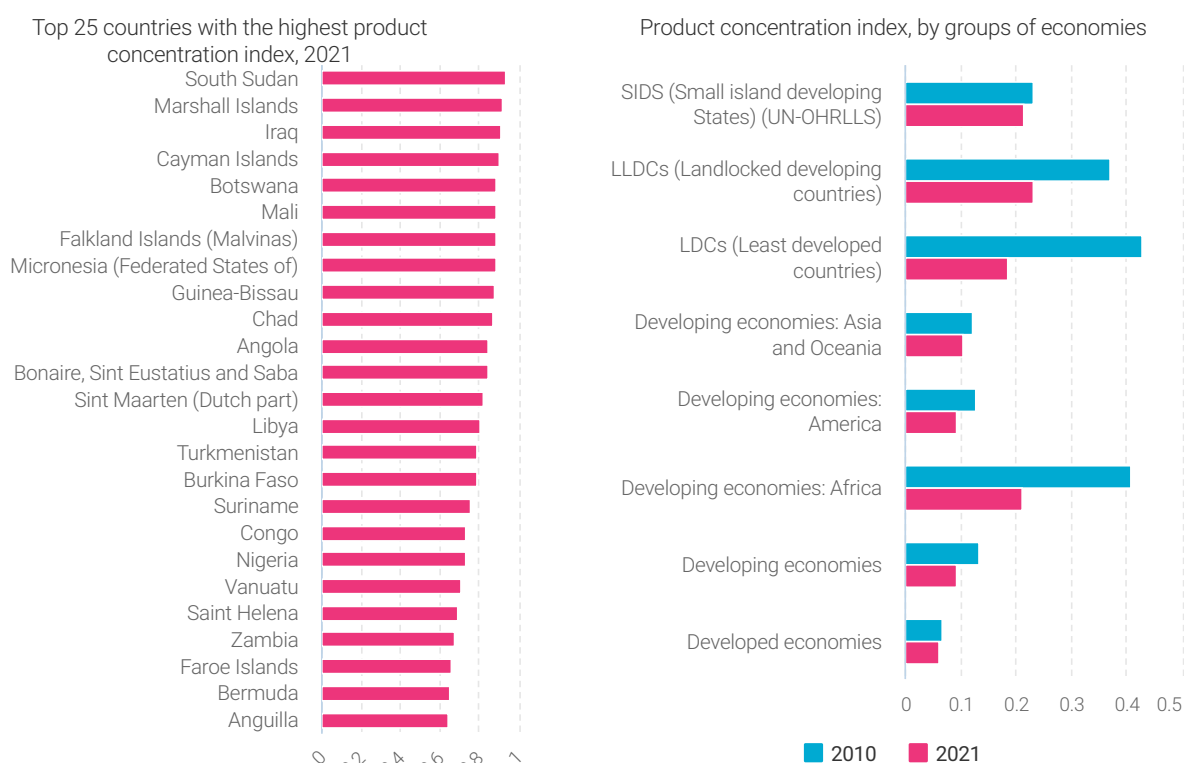
Note: Manufactured goods by degree of manufacturing groups refers to the April 2023 classification, as specified in UNCTAD (2023b) and is according to the three-digit level of SITC Revision 3.

Developing economies in Africa continue to struggle with trade diversification

In 2021, the top 25 in export concentration were all developing economies

Developing economies' exports concentration index in 2021 stood at 0.09 (Figure 6), notably higher than for developed economies (0.06). Exports are most concentrated in Africa (0.21) (Figure 6). The export mix was more varied in the developing economies of Asia and Oceania (0.11). LDC's export concentration stood at 0.19, and SIDS at 0.21. While the exports of these economies are still highly concentrated, developing economies have managed to reduce export concentration in the last 10 years. In 2021, top 25 countries with the highest concentration index were all developing economies, seven of them LDCs.

Figure 6. Exports concentration, even though reduced since 2010, remains highest in Africa
(Herfindahl-Hirschman Index (HHI))



Source: UNCTADstat (UNCTAD, 2023a).

Note: The concentration is measured by the Herfindahl-Hirschman Index (HHI). An index value closer to one indicates that a country's exports or imports are highly concentrated in a few products. On the contrary, values closer to zero reflect a more homogeneous distribution of exports or imports among a series of products. The country grouping refers to the April 2023 classification, as specified in UNCTAD (2023b).

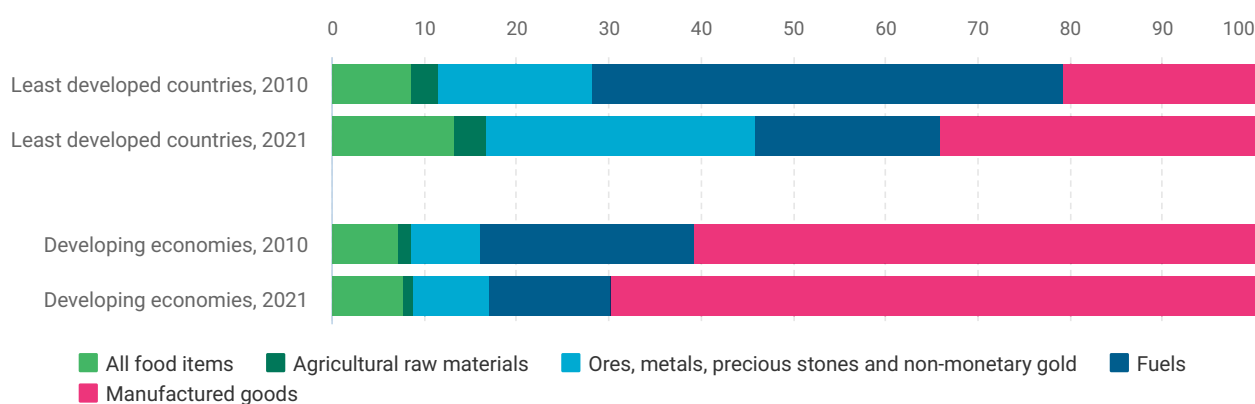
In 2021, manufactured goods accounted for about 70 per cent of total merchandise exports from developing economies, with China accounting for almost half of the total exports of manufactures of the group. The share of fuels has reduced from about 23 per cent in 2010 to 13 per cent in 2021, largely due to volatility of primary commodities prices. Ores, metals, precious stones, and non-monetary gold accounted for about 8 per cent of total exports of developing economies, followed by food (8 per cent) (Figure 7).

Merchandise exports of LDCs are largely focused on primary commodities and simple manufactured products, such as textiles and clothing. In 2021, manufactured goods accounted for 34 per cent of total exports in LDCs, an increase of 13 percentage points from 2010. Ores, metals, precious stones, and non-monetary gold were another largest product group in 2021 (29 per cent), followed by fuels (20 per cent). The share of agricultural products (agricultural raw materials and food) in LDCs' exports increased from around 9 to about 13 per cent during the same period.



Figure 7. Fuels' share in exports of developing economies and LDCs reduced significantly from 2010 to 2021, while the share of manufactured products increased

(Percentage)



Source: UNCTADstat (UNCTAD, 2023a).

Services exports are highly concentrated in a few countries

In 2022, China, India, and Singapore accounted for 15% of global services exports



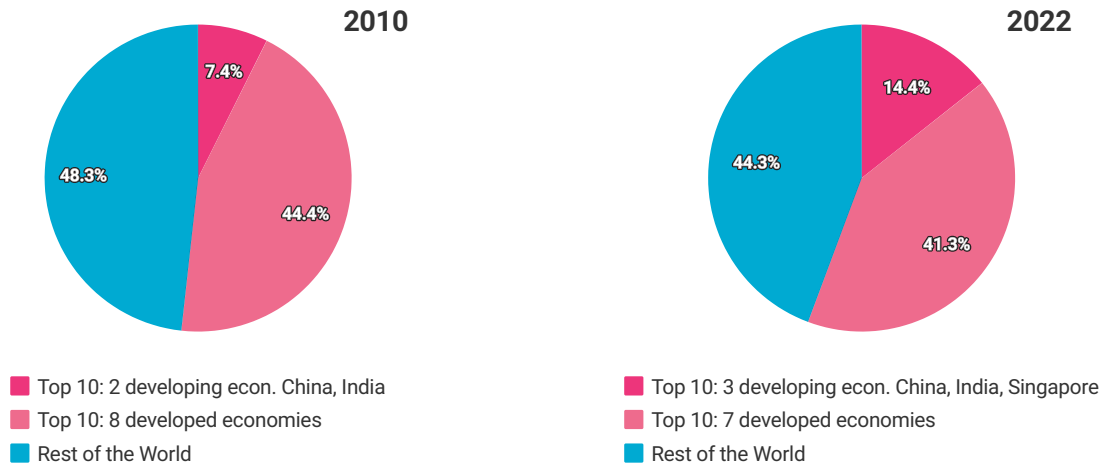
Trade in services is highly concentrated, with mainly the same countries ranking as leading services exporters since 2010. China, India and Singapore are the top three developing-country exporters and accounted for 15 per cent of global services exports in 2022 (Figure 8). China, the leading exporter of services among developing countries, ranked third globally in 2022. Singapore ranked eleventh in 2010, but increased its share to about 4 per cent, making it the eight largest exporter of services in

the world in 2022. In 2022, three developing economies reached the global top 10 exporters group, while in 2010 there were only two.



Figure 8. Top 10 services exporters accounted for more than half of the global markets, increasing their share further from 2010 to 2022

(Percentage)



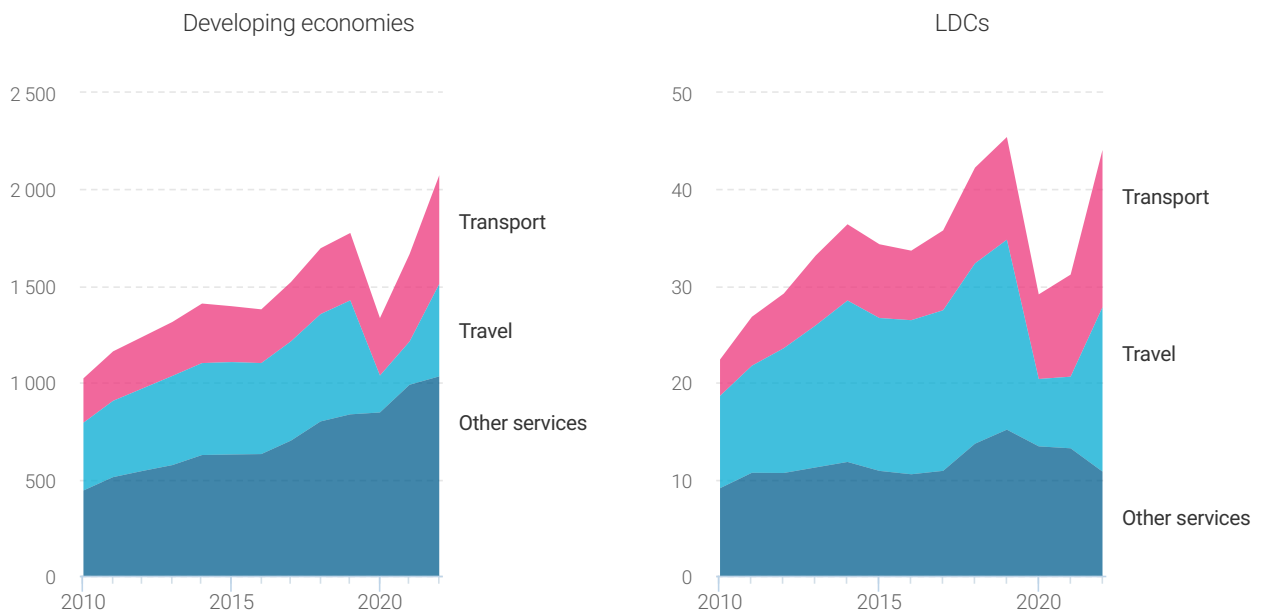
Source: UNCTADstat (UNCTAD, 2023a) based on UNCTAD-WTO services dataset.
Note: Year 2022 figures are estimates.

From the beginning of the pandemic in 2020, the exports structure of developing economies as a group has been dominated by services other than transport and travel. By contrast, LDCs' international services sales have been dominated by travel, except for the pandemic years 2020 and 2021, in which transport topped LDCs' services exports. (Figure 9)



Figure 9. Services exports of developing economies exceeded pre-pandemic levels in 2022, LDCs services exports still recovering

(Billions of current US\$)



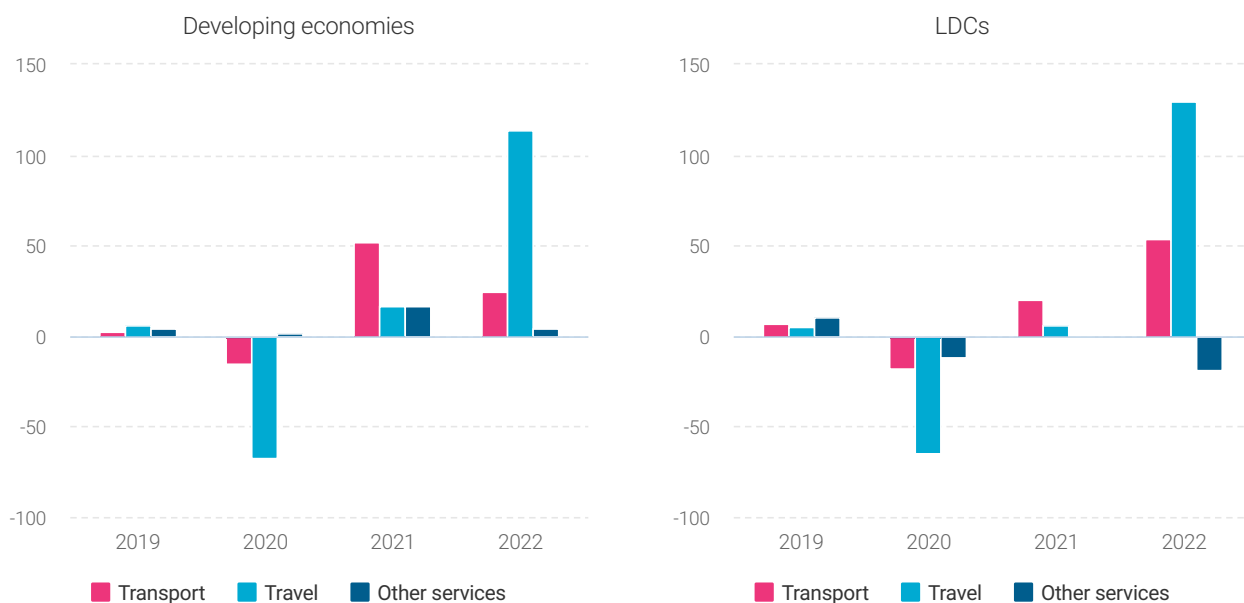
Source: UNCTADstat (UNCTAD, 2023a) based on UNCTAD-WTO services dataset.

Note: Year 2022 figures are estimates. Other services cover a heterogeneous group of products dominated by various business services, telecommunications and computer services, and intellectual-property, insurance and financial services. They also include construction, personal, cultural and recreational services, goods-related services, and government goods and services.

Growth in trade of transport and travel services of LDCs follow the same tendencies as in the group of developing economies. In other services it has not been the case in recent years. In 2021 and 2022, developing states recorded 17 and then four per cent rise in other services, while LDCs registered decline for both years (Figure 10).

Figure 10. Among services exports, travel bounced back strongly in 2022

(Growth rate, percentage)



Source: UNCTADstat (UNCTAD, 2023a) based on UNCTAD-WTO services dataset.
 Note: Year 2022 figures are estimates.

Growing importance of telecommunications, computer, and information services in exports of developing economies

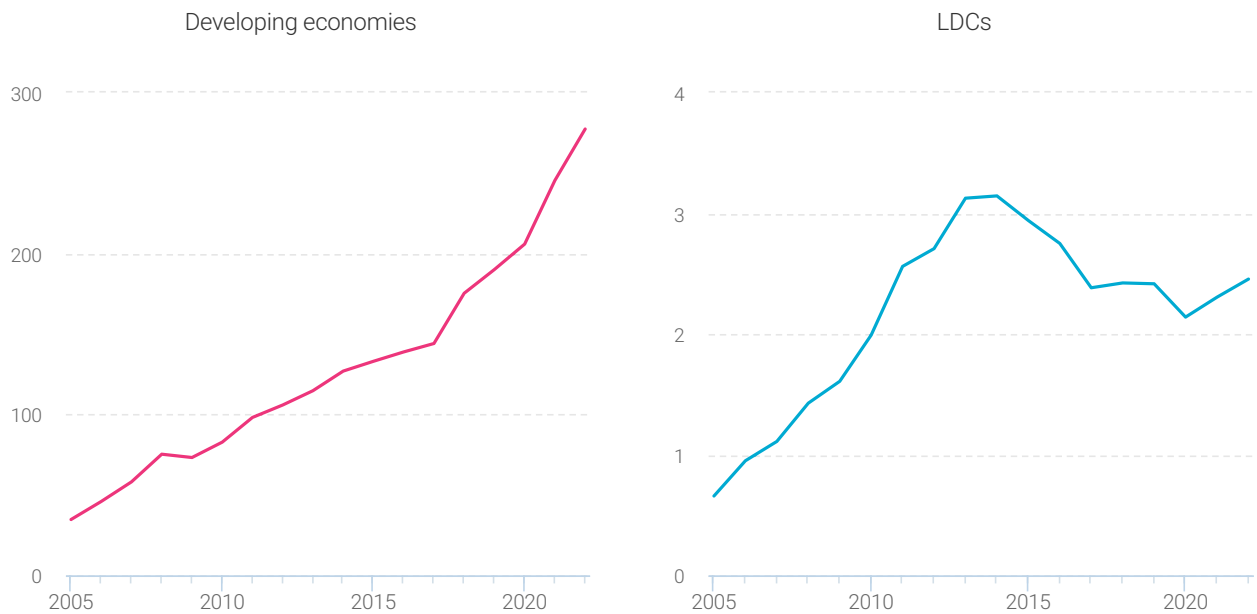
Exports of telecommunication, computer, and information services by developing economies have been steadily growing since 2010 (Figure 11). The pace of growth picked up further, as the pandemic closedowns solicited larger and innovative usage of these services. The trend has continued in the post-pandemic times. Since 2014, the growth of exports of telecommunications, computer, and information services from LDCs had been slowing down, but had picked up from 2020 on, with the pandemic.

Exports of telecommunications, computer, and information services by developing economies 46% higher in 2022 from the pre-pandemic level



Figure 11. LDCs lag further behind in exports of telecommunications, computer and information services

(Billions of current US\$)



Source: UNCTADstat (UNCTAD, 2023a) based on UNCTAD-WTO services dataset.

Note: Year 2022 figures are estimates.

Small and vulnerable economies hit harder by tourism losses during the pandemic

Tourism sector and its economic importance had been growing for most developing economies over the first two decades of the century, until the COVID-19 pandemic brought touristic activity to an abrupt plunge in 2020. In 2019, direct contribution of tourism to GDP stood at 3.8 per cent of GDP for developed countries and at 5.1 per cent for the developing (Figure 12). Tourism is very important for SIDS: before the pandemic in 2019, estimated at 7.1 per cent of GDP. With the pandemic lockdowns in 2020, developing economies lost more than half of the tourism contribution to GDP, while the developed world lost a third. For SIDS, the plunge was even more pronounced, as in 2020 the contribution of tourism to GDP had dropped to only one fifth of the level recorded in 2019.

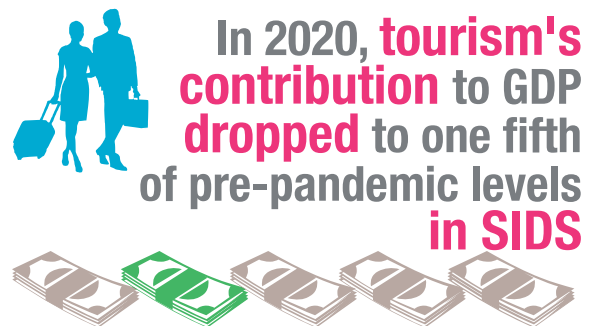
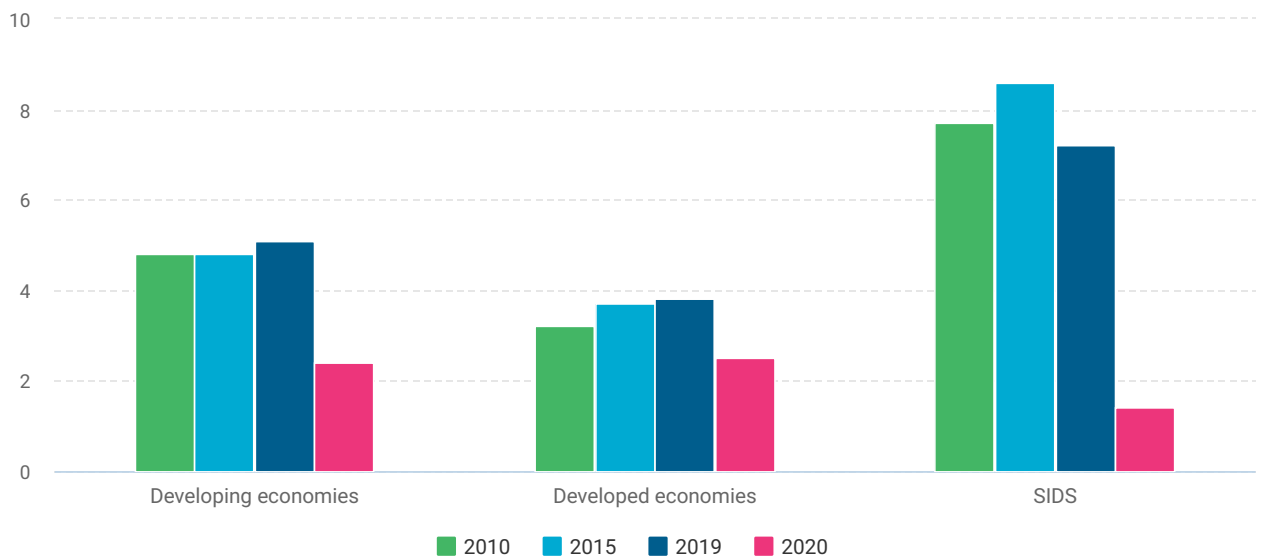




Figure 12. SIDS hit hard as direct tourism contribution to GDP dropped to one fifth of 2019 levels in 2020

(Percentage, SDG 8.9.1)



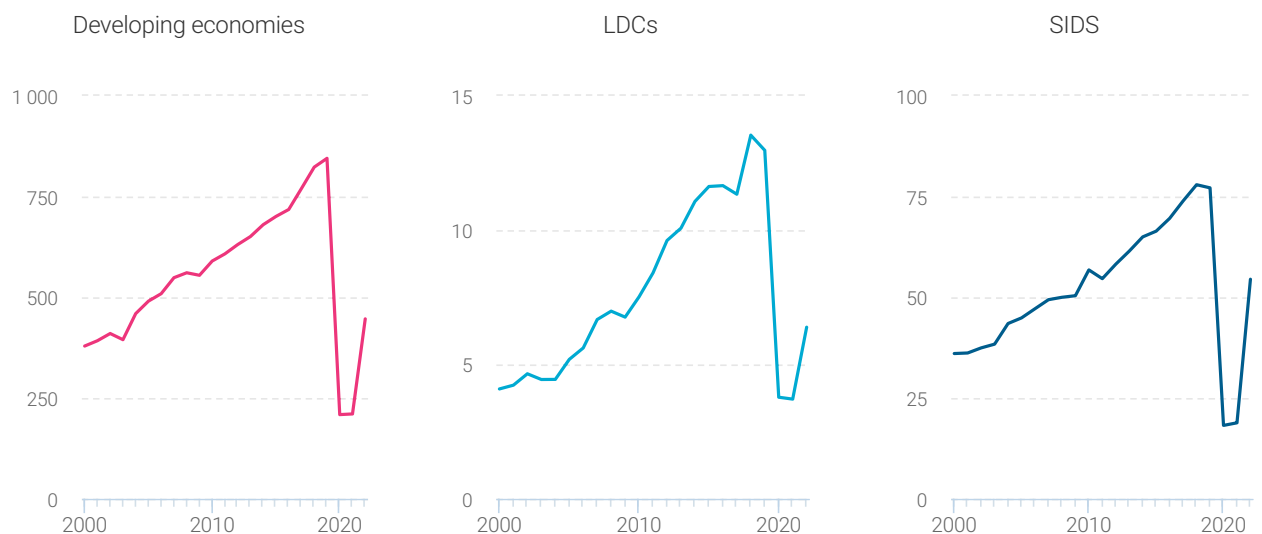
Source: UNWTO (2023).

Inbound tourist arrivals to developing economies had steadily been growing up to 2020, when they plummeted to their lowest levels for decades (Figure 13). Then, in 2022, developing economies recorded 446 million inbound visitor entries, accounting for 50 per cent of the 2019 numbers. For 2022, LDCs also registered half of the pre-pandemic inbound arrivals. SIDS reported 54 million arrivals, representing a solid recovery though still 30 per cent below the 2019 level.



Figure 13. Inbound tourist arrivals still below pre-pandemic levels in developing economies, LDCs and SIDS

(Millions)



Source: UNWTO (2021).

Note: Year 2022 figures are UNCTAD secretariat's preliminary estimates.

Inbound tourism expenditures (tourism exports) recuperated in 2022 but remained below the 2019 levels globally. Estimates indicate that developing economies recovered close to 85 per cent of the pre-pandemic tourism receipts, LDCs recovered 95 per cent, while SIDS surpassed the 2019 inbound tourism expenditures by some 8 per cent (Figure 14).

In 2022, LDCs' tourism exports are estimated to recover to 95% of pre-pandemic levels.

SIDS already surpassed their 2019 levels by 8%

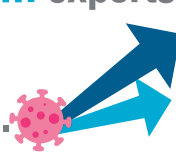
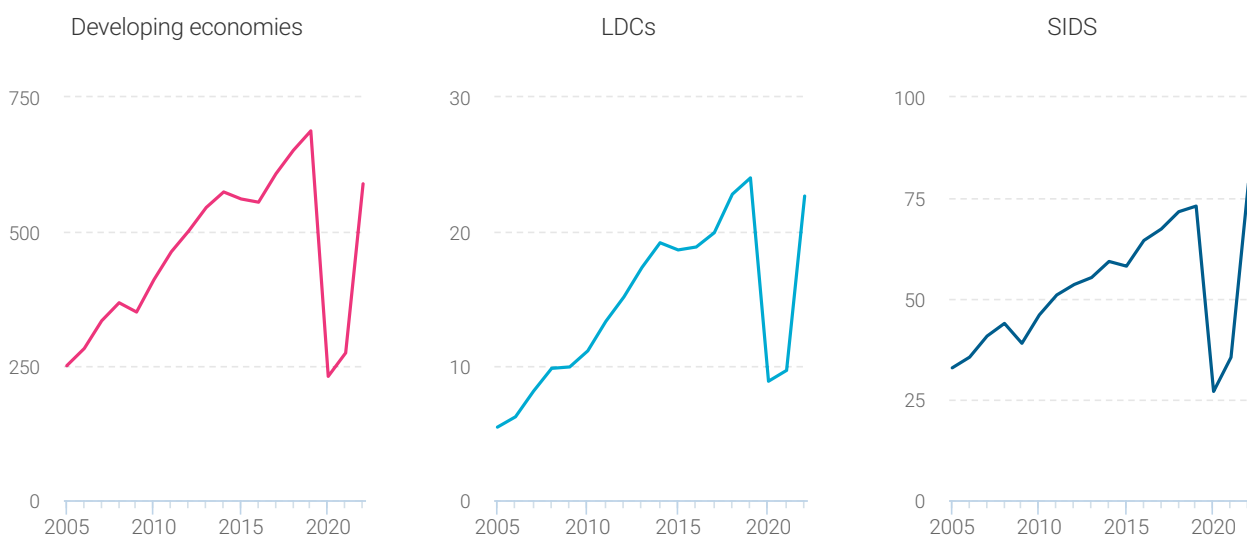


Figure 14. Inbound tourism expenditures rebounded in 2022, exceeding pre-pandemic levels in SIDS
(Billions of current US\$)



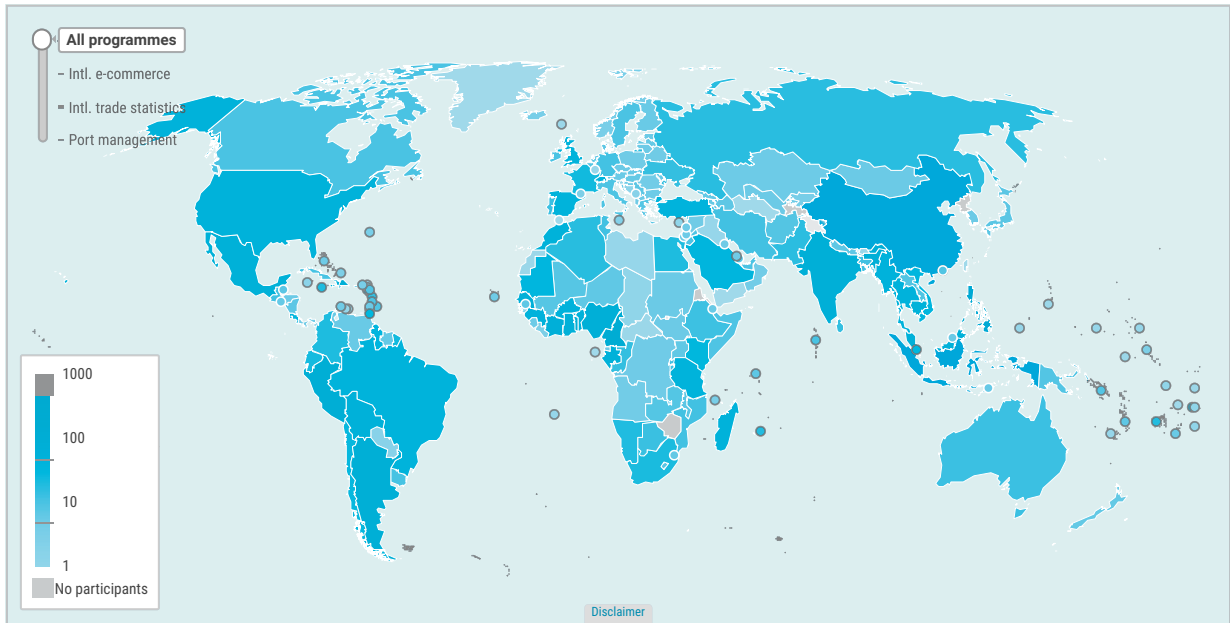
Source: UNCTADstat (UNCTAD, 2023a) based on UNCTAD-WTO services dataset.

Note: Year 2022 figures are UNCTAD secretariat's preliminary estimates. Tourism exports (inbound tourism expenditures) include two BPM6 services items: travel and passenger transport.

TrainForTrade has a global impact: nearly 15 000 trained from over 200 countries



Map 2. People from 218 countries participated in TrainForTrade activities, 2018-2022



Source: UNCTAD [TrainForTrade](#).

UNCTAD TrainForTrade provides bespoke technical assistance globally, with an emphasis on developing countries. It follows three goals:

- Build sustainable networks of support and knowledge exchange to enhance South-South cooperation and national ownership;
- Promote digital solutions and innovative thinking to strengthen the capacities of international trade players;
- Encourage development-oriented trade policy to reduce poverty and to promote transparency and best practices in trade.

To accomplish these objectives, TrainForTrade combines e-learning, face-to-face and hybrid activities: an environmentally friendly and cost-efficient approach, providing mass access to high-quality education while allowing the training of individuals chosen for their capacity to impact their communities. TrainForTrade currently covers three areas: Port Management, e-Commerce and Trade Statistics. Between 2018 and 2022, it held 148 events, in which almost 15 000 people from 218 countries or areas took part (Map 1 and Table 1). These participants completed on average 7.5 days of training. Asia, Africa and the Americas accounted for the bulk of this capacity development, with respectively 43, 27 and 18 per cent of all attendees. TrainForTrade's team led physical workshops in more than 43 countries, maintaining a strong field presence and an extended network.

**Table 1. Nearly 15 000 participants trained by TrainForTrade between 2018 and 2022**

Year(s)	Number of participants	Share of women	Number of certificates delivered	Hours of training	Days of training	Number of countries or areas covered	Average score	Satisfaction rate
2018	871	36%	399	66 892	10 597	66	77%	87%
2019	2 935	47%	1 439	127 640	22 275	165	77%	89%
2020	2 984	43%	1 389	92 196	17 798	171	78%	88%
2021	4 452	43%	2 546	145 063	28 847	178	79%	90%
2022	4 786	38%	2 417	170 127	32 665	189	78%	92%
2018-2022	14 898	43%	8 190	601 917	112 181	218	78%	89%

Source: UNCTAD [TrainForTrade](#).

Note: For activities lasting longer than one year, the number of participants for each year is shown. For that reason, the number of participants does not add up to the 2018-2022 total. The number of certificates delivered should not be compared to the number of participants as not all activities lead to a diploma.

Building Port Resilience Against Pandemics was a very educative course. It empowered me and gave me the capacity of empowering others. I will share my knowledge and experience with fellow colleagues and the community at large.

— Ms Helena Newaka, Executive Secretary Commercial Department, NamPort, Namibia
(2022)

Over the past five years, TrainForTrade has considerably boosted its global impact (Table B1). The number of participants per year has increased fivefold from 2018 to 2022, while the number of training days per year has tripled. In 2022, TrainForTrade delivered 100 000 additional training hours compared to 2018 and six times as many people obtained a certificate, attesting to the skills acquired. To achieve these results, TrainForTrade relied on the advantages of its longstanding e-learning experience and opened online courses to a broader audience. The Trade Statistics programmes accounted for 58 per cent of all participants, while the Port Management and e-Commerce activities represented 34 and 8 per cent, respectively.

Women’s empowerment is a priority. Overall, 43 per cent of all participants were female: an impressive figure given TrainForTrade’s activities related to sectors remaining largely male-dominant worldwide (i.e., port management). To multiply its impact and foster South-South Cooperation, TrainForTrade systematically trains future instructors who propagate their enhanced capacities and knowledge in their communities. Between 2018 and 2022, 308 high-profile candidates became “trainers” of the Port Management Programme, mostly in Africa and Latin America, after a series of intensive online and face-to-face seminars. With a satisfaction rate reaching almost 90 per cent and an average score approaching 80 per cent, TrainForTrade continues to promote achievement of SDGs (particularly goals 1, 5, 8, 9, 13, 14, 17) and aims to extend a world of opportunities for all.

Notes

1. A country is considered to be export-commodity-dependent when more than 60 per cent of its total merchandise exports

are composed of commodities.

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Tackling global inequality through collaborative trade

SDG indicators

Goal 10: Reduced inequalities

Target 10.a: Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements

Indicator 10.a.1: Proportion of tariff lines applied to imports from LDCs and developing countries with zero-tariff (Tier I)

Goal 17: Partnerships for the goals

Target 17.10: Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda.

Indicator 17.10.1: Worldwide weighted tariff-average (Tier I)

Target 17.12: Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access.

Indicator 17.12.1: Average tariffs faced by developing countries, LDCs and SIDS (Tier I)

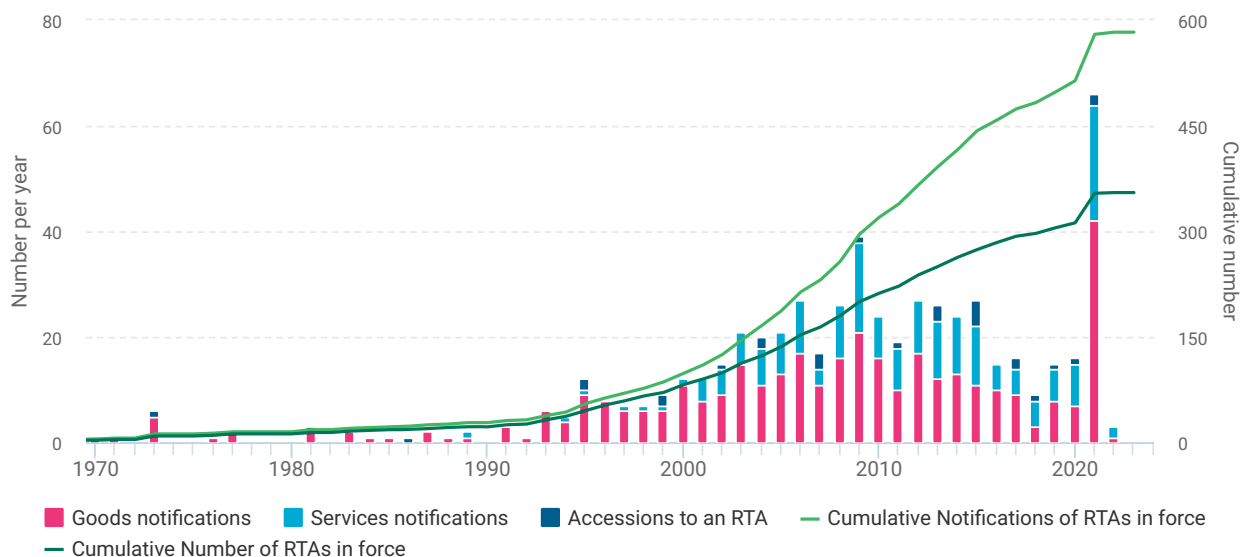
The world is witnessing a surge in regionalization, causing fragmentation in the global economy and trade systems. Noteworthy recent achievements, however, include the African Continental Free Trade Area, the Pacific Agreement on Closer Economic Relations Plus and the Regional Comprehensive Economic Partnership Agreement. Nevertheless, trade tensions have been on the rise hampering global progress in sustainable development. International trade regulations and dispute settlement mechanisms face pressure. In light of these global risks, it is essential to take action and rely on multilateral rulemaking to allow developing countries to integrate into the global economy and thereby "allow cross-border trade to transform economies, unlock growth and reduce poverty" (UNCTAD, 2021a).

2021 saw a peak in regional trade agreements

RTAs make it easier for countries to engage in trade, encourage investment and limit trading costs. Since the inception of the GATT/ WTO system in 1947, most economies across the world have negotiated bilateral or multilateral trade agreements with the objective of reducing barriers to trade and promoting exchange of goods and services among members. Nowadays, practically all countries participate in at least one RTA. As of 15 March 2023, 355 RTAs were in force for both goods and services, as compared to 136 in 2005 (WTO, 2023a) (Figure 1). The increase in RTAs was particularly remarkable in 2021, largely due to 3 enhanced and 33 continuity agreements signed by the United Kingdom since leaving the EU.



Figure 1. A historic number of new RTAs entered into force in 2021



Source: WTO (2023a).

Note: Goods, services and accessions to an RTA are counted separately. The cumulative lines show the number of RTAs currently in force (by the year of entry into force).

Environmental considerations entered trade negotiations

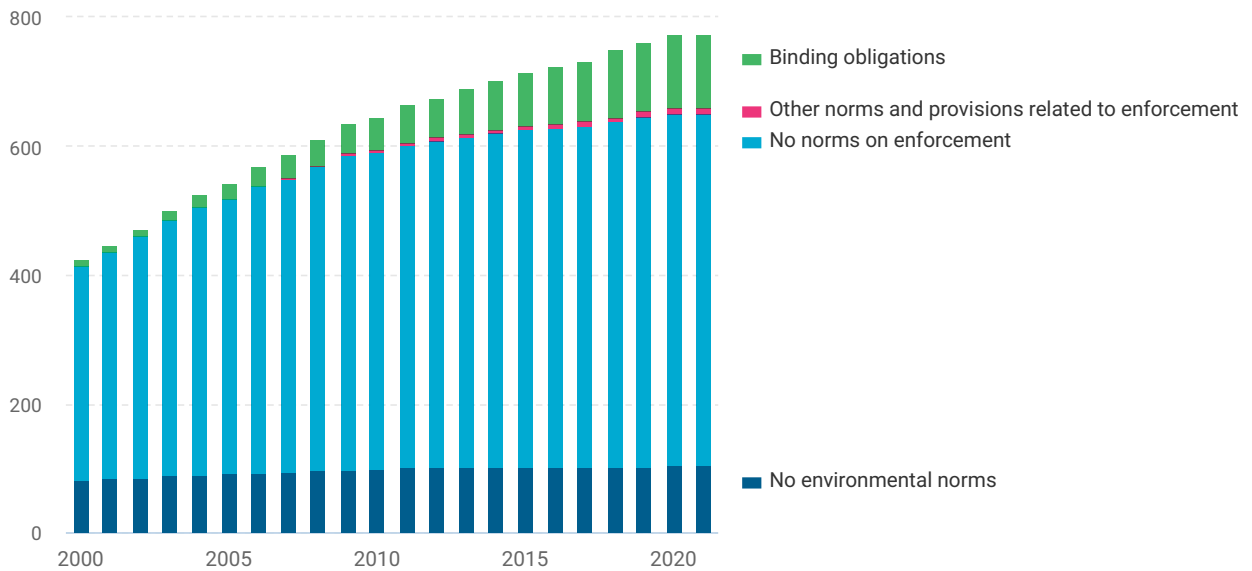
Since 2000, countries have started to increasingly incorporate provisions on environmental sustainability in RTAs. The share of RTAs including binding environmental obligations grew from 2 per cent in 2000 to 15 per cent in 2021 (Figure 2). These obligations are central to strengthening environmental laws and fostering environmental sustainability, as RTAs are also likely to expand economic output and trade with potentially increasing CO₂ emissions. (Tian et al., 2022).

The share of RTAs containing green norms

increased from 2% in 2000 to 15% in 2021



Figure 2. Binding provisions on environmental goods and services are increasingly included in RTAs
(Cumulative number of RTAs)



Source: UNCTAD (2023a).

Note: Norms are identified in the TREND database (TRade & ENvironment Database) (German Institute of Development and Sustainability, 2023) and include laws and regulations, as well as provisions, rules with varying degrees of enforceability, and statements that are merely aspirational. These are coded independently from the treaty structure.

In 2021, average tariffs on green goods declined

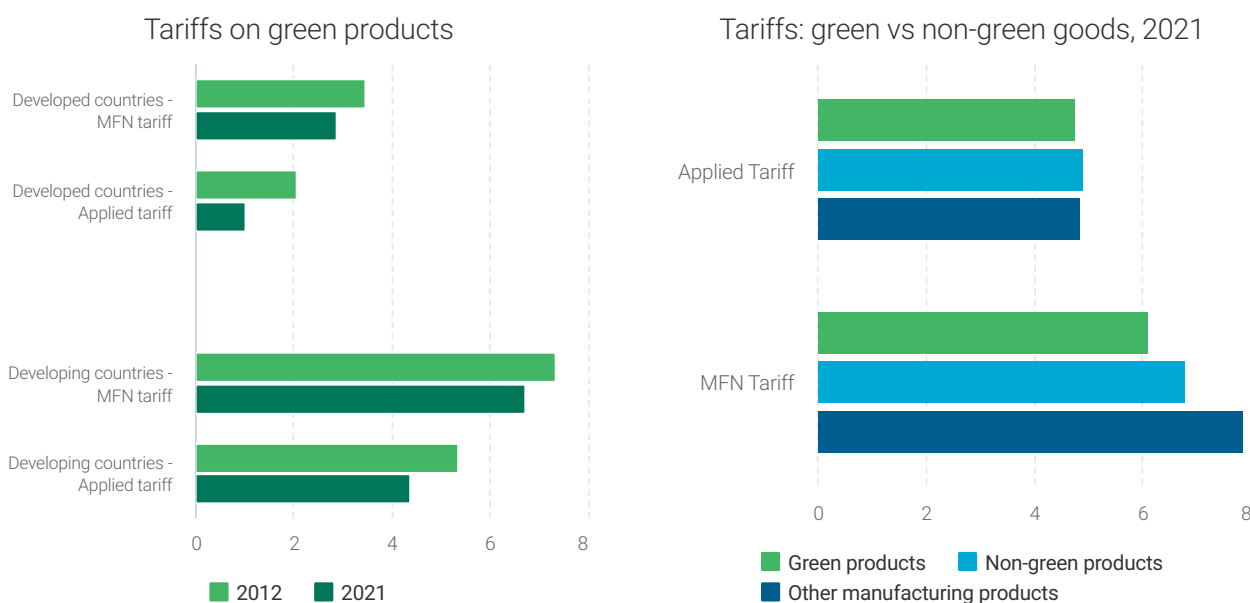
to 1% in developed countries



to 4% in developing countries

Tariffs on green goods¹ are nearly as high as tariffs on non-green goods. In 2021, the average applied tariff imposed on international trade of green products amounted to 1 per cent in developed countries and 4.4 per cent in developing countries (UNCTAD, 2023a) (Figure 3). This represents a decrease of about 1 percentage point from 2012 for the two groups, largely explained by the overall trade liberalization, rather than specific initiatives to promote trade of green goods. MFN tariffs are notably higher than applied tariffs. The average MFN tariffs are about 3 per cent for developed countries and 7 per cent for developing countries. MFN tariffs on green products are lower than on their non-green counterparts and other manufacturers, as the latter are generally already subject to relatively high tariffs.

Figure 3. Tariffs on green products are lower than those on other products, but remain high
(Simple-average, percentage)



Source: UNCTAD (2023a).

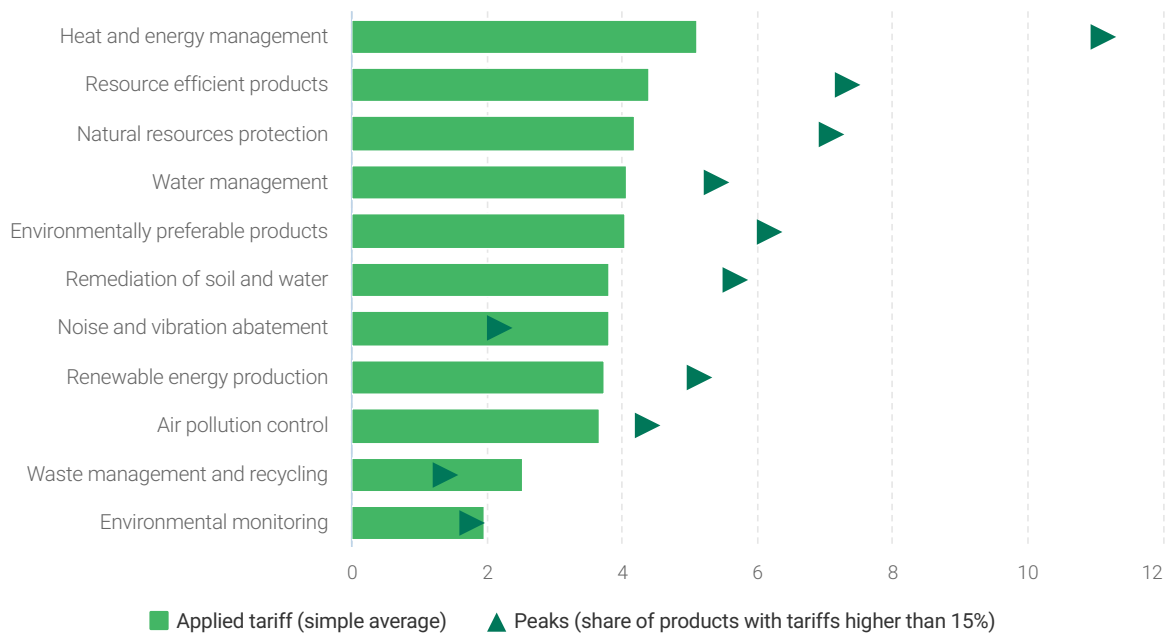
Note: Green products are products listed in the Combined List of Environmental Goods (CLEG) created by the Organization for Economic Co-operation and Development (OECD) with the purpose of promoting international trade of green goods. The CLEG identifies 248 environmental goods, classified according to the Harmonized System (HS) at the 6-digit level.

Tariffs on green goods are higher for products related to the heat and energy management sector, resource-efficient products, and goods related to the protection of natural resources, which also experience numerous tariff peaks. Conversely, tariffs tend to be lower for environmental monitoring equipment, waste management and recycling. Only about 2 per cent of the tariffs in these sectors are above 15 per cent. (UNCTAD, 2023a).

Tariff peaks
in heat and energy management, resource efficient products and natural resources protection



Figure 4. Tariffs on green products vary across sectors
 (2021, simple-average, percentage)



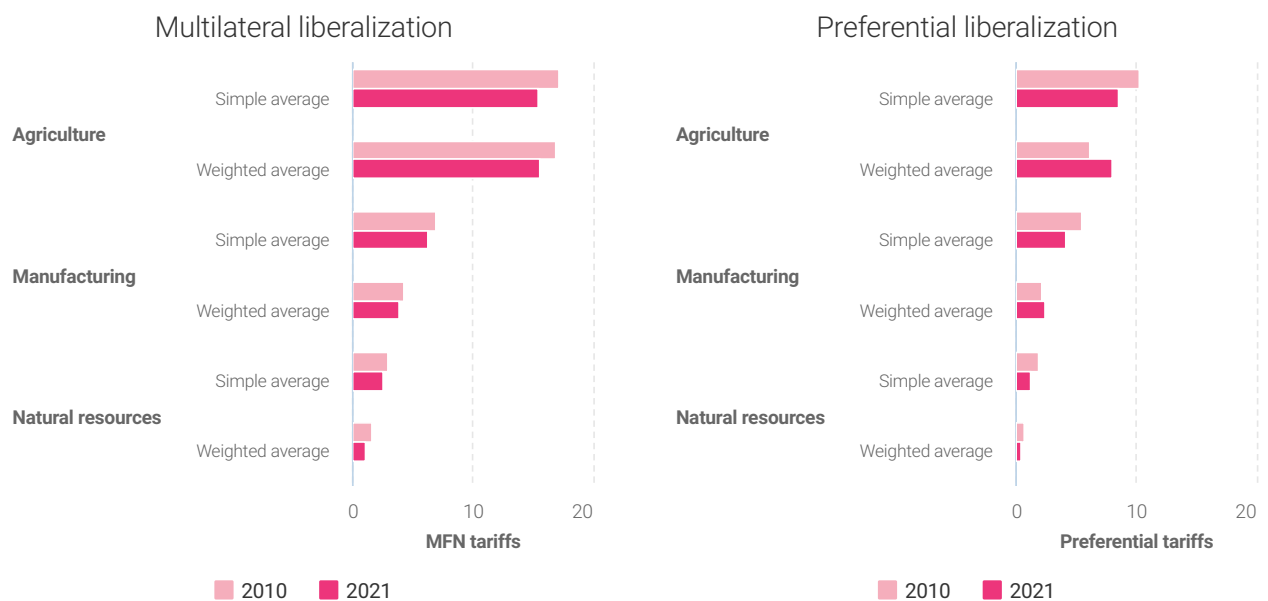
Source: UNCTAD (2023a).

Tariffs trending downwards with zero MFN tariffs and preferential duty-free access

Since 2010, reductions of MFN and preferential tariffs occurred in agriculture, manufacturing, and natural resources. Simple-average preferential tariffs declined at a faster pace than MFN tariffs. In 2021, simple-average MFN tariffs in these sectors amounted to 15.5 per cent, 6.3 per cent, and 2.5 per cent, respectively (Figure 5). Trade-weighted averages tariffs have in some instances increased, which was largely due to retaliatory tariffs imposed by the United States of America and China on each other (UNCTAD, 2023a).

 **Figure 5. Since 2010, tariffs on the preferential basis have declined faster than MFN tariffs**

(Percentage)



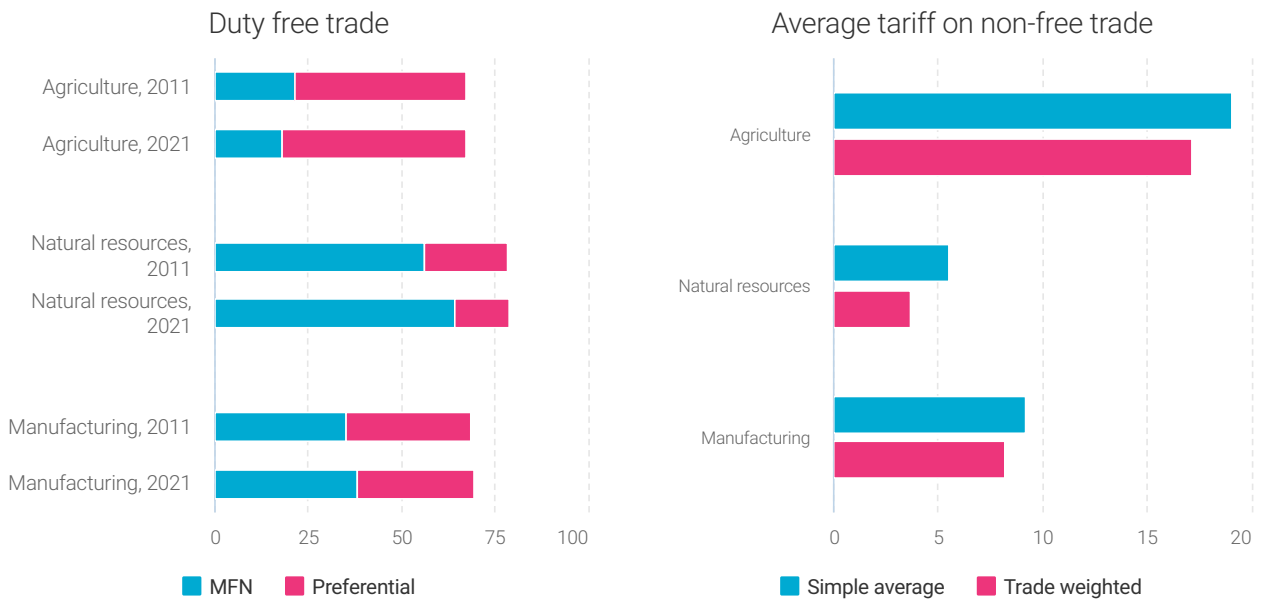
Source: UNCTAD, ITC and WTO calculations based on (UNCTAD, 2023b), (ITC, 2023) and (WTO, 2023b).

Preferential access is important for agricultural trade, but remaining tariffs are about 20%



About two thirds of international trade is free of tariffs. Agricultural trade is largely free from tariffs due to preferential access and reciprocal concessions, while the remaining tariffs are high (about 20 per cent) (Figure 6). Preferential access is also important for trade in manufacturing products, where the average tariff on non-free trade was almost 10 per cent in 2021. For natural resources, preferential access is less important, as trade in these goods is largely tariff-free under MFN rates, and the remaining tariffs are generally very low (about 5.8 per cent).

Figure 6. Two thirds of international trade is free of tariffs, but the remaining tariffs are still high
(Percentage, 2021)

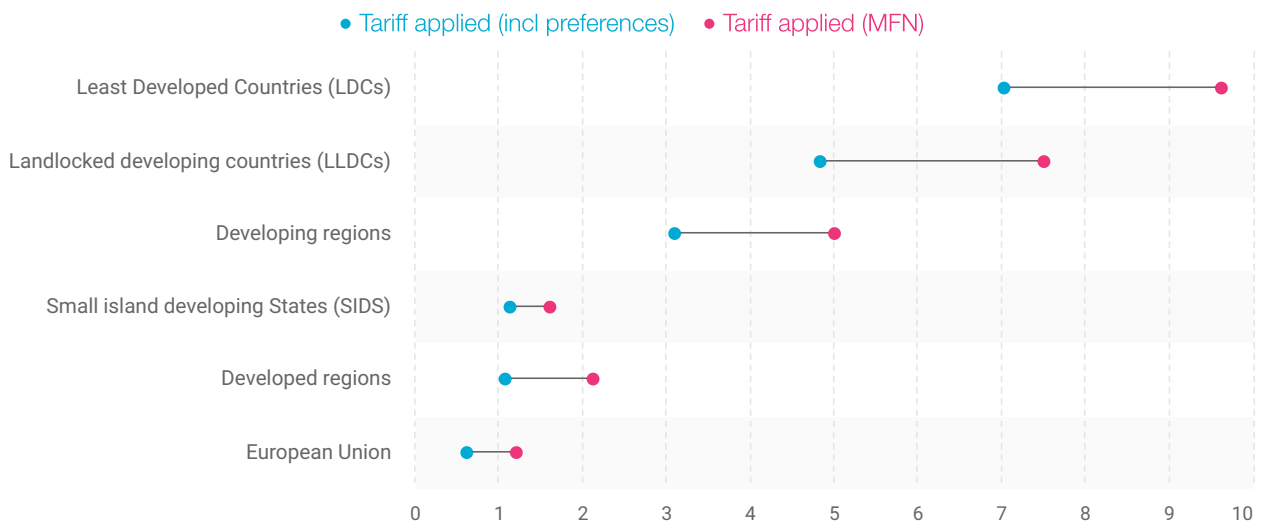


Source: UNCTAD, ITC and WTO calculations based on (UNCTAD, 2023b), (ITC, 2023) and (WTO, 2023b).

Globally, overall tariffs rates have remained unchanged in recent years. The average tariffs applied worldwide is used as an indicator of success in promoting a universal, open and non-discriminatory trading system under SDG target 17.10. Decreasing tariffs applied provide wider access to goods and a more open trading system. In developing regions, in 2021, the recorded levels ranged from 5 per cent for countries benefiting from MFN status to 3 per cent for those with preferential status. The lowest levels of tariffs were observed in the European Union for both measures, with the worldwide weighted tariffs averaging 0.6 per cent for countries with preferential status and 1.2 per cent for countries with MFN status.

**Two thirds
of international trade is
free of tariffs**

 **Figure 7. Worldwide weighted average tariffs are highest in LDCs and lowest in the European Union**
(2021, Percentage, all products, SDG 17.10.1)



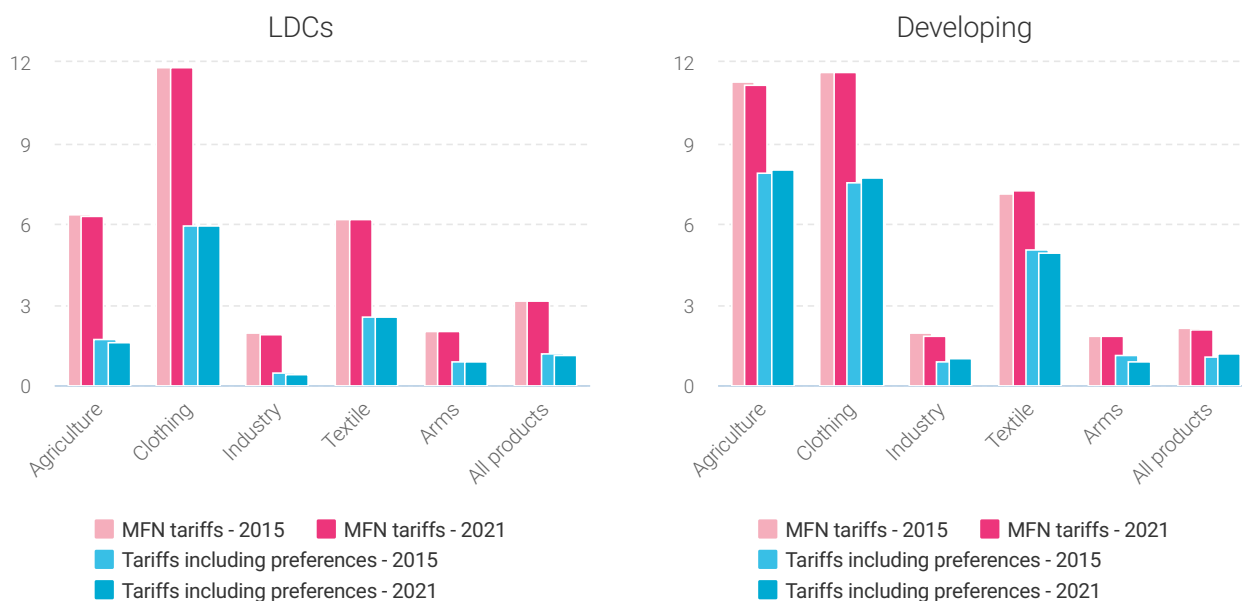
Source: UNCTAD, ITC and WTO calculations based on (UNCTAD, 2023b), (ITC, 2023) and (WTO, 2023b).

Progress towards improved market access for developing countries and LDCs is slow

Target 17.12 of the 2030 Agenda aims at realizing duty-free and quota-free market access for all least developed countries, including by ensuring transparent and simple preferential rules of origin to imports from LDCs and contributes to facilitating market access. In 2021, import tariffs (including preferences) and MFN tariffs applied by developed countries to all products from LDCs remained stable since 2015 and amounted to 1.1 per cent and 3.1 per cent, respectively. Tariffs varied across product groups, ranging from 5.9 per cent for clothing to 0.4 per cent for industrial products for countries that benefit from preferential status. For developing countries, tariffs including preferences stood at 1 per cent for all products, 0.1 percentage point lower than in 2015, ranging from 7.9 per cent for agriculture to 0.9 for industrial products. MFN tariffs were lower for developing countries (2 per cent) than for LDCs (3.1 per cent), which is 0.1 percentage point below the 2015 level.

Tariffs applied by developed countries on imports from LDCs and developing countries remained stable since 2015

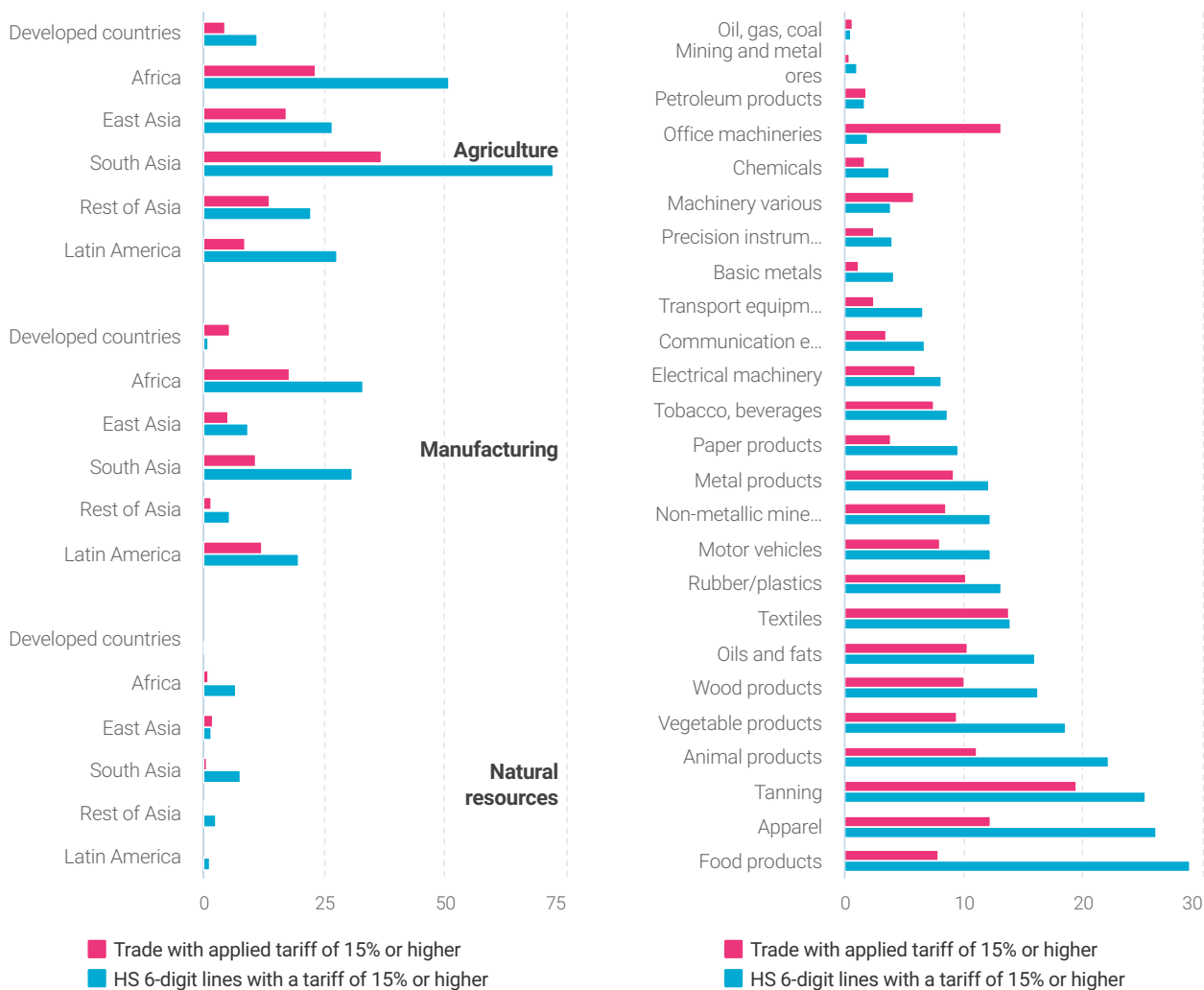
Figure 8. Trade-weighted average tariff faced by developing countries and LDCs are relatively low, but duties are still high in clothing and agriculture
(Percentage, SDG 17.12)



Source: UNCTAD, ITC and WTO calculations based on (UNCTAD, 2023b), (ITC, 2023), and (WTO, 2023b).

Although tariffs are generally low, there are many products subject to high tariffs. Tariffs are particularly high for agricultural products, as well as apparel, textiles, and tanning. For example, tariffs above 15 per cent are imposed on about 8 per cent of global trade in food (which make 29 per cent of the products in this group). Similarly, more than 12 per cent of international trade in apparel and 19 per cent in tanning are subject to tariffs of 15 per cent or more. Tariff peaks for food products are particularly prevalent in developing countries of South Asia and Africa, imposing significant tariffs on their imports.

Figure 9. Tariff peaks tend to be concentrated in products exported by developing countries
(Percentage)



Source: UNCTAD, ITC and WTO calculations based on (UNCTAD, 2023b), (ITC, 2023) and (WTO, 2023b).

In 2021, developing countries were granted duty-free market access on about 73% of tariff lines

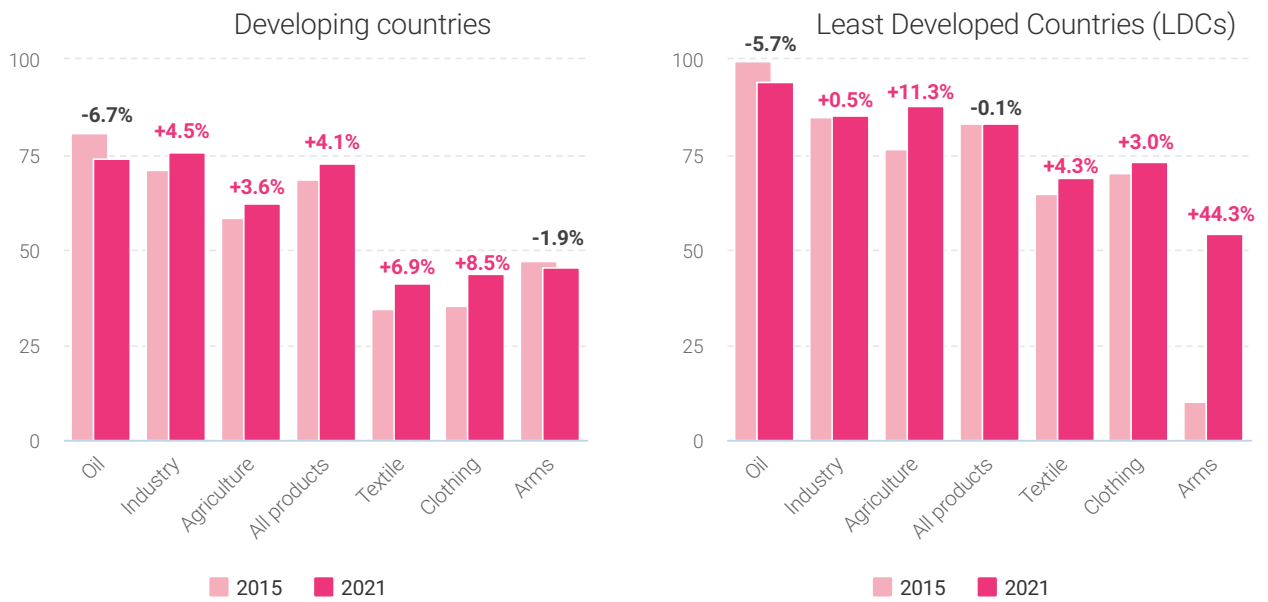


In 2021, LDCs were granted duty-free market access on 83.2 per cent of tariff lines², the share which remained constant since 2015 (arms excluded). In contrary, the share of developing countries exports entering duty free has increased by 4 percentage points and amounted to 72.6 per cent of tariff lines³ The highest proportions of duty-free exports from LDCs, excluding oil, were found in trade in agricultural products (87.6 per cent) and industrial products (85.2 per cent). As for developing countries, 62 per cent of their exports of agricultural products and 75.7 per cent of industrial

products entered the world markets duty-free.

Figure 10. LDCs and developing countries have duty-free access into developed countries' market on most of their traded products

(Percentage, SDG 10.a.1)



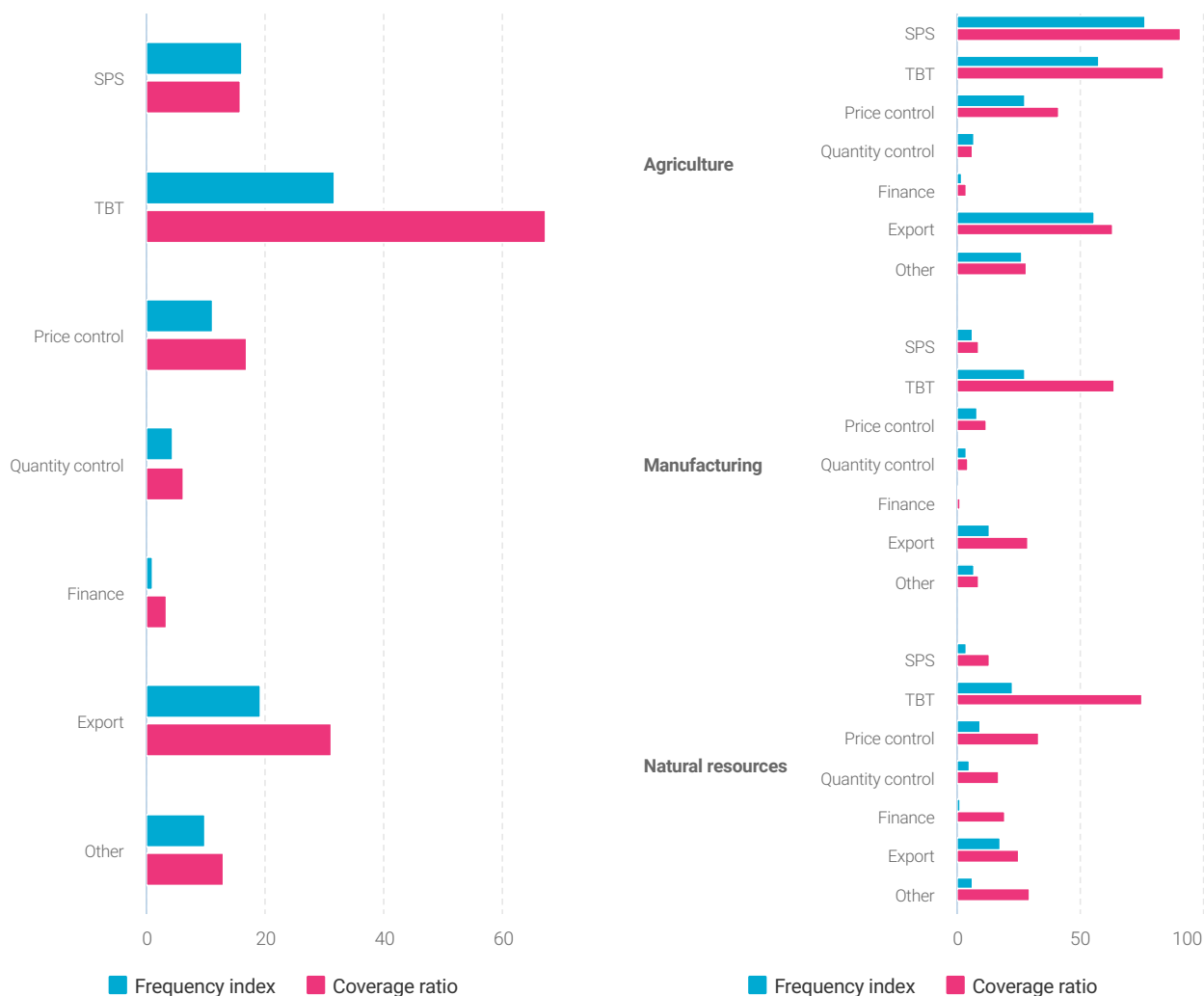
Source: UNCTAD, ITC and WTO calculations based on (UNCTAD, 2023b), (ITC, 2023), and (WTO, 2023b).

The increase of non-tariff measures is a growing concern for developing countries

NTMs often impede trade more than border duties. Their effects on international trade can be both negative or positive. Technical NTMs, such as TBT affect more than 30 per cent of product lines and almost 70 per cent of world trade. The agricultural sector, where most of world agricultural trade is subject to SPS and TBT, is more regulated than manufacturing and natural resources.



Figure 11. International trade is highly regulated through technical barriers to trade, agriculture most affected
(2021, Percentage)



Source: UNCTAD, ITC and WTO calculations based on (UNCTAD, 2023b), (ITC, 2023) and (WTO, 2023b).

Note: The frequency index is defined as the percentage of HS 6-digit lines covered. Coverage ratio is defined as the percentage of trade affected.

Notes

1. Green goods refer to the OECD Combined List of Environmental Goods (CLEG). The CLEG identifies 248 environmental goods, classified according to the Harmonized System (HS) at the 6-digit level, as used in Sauvage (2014), which provides the Harmonized System 6-digit level codes of 248 products. There is no consensus on which traded goods should be deemed “green”. This list represents a practical approach to overcome the challenges to defining an internationally agreed list of environmental goods.
2. Limitations of this indicator include the following: tariff-based measures are only a part of trade limitation factors; inability to comply with rules of origin criteria limits the utilization of preferential treatments; using data on zero-tariff lines assumes full utilization of benefits; low MFN tariffs mean that duty-free treatment is not always preferential (United Nations, 2019).
3. Proportion of total number of tariff lines applied to products imported from LDCs and developing countries is presented in per cent, corresponding to a 0 per cent tariff rate in HS chapter 01-97. This indicator allows observing how many products from developing countries and LDCs have free access to markets in developed countries.

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Trade – a key ingredient to food security

SDG indicators

Goal 2: Zero hunger

Target 2.1: By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round

Indicator 2.1.1: Prevalence of undernourishment

Indicator 2.1.2: Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)

Target 2.b: Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

Indicator 2.b.1: Agricultural export subsidies

Target 2.c: Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility

Indicator 2.c.1: Indicator of (food) price anomalies

Goal 2 of the 2030 Agenda is to “End hunger, achieve food security and improved nutrition and promote sustainable agriculture” and the targets set out to do this by 2030. As with other SDGs, realizing this goal will require a multifaceted approach. Ensuring that markets around the world have access to nutritious food requires international trade and cross-border cooperation. With climate change threatening predictability of harvests and the sustainability of many regional crops, the importance of trade in food commodities is likely to increase. The Bridgetown covenant calls UNCTAD to pay special attention to the challenges of the commodity dependent developing countries, as well as net food-importing developing countries (UNCTAD, 2021).

Two means of implementation targets for SDG 2 refer to the proper functioning of food markets. Target 2.c is to limit or reduce price volatility through better access to market information. Target 2.b is to avoid market distortions by eliminating export subsidies and equivalent measures, as defined in the Doha Development Round (WTO, 2022). A well-functioning global market for food plays a role in alleviating hunger, complementing other efforts, such as increasing ODA and OOFs to the agricultural sector (see [Development financing](#)).

The goal to end hunger is falling further behind schedule

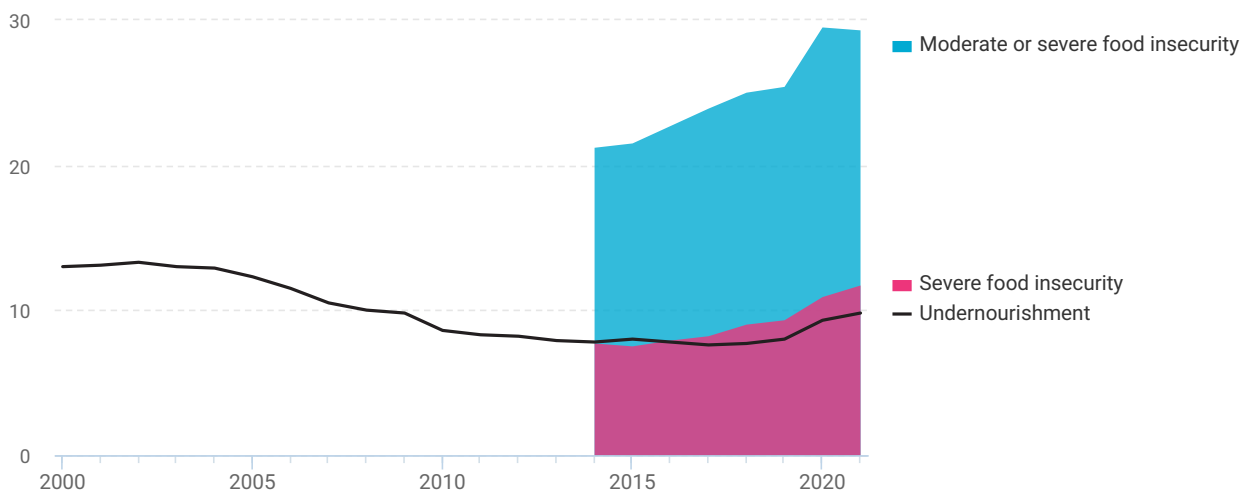
FAO (2022a) estimates that 768 million people, or one in ten of the world's population, was undernourished in 2021. Survey data show that 11.7 per cent of the world's population experienced severe food insecurity in 2021 and an additional 17.6 per cent experienced moderate food insecurity (Figure 1). Food crises are playing out in 58 countries where a total 258 million people find themselves in situations with increased mortality and morbidity, and in urgent need of assistance. Indicators of hunger have been rising over the last five years. This rise, coupled with decreasing aid, has left the effort to alleviate acute hunger severely underfunded. The funding available per person in a food crisis shrunk by 30 per cent from 2017 to 2021 (FSIN and Global Network Against Food Crises, 2023).

The funding available per person in a food crises shrunk by 30% from 2017 to 2021



Figure 1. Indicators of hunger are moving in the wrong direction

(Percentage, SDG 2.1.1 on undernourishment and SDG 2.1.2 on food insecurity)



Source: FAO (2023a)

Note: Estimates of undernourishment are derived from the average dietary intake per person and its variation in a country. Experienced food security is based on t based on the Food Insecurity Experience Scale (United Nations, 2023a).

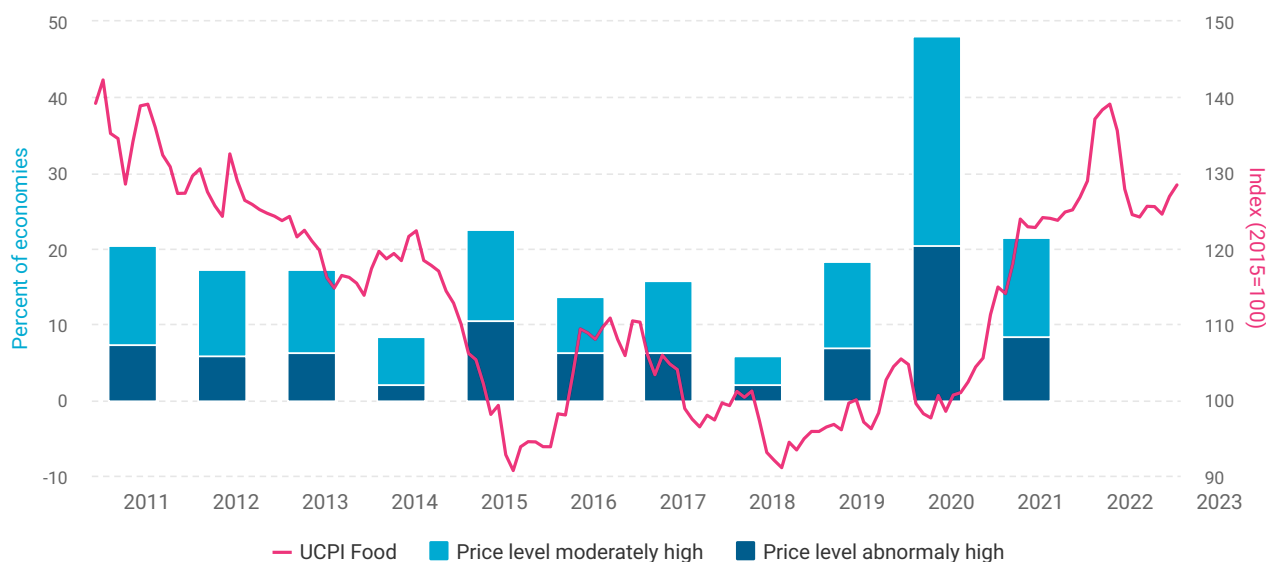
Conflicts and weather extremes drive many food crises and the increase of both contribute to increases in indicators of hunger. But people also face hunger when they simply cannot afford food in appropriate quantities and quality. Economic shocks and high food prices are increasingly putting adequate nutrition out of reach for people with limited means (FAO, 2022a).

Some economies are more resilient to food price shocks than others

Stable increases in prices give consumers and producers a theoretical chance to budget and plan, whereas volatile prices are more disruptive to the livelihoods of people on both sides of the market. Sharp rises in food prices between 2007 and 2008 and again in 2011 highlighted the need to develop methods to track price volatility as advance warnings of food crises (Baquedano, 2015). Prices carry broad information about recent changes in supply and demand as well as signals about expectations and risks with regards to future food supply. They can be observed easily and frequently (Kalkuhl et al., 2016). Abnormalities in food prices are, in themselves, strong indicators of potential threats to food security and provide valuable warning signs, signaling the

need for action. Food prices are therefore carefully monitored by the GIEWS (FAO, 2023b) and the AMIS (AMIS, 2023) which have been established as early warning systems to prevent outbreaks of food crises.

Figure 2. Many countries are still adjusting to higher food prices
(SDG 2.c.1 on food price anomalies and UNCTAD Commodity Price Index for food)



Source: SDG Global Database (United Nations, 2023b) and UNCTADstat (UNCTAD, 2023a)

Notes: The SDG indicator of food price anomalies (SDG 2.c.1) relies on identifying food prices with growth rates that differ from the historical average (United Nations, 2023a; Baquedano, 2015). The UNCTAD Commodity Price Index (UCPI) tracks the average development of prices, in United States dollars, of main primary commodities exported by developing economies. The sub-index of food excludes tropical beverages, vegetable oilseeds and oils. For more information, see UNCTAD (2018).

One in five economies experienced abnormally high food prices in 2020. This rate dropped to one in ten in 2021, but is likely to have risen again in 2022, as global food prices moved further upward (Figure 2). Changes in global food prices can produce food price shocks in an economy, but local challenges to supply also play an important role. The COVID-19 pandemic and the war in Ukraine pushed food prices to historically high levels, disproportionately affecting countries and households already struggling (United Nations, 2022d). The recent rise in food prices has been coupled with a strengthening US dollar. This constitutes a *double burden* for net food-importing countries. International trade in open and transparent markets may alleviate the effects of shocks and, among the policy actions that the situation requires, UNCTAD (2022) recommends maintaining international markets open and accelerating transport and trade facilitation initiatives.

In a world with a calory surplus, most economies are net-importers of food

Globally, in pure calorie terms, there is enough food to feed the world. The average person living on the planet needs a minimum of 1830 kcal per day to avoid undernourishment and about 2360 kcal per day for optimal health. The food available per person in 2020 amounted to 2980 kcal per day, up from 2860 kcal in 2010 (FAO, 2023a).

The various factors affecting food production are unevenly distributed across time and space, which means there are benefits of a diversified global market for food. Trade between regions and across country borders may help adjust to changing conditions affecting food production as result of climate change (FAO, 2022c). A well-functioning global value chain across agro-food sectors opens up opportunities for producers in developing economies to contribute to economic development in their local community (FAO, 2020). The International Covenant on Economic, Social and Cultural Rights (United Nations, 1966) recognizes

freedom from hunger as a fundamental right and states that the parties to the Covenant shall take measures to ensure that right, including by equitably distributing the world's food supply.

“
The States Parties will take appropriate steps to ensure the realization of [the right to adequate food... taking] into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need.
 — International Covenant on Economic, Social and Cultural Rights, article 11
 ”

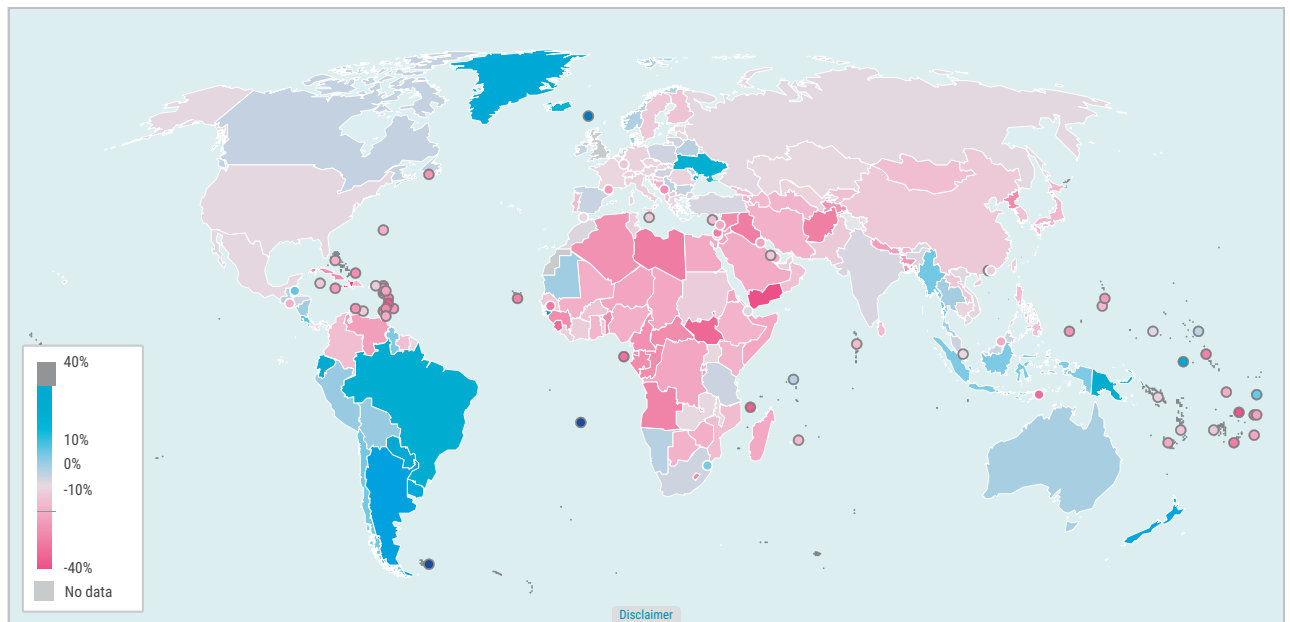
The importance of food to individual economies' import baskets varies considerably across countries. In 2017 to 2021, basic food¹ made up from as little as a couple of per cent of the total imports of an economy up to 44 per cent for Haiti. Basic food in merchandise imports exceeded 30 per cent also in Benin, American Samoa, Eritrea, Yemen and Somalia. The median was 12 per cent (UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a)).

The median country imports 12% of its merchandise as basic food

Seven in ten economies import more food than they export. Subtracting exports from imports, the median net imports of basic food were 5 per cent of total merchandise imports in the period 2017–2021. South America is home to several net food-exporting countries, while many net importing countries are found in the Middle East and Africa, many of them LDCs (Map 1). Several SIDS also had a relatively big negative trade balance in food. The median net import of basic food among both SIDS and LDCs were 11 per cent of total imports.

 **Map 1. Both big net food exporters and importers are found in the global south**

(Trade balance in basic food as a ratio to total imports, 2017-2021, percentage)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a)

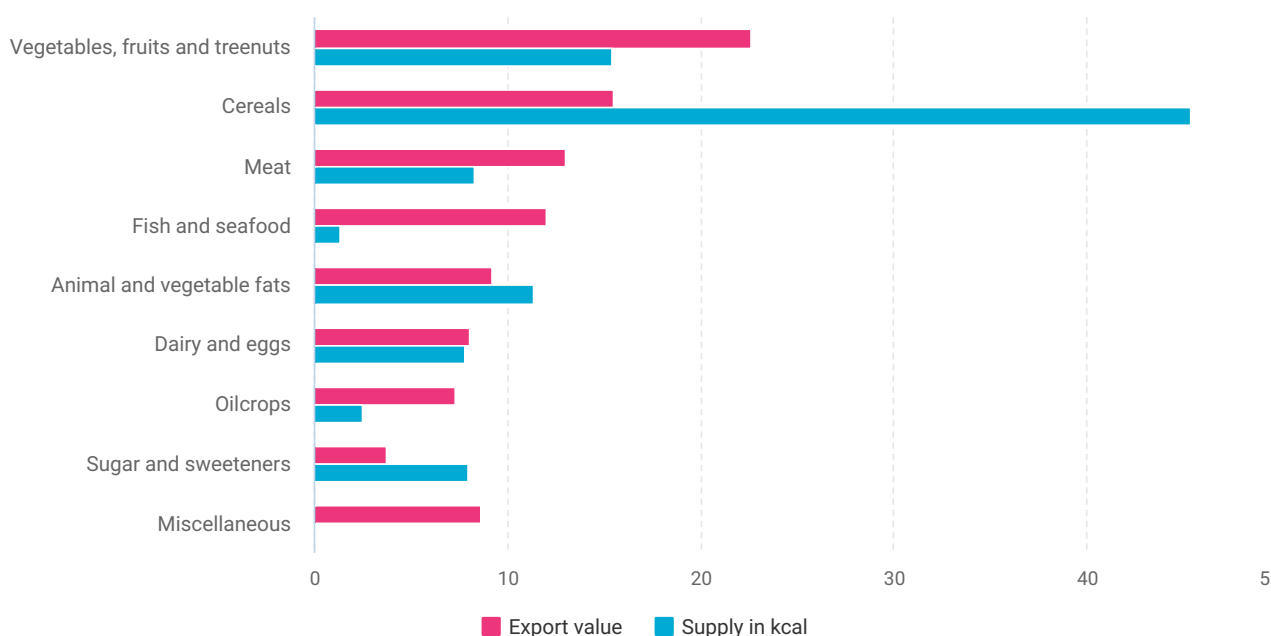
Notes: The trade balance in basic food is calculated as exports minus imports of basic food excluding tea, coffee, cocoa and spices (SITC 0 + 22 + 4 less 07) during the years 2017 – 2021. The percentage displayed is reached by dividing this trade balance with total imports of all goods for the economy in the same period.

The importance of keeping breadbaskets open

Trade helps countries, especially LDCs, to both increase the total amount of calories supplied but also diversify the food available for consumption (ITC, 2023). The war in Ukraine has put international trade in cereals in the spotlight, as Ukraine and Russia are major exporters of grains (UNCTAD, 2023b; United Nations, 2022b). Cereals and cereal preparations are an important part of the global trade in food – they make up 15 per cent of exported food in value terms. However, as affordable staple foods, they account for 45 per cent of the calories available to the world’s population. Other, more expensive food groups, especially fish and seafood, play a bigger role in the value of international trade than they do in calories supplied (Figure 3).

Figure 3. Cereals are a big part of what we trade – it is even bigger part of what we eat

(Share of US\$ value of traded food (2019 - 2021 average) and calories supplied (2020), by food group, world total, percentage)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a) and FAOSTAT (FAO, 2023a)

Note: Food groups include preparations of the main commodity except those preparations that fall in the category Miscellaneous. Food products are grouped according to SITC Revision 3 for export value and according to CPC Version 2.1 for supply in calories. Trade in meat excludes live animals sold for raising and slaughter which fall in SITC 00. Total trade value and supply of calories both exclude alcoholic beverages as well as coffee, tea, cocoa and spices. Alcoholic beverages constitute 2%, and stimulants and spices 1% of the total calorie supply including those groups.

Globally, 45% of the food supply is met by cereals



The type of cereal typically consumed in a country varies as well as the share cereals have in dietary energy supply. In the Central African Republic 15 per cent of dietary energy supply is covered by cereals, whereas they cover 72 per cent in Bangladesh. Globally, 18 per cent of the volume of cereals supplied are imports. However, many countries are especially vulnerable to market disruptions due to the importance of cereals in the diet combined with a heavy reliance on imports for the supply of cereals. In

Yemen, Lesotho, Djibouti and Eswatini more than 50 per cent of the calories supplied came from cereals and more than 90 per cent of these cereals were imported in 2020 (UNCTAD calculations based on FAO (FAO, 2023a)).

Because of the importance of the Russian Federation and Ukraine for the production and trade of food and fertilizers, the *Black Sea Initiative* (United Nations, 2023c) that ensures that food can safely be transported out to the global food markets and the

MoU between the Russian Federation and UN on Trade Facilitation (United Nations, 2022e) are crucial. Developing economies and LDCs are those most dependent on further disruptions from the war being avoided (UNCTAD, 2023b). By end of May 2023, over 30 million tons of wheat, corn, and other foodstuffs had been exported under the Initiative (OCHA, 2023).

Agricultural export subsidies are vanishing; market distorting policies are not

Many governments support domestic food production, for example to ensure sufficient supply of food or to protect farmers from weather extremes and other events outside of their control. However, this support can have a market distorting effect, specifically when the price paid to the producers is higher than that of the market (WTO, 2023a). This can lead to overproduction in some regions while discouraging development of the agricultural sector in other regions of the world. Economies that do not, or cannot, provide this kind of support are at a disadvantage in international trade and risk becoming more food insecure as a result. Special attention has been given to export subsidies for agricultural products. These have been seen as having an especially distorting effect on international food markets (WTO, 2023b).

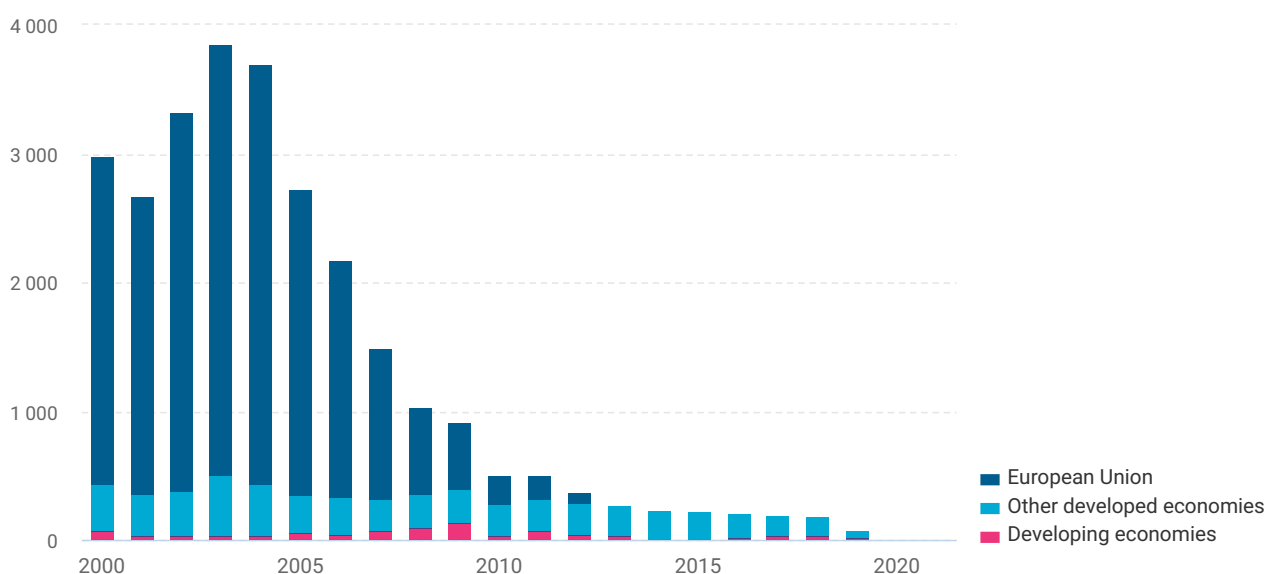
The WTO Agreement on Agriculture (WTO, 1994) set limits on export subsidies that distort agricultural trade, and at the Nairobi Ministerial Conference, WTO members agreed to phase out remaining export subsidy entitlements to level the playing field between developed and developing economies. Apart from a few selected agricultural products, developed countries agreed to remove export subsidies with immediate effect, and most developing countries agreed to do so by 2018. However, developing countries will retain the flexibility to cover marketing and transport costs for agriculture exports until the end of 2023, while the poorest and food-import dependent developing countries will be granted more time to reduce export subsidies (WTO, 2023c)

Notifications of agricultural export subsidies were between US\$3 and 4 trillion in the early years of the 2000s, with the majority provided by the EU. Subsidies declined rapidly from 2005 and reached almost zero in 2021. Mauritius was the only country reporting any amount for 2021 (Figure 4).



Figure 4. Agricultural export subsidies are becoming a thing of the past

(SDG 2.b.1, Notifications to WTO of agricultural export subsidy outlay in millions of US\$)



Source: United Nations (2023b)

Notes: Only export subsidies notified by members who have commitments to notify WTO are included. Other members are not entitled to export subsidies and are assumed not to have export subsidies. Values for members that have not made notifications cannot be estimated and are treated as zero (United Nations, 2023a).

Phasing out export subsidies was one part of the mandate for the Doha Development Round referred to in SDG target 2.b. This target also called for “substantial reductions in trade-distorting domestic support” (WTO, 2001) and continued negotiations about the amount and pace of these reductions (WTO, 2023e). WTO members are obliged to notify the WTO about all forms of domestic support for agriculture and to report price support measures and their amount (defined as the product of food production and the gap between producer and market price) (WTO, 2023d). However, the only SDG indicator that tracks the progress on target 2.b is the amount related to notifications of export subsidies (Figure 4). OECD estimates positive market price support as the total of explicit and implicit transfers through policy measures creating a price gap. From 2019 to 2021, positive market price support in the OECD and eleven emerging economies was estimated to amount to US\$317 billion per year. This value was equivalent to 8 per cent of gross farm receipts (OECD, 2022) and 85 times higher than notified export subsidies at any time during the 2000s.

8%
of farmers
gross receipts
are thanks to
market price support



Notes

1. Basic food refers here to a category of food products that excludes beverages and tobacco, tropical beverages (such as coffee and tea) and spices. When SITC codes are used, the included codes are 0 - *Food and live animals*, 22 - *Oil seeds and oleaginous fruits*, 4 - *Animal and vegetable oils, fats and waxes* with the exclusion of 07 - *Coffee, tea, cocoa, spices, and manufactures thereof*. In the HS classification a comparable set of products would be included in chapters 1-24 excluding 05 - *Products of animal origin, not elsewhere specified or included*, 06 - *Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage*, 09 - *Coffee, tea, mate and spices*, 13 - *Lac; gums, resins and other vegetable saps and extracts*, 14 - *Vegetable plaiting materials; vegetable products not elsewhere specified or included*, 22 - *Beverages, spirits and vinegar*, and 24 - *Tobacco and manufactured tobacco substitute*.

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THEME 2

Development finance

“Debt cannot and must not become an obstacle for achieving the 2030 agenda and the climate transition the world desperately needs.”

– Ms. Rebeca Grynspan, UNCTAD Secretary General
at the 13th International Debt Management Conference,
5 December 2022, Geneva.



Development finance

The world's ability to effectively mobilize and deploy necessary financial resources is crucial for a more sustainable and resilient recovery from the ongoing crises. Developing countries have long faced persistent challenges in mobilizing domestic resources, exacerbated by volatile capital flows, soaring debt levels, and the detrimental effects of illicit financial flows. More recently, the war in Ukraine, sharp increases in food and energy prices, and rapidly tightening financial conditions have increased hunger and poverty risking progress on the SDGs. The Bridgetown Covenant (UNCTAD, 2021) strongly emphasizes the essential contribution of ODA, private investment, as well as South-South and triangular cooperation, in addressing the challenges related to development finance. Developments in these areas are reviewed in the following sections based on SDG indicators and other official statistics:

1. [Official international assistance insufficient to reach 2030 Agenda](#)
2. [Volatile, but slowly more sustainability-focused investment flows](#)
3. [Escalating debt challenges are inhibiting achievement of the SDGs](#)
4. [First official estimates of illicit financial flows](#)

Debt cannot and must not become an obstacle for achieving the 2030 agenda and the climate transition the world desperately needs.

— Ms. Rebeca Grynspan, UNCTAD Secretary General at the 13th International Debt Management Conference, 5 December 2022, Geneva.

ODA at 0.36%
of developed country GNI
in 2022,
still far below
the target
of 0.70%



**Net private capital flows
to developing countries
are positive in 2022
for the first time
since 2016:
US\$37.7 billion**

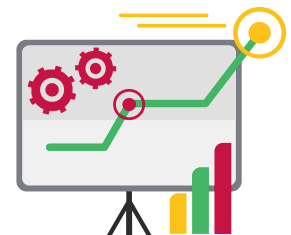


**Total external debt
of developing countries
grew by more than 15%**
in 2022 compared to
pre-pandemic 2019



**22 countries on 3 continents
tested IFFs measurement**

**9 new countries
joined in 2023**



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Official international assistance insufficient to reach 2030 Agenda

SDG indicators

Goal 8: Decent work and economic growth

Target 8.a: Increase Aid for Trade support for developing countries, in particular least developed countries.

Indicator 8.a.1 Aid for Trade commitments and disbursements.

Goal 17: Partnerships for the goals

Target 17.2: Developed countries to implement fully their official development assistance commitments.

Indicator 17.2.1 Net official development assistance, total and to least developed countries.

Target 17.2: Mobilize additional financial resources for developing countries from multiple sources.

Indicator 17.3.1 Additional financial resources mobilized for developing countries from multiple sources.

Financing development, from domestic and external public and private sources, is intricately linked to poverty eradication, an essential ingredient of inclusion and an overarching goal of the 2030 Agenda for Sustainable Development. Concerns have been voiced over “the great finance divide” (United Nations, 2023) in the context of the “two-speed recovery” from the COVID-19 pandemic.

Despite some increases in ODA, commitments are still out of reach. Considering the overall lack of financing for sustainable development, ODA should be significantly scaled up to support developing countries’ progress towards the 2030 Agenda. Moreover, the many crises, including the economic consequences of the COVID-19 pandemic, war, conflicts and related refugee costs, have derailed funds from the already limited official international assistance.

Despite new highs, ODA flows far from agreed targets

The Bridgetown Covenant (UNCTAD, 2021) reiterates the importance of ODA providers to “reaffirm their respective ODA commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of ODA/gross national income (GNI) and 0.15 to 0.20 per cent of ODA/GNI to the least developed countries, as outlined in the Addis Ababa Action Agenda”.

ODA and OOFs remain relatively small when compared to domestic public resources or private flows (Volatile, but slowly more sustainability-focused investment flows). However, they play an essential role since they frequently function as “seed funds” or catalysers of additional resource mobilization in sectors or projects where other funding options are limited, or where investors are reluctant to participate. Furthermore, for some countries in vulnerable situations, official funds are frequently the only source of financing available. Thus, their importance is often highlighted in

ODA reached record-high for fourth consecutive year



attaining US\$204 billion in 2022

the 2030 Agenda. They are referred to in 11 targets, including sector-specific official support to agriculture¹, health², water and sanitation³, clean energy⁴, biodiversity⁵ and others.

ODA at 0.36% of developed country GNI in 2022, still far below the target of 0.70%

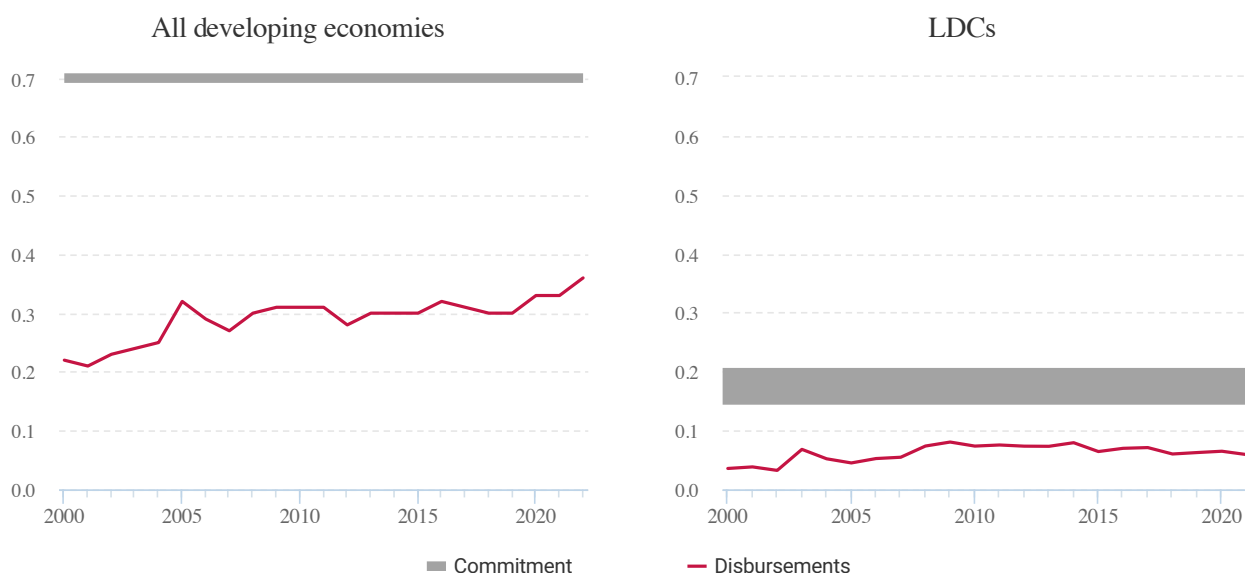


In 2022, total ODA reached a record high of US\$204 billion, amounting to a real-terms annual increase of 13.6 per cent (OECD, 2023a). Despite this being a fourth consecutive year for ODA to surpass its previous record levels, the share of ODA in GNI still lags significantly behind the committed 0.70 per cent by developed economies, as it only reached 0.36 per cent in 2022 (Figure 1). As such, it remains at a level insufficient to support recipient countries in their efforts to recover from the long-term challenges planted by the pandemic and other compounding crises.

In addition, the observed increase of ODA was primarily led by in-donor refugee costs which amounted to US\$29.3 billion in 2022 and represented 14.4 per cent of DAC member countries' total ODA. Excluding in-donor refugee costs, ODA rose by a modest 4.6 per cent compared to 2021. A jump in net ODA to Ukraine contributed to the increase; on the other hand, initial estimates indicate that ODA support related to the COVID-19 pandemic was down by 45 per cent in 2022 compared to the previous year (OECD, 2023a).

Whereas ODA to developing countries exhibits a modest increase, ODA flows to LDCs for 2021 saw a slight downward trend: developed economies devoted just below 0.06 per cent of their GNI to ODA to LDCs (Figure 1), below the over 0.08 per cent recorded in 2008 and falling short of their commitment to allocate from 0.15 to 0.20 per cent exclusively to LDCs.

Figure 1. While ODA flows to developing countries slightly increased, flows to LDCs have been slowly decreasing
(Percentage of GNI, SDG 17.2.1)



Source: UNCTAD calculations based on OECD (2023a).

In-donor refugee costs increased

After a significant increase of debt relief reported in ODA in 2020, it shrunk by nearly a third, to 0.5 per cent as a share of total ODA in 2021 (Figure 2). The observed pattern from previous crises repeats itself: the share of debt relief in ODA ramped up considerably in the aftermath of the 2008 financial crisis, reaching 6.2 per cent in 2011. This rise persisted until 2013, representing a significant shortfall in ODA to foster sustainable development from 2014 onwards. Recent years have seen much lower values of debt relief reported in ODA, the spike in 2020 reflects the response to challenges related to the COVID-19 pandemic.

In recent years, many donor countries rechannelled their ODA domestically to care for refugees fleeing conflicts⁶. In-donor refugee costs peaked at 14.1 per cent of total ODA in 2016 with the Syrian refugee crisis. In 2021, as a response to increased displacements and some countries' adaptive measures to closed borders due to the COVID-19 pandemic (UNHCR, 2022), the share of in-donor refugee costs increased by 2 percentage points, reaching 9.2 per cent (Figure 2).

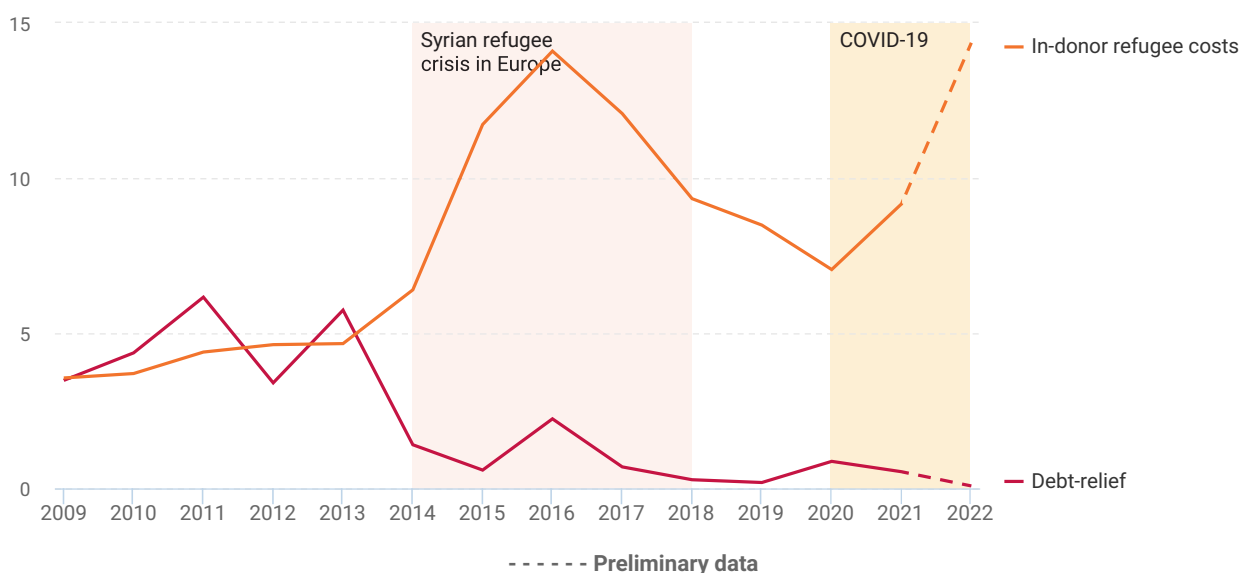
In a similar fashion, the war in Ukraine increased the share of in-donor country refugee costs in 2022, meaning not all ODA were received by developing economies. Preliminary data for 2022 show that in-donor refugee costs amounted to USD 29.3 billion in 2022, representing 14.4 per cent of total ODA. Further, net bilateral ODA to Ukraine preliminarily amounted to US\$16.1 billion in 2022, 7.8 per cent of global ODA, a more than 17-fold increase from US\$ 0.9 billion in the previous year (OECD, 2023a, 2023d).

In-donor refugee costs up again in 2021 at 9.2% of total ODA, preliminary data indicating a sharp rise in 2022



Figure 2. In-donor refugee costs on the rise again in 2021 and skyrocketing in 2022

(Percentage of total ODA)



Source: UNCTAD calculations based on data by the OECD (2023b)

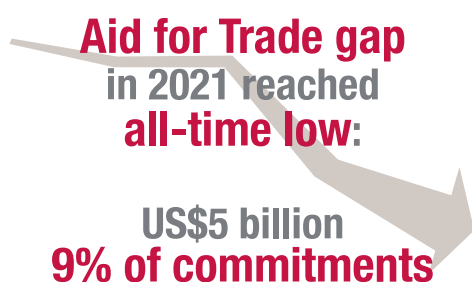
Note: 2022 data are preliminary based on advanced questionnaire by OECD. Coverage of debt relief and in-donor refugee costs is also preliminary.

At the time of the Syrian refugee crisis, former UN Secretary-General Ban Ki-moon warned that “reducing development assistance to finance the cost of refugee flows was counter-productive” and that “helping people in need should not be a zero-sum game” (United Nations, 2015). Similarly, the current UN Secretary-General Guterres has urged “all countries to reconsider

making cuts that will affect the world's most vulnerable" (United Nations, 2022). Finally, "DAC members still have the option to decide that such costs are additional to their planned development budgets. This is what for example Austria and Germany have done in their preliminary 2022 ODA reporting – meaning that these costs did not have a negative effect on already budgeted ODA programmes and contributions" (Staur, 2023). These considerations are not to be taken lightly to ensure no one is left behind in efforts to progress towards the 2030 Agenda.

Aid for trade disbursements remain resilient

The Aid for Trade initiative⁷ (WTO, 2005) helps developing countries, particularly LDCs, to build the capacity to benefit from WTO agreements and engage in international trade. The assistance is targeted at enhancing national trade policy and regulations, developing infrastructure, and building productive capacity. Many positive impacts from Aid for Trade have been identified, for instance by the OECD and WTO (2013) and OECD and WTO (2019), Razzaque and te Velde (2013), and Gnanon (2019). The 2022 global review of Aid for Trade also focused on Aid for Trade as a tool to attract more investment into advancing gender equality, digitalization and efforts to mitigate and adapt to climate change via Aid for Trade (WTO, 2022).



**Aid for Trade gap
in 2021 reached
all-time low:
US\$5 billion
9% of commitments**

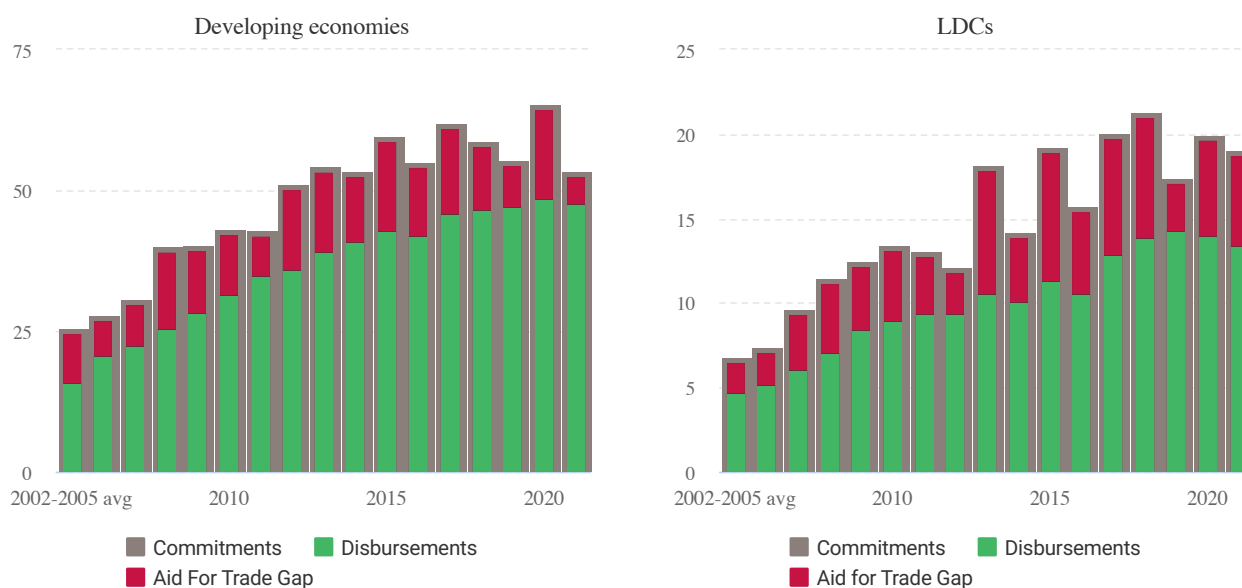
In 2021, Aid for Trade remained relatively stable with a slight decrease compared to 2020. For developing economies, Aid for Trade commitments after increasing more than 18 per cent in 2020 fell by more than 18 per cent in 2021. The commitments were valued at US\$52.2 billion in 2021 (Figure 3). Aid for Trade disbursements were worth US\$47.8 billion in 2021, and have plateaued since 2017, but they have more than doubled since the launch of the Aid for Trade initiative in 2006. Aid for Trade disbursements represent about one fifth of total ODA based on data from

the OECD (2023c). The Aid for Trade gap decreased to an all-time low of just below US\$5 billion (9 per cent short of commitments) in 2021, not because of more disbursements but due to a drop in committed amounts. The Aid for Trade disbursements to LDCs stood at US\$13.5 billion in 2021, 2.6 times higher than in 2006, but slightly below the 2019 peak of US\$14.3 billion. The Aid for Trade gap for LDCs remained at US\$5.3 billion in 2021, leaving disbursements 28 per cent short of commitments.



Figure 3. The Aid for Trade gap reduced due to lower commitments in 2021

(Billions of US\$ in constant 2021 prices, SDG 8.a.1)



Source: UNCTAD calculations based on data from OECD (2023c)

Notes: Aid for Trade gap is calculated as the difference between Aid for Trade commitments and disbursements.

New framework enables the quantification of South-South cooperation alongside other development support

The Bridgetown Covenant (UNCTAD, 2021) emphasized the importance to strengthen South–South and triangular cooperation as a means of bringing relevant experience and expertise to bear in development cooperation and to enhance its development effectiveness. They also underlined the need to continue holding open, inclusive and transparent discussions on the proposed measure of “total official support for sustainable development”.

From the start, the SDG indicator framework included indicator 17.3.1 on ODA, FDI and SSC, but data were never reported on all its elements. The lack of data was discussed as part of the 2020 review of the SDG indicator framework, and the countries of the South requested that a new methodology be discussed to measure these development support flows with universally agreed concepts and methods. Further work on data was also called by the outcome of the March 2019 High-Level Conference on South-South Cooperation (United Nations, 2019) which encouraged “*all actors to support initiatives for information and data collection, coordination, dissemination and evaluation of South-South cooperation, upon the request of developing countries*”.

As information on other elements of development support existed, countries considered it important that South-South cooperation be equally measured alongside other development support. South-South cooperation “is a vital force for initiating, designing, organizing and promoting cooperation among developing countries so that they can create, acquire, adapt, transfer and pool knowledge and experience for their mutual benefit and for achieving national and collective self-reliance, which are essential for their social and economic development”, as described already in 1978 in the Buenos Aires Action Plan (United Nations, 1978).

In March 2020, the UN Statistical Commission established a Working Group on Measurement of Development Support. It set up a dedicated sub-group to develop methods to measure SSC, in a process led by the global South and with representation from all regions. Countries invited UNCTAD to provide the secretariat to this effort. This work resulted in a voluntary Conceptual Framework for the measurement of SSC (United Nations, 2021b). It was welcomed by the UN Statistical Commission in March

2022, as member States endorsed the new SDG indicator 17.3.1 to measure “additional financial resources mobilized for developing countries from multiple sources” and requested UNCTAD and the OECD to act as co-custodians of the indicator.

The framework aims to quantify the value of SSC, while it does not measure the impacts of SSC. It takes into account the multidimensional and unique characteristics of SSC and the different modalities, thus enabling quantification of both financial and non-financial dimensions. The framework considers elements of solidarity between developing countries that constitute powerful instruments for promoting international and regional development, instead of focusing only on vertical relations driven by grants, technical cooperation, and concessional loans.

The voluntary framework proposes three sets of quantifiable items, that can be independently measured and reported to allow flexibility for country-led systems:

- Group A: Financial modalities of SSC (reported directly through monetization)
- Group B: Non-financial modalities of SSC (including items that may be monetized)
- Group C: Non-financial modalities of SSC (quantification by non-monetized methods)

★ UNCTAD in Action ★

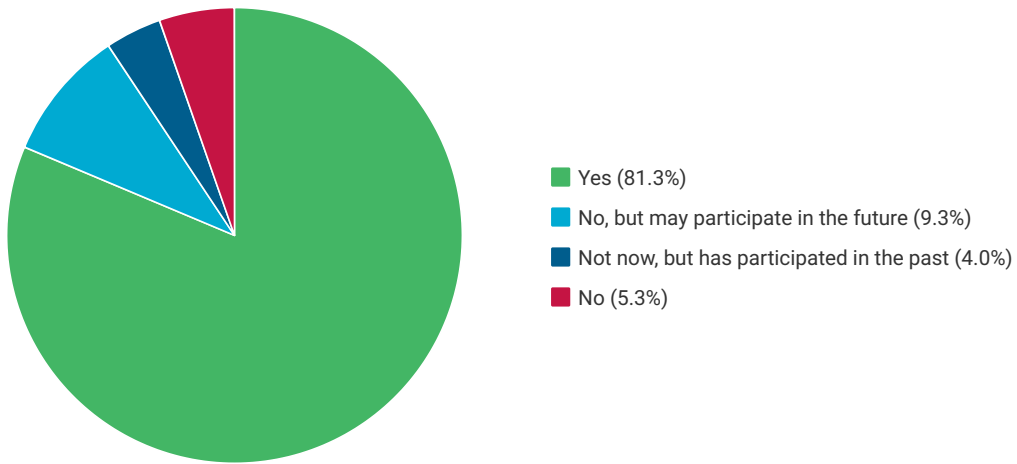
Towards global reporting of data on SDG indicator 17.3.1, including on South-South cooperation

The agreement on a voluntary Framework to Measure South-South Cooperation is in many ways historic. For the first time a tool exists that can be applied by all interested Southern countries to quantify mutual support flows among them. As a custodian agency, UNCTAD launched a global programme to enhance countries’ capacity to collect data and measure SSC and invites interested countries to test the Framework to identify any needs for technical refinement. As the United Nations member States welcomed the development of the Framework at the Statistical Commission (2022), they *“requested that further work on this, including on global reporting and capacity-building, be enabled by the co-custodianship of UNCTAD and be led by countries from the global South, building on country-led mechanisms”*.

To inform the global capacity development efforts with countries’ current data availability, mechanisms and support needs, UNCTAD conducted a survey of countries. The results show that 71 respondent countries out of 75 countries (95 per cent) participate in SSC, either now (61 countries or 81 per cent), participated previously (4 per cent) or may participate in the future (nearly 10 per cent) (Figure 4).

Figure 4. 95 per cent of respondent countries play a role in South-South Cooperation

(Number of responses, Percentage)



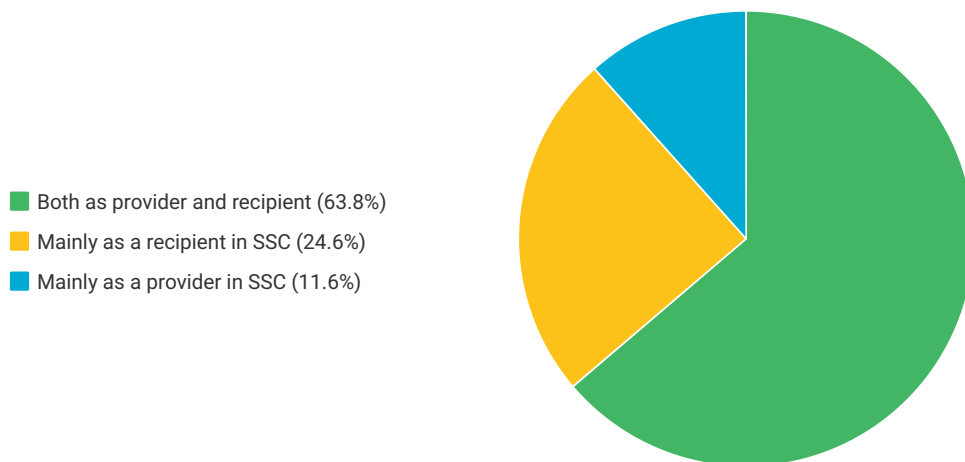
Source: UNCTAD.

Most of the countries involved in SSC, 64 per cent of respondents, reported that they engage as both providers and recipients of support in the context of SSC (Figure 5). A quarter reported their role as mainly being a recipient of SSC support, while 12 per cent mainly have a provider role.

UNCTAD survey finds that 95% of Southern countries engage in SSC, most as both providers and recipients

Figure 5. Most countries engage in SSC both as providers and recipients

(Number of responses, Percentage)



Source: UNCTAD.

The statistical capacity (85 per cent of the responses) and collaboration between agencies (75 per cent) were identified as the key areas for improvement to enable data collection on development support and SCC. Technical training (i.e., courses or workshops) and sharing of experience (i.e., study visits or meetings) were demanded across all regions. Several countries also asked for methodological materials and financial support to enable measurement of SSC.

In 2020-2023, UNCTAD has organized a series of events to inform countries of the Framework and prepare mechanisms towards informing SDG indicator 17.3.1 with data of the global South. This has involved briefings to member States, online workshops for statistical offices and for development experts, as well as sessions held at global events, like the Global South-South Development Expo in 2022 and the UN Statistical Commission in 2023. UNCTAD has also taken part in discussions at the High-Level Committee on South-South Cooperation, in coordination with the UN Office on South-South Cooperation and engaged with the UN interagency mechanism to enable joint efforts with interested UN entities.

In July 2023, UNCTAD is organizing an Expert Meeting on the statistical measurement of SSC, hosted by the IPEA, in association with the ABC, in Brazil. The meeting is part of the new UN Development Account project, led by UNCTAD and in collaboration with UN Regional Commissions and UN Statistics Division. It will set the ground for the upcoming activities by sharing experience among interested countries and testing the voluntary Framework with a view to its applicability to countries' needs and circumstances. The meeting will pave the way for the preparation of tools, guidance and capacity building to support interested countries globally and will be followed by a series of activities across regions.

Notes

1. SDG indicator 2.a.2: Total official flows (official development assistance plus other official flows) to the agriculture sector.
2. SDG indicator 3.b.2: Total net official development assistance to medical research and basic health sectors.
3. SDG indicator 6.a.1: Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan.
4. SDG indicator 7.a.1: International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems.
5. SDG indicator 15.a.1: Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems.
6. OECD DAC rules allow DAC members to report in-donor refugee costs as ODA. When specific instructions were first introduced in 1988, it was agreed that *“the first-year costs of sustaining developing country refugees arriving in donor countries could be reported as ODA. The rationale behind this agreement is to reflect the financial effort of hosting refugees and the sharing of responsibility with developing countries who host the vast majority of the world’s refugees”* (Staur, 2023).
7. The Aid for Trade initiative was launched at the 2005 WTO Ministerial Conference in China, Hong Kong (SAR) (WTO, 2005) to help developing countries, particularly LDCs, build the supply-side capacity and trade-related infrastructure to assist them in benefiting from WTO agreements and engaging in international trade.

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Volatile, but slowly more sustainability-focused investment flows

SDG indicators

Goal 10: Reduced inequalities

Target 10.b: Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes

Indicator 10.b.1: Total resource flows for development, by recipient and donor countries and type of flow

Goal 17: Partnerships for the goals

Target 17.5: Adopt and implement investment promotion regimes for least developed countries

Indicator 17.5.1: Implement investment promotion regimes for LDCs

Half-way through the 2030 Agenda, national policies to create an enabling environment for investments can guide private and public capital flows, including foreign direct investment, towards the achievement of national development objectives and the SDGs (UNCTAD, 2021). The financing gap to achieve the SDGs and support long-term economic transformation can only be bridged through the effective mobilization and utilization of the different sources of finance.

These could be found in government borrowing from international development finance institutions, private capital markets and flows, international official support, among others. Different economic flows can have a vastly varying impact on short and long-term sustained development depending on their source, type, and volume. For this reason, financing for development efforts should be aligned with the national development priorities of recipient countries and global efforts to implement the SDGs.

Many developing countries lack the capacity to mobilise sufficient funds due to their inability to borrow affordably for investment. Finding the right mix and adequate terms of financing is key to a lasting effect on individuals, households and communities with the most urgent needs. Challenges are also posed by the vulnerability of many developing countries to the volatility of private capital flows, which has increased in recent years (UNCTAD, 2023c). The challenge is even more critical when countries graduate to the next income group, lose eligibility for concessional finance (or part thereof), and are instead expected to rely more on private financial markets.

Resource disbursements for development more volatile in recent years

Sufficient financing remains a critical challenge for progress towards the 2030 Agenda. SDG target 10.b seeks to “*encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest*”.

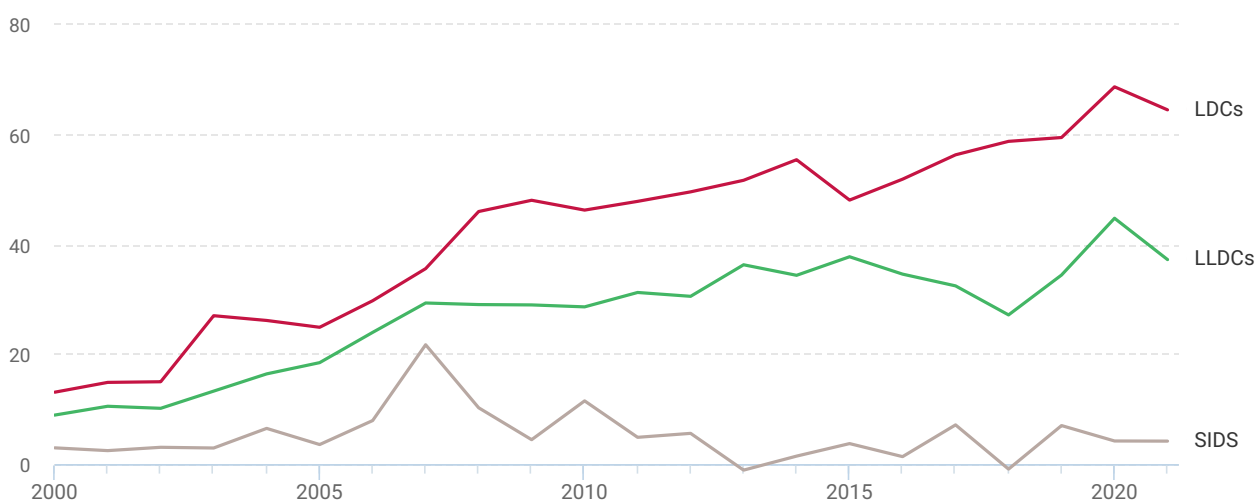
LDCs, LLDCs and SIDS are facing heightened challenges in achieving their development goals (Figure 1). After 2008, total resource flows to LDCs and LLDCs have increased slowly with higher volatility during and after the COVID-19 pandemic: both groups saw the highest values ever recorded in 2020. Regardless of a significant decline since, total resource disbursements were still higher in 2021 than before the COVID-19 pandemic: US\$64.4 billion for LDCs and US\$37.2 billion for

Total resource disbursement for development in LDCs, LLDCs and SIDS dropped in 2021 to US\$106 billion but still higher than before COVID-19

LLDCs. Funding for SIDS is more modest at US\$4.2 billion in 2021 with greater volatility around the peak in 2007. Since then, SIDS' external financing has declined steeply, turning negative¹ in 2018 before rebounding somewhat in 2019. The 2020 decline and stagnation of external financing in 2021 was less dramatic for SIDS than for LDCs and LLDCs.

Figure 1. Sharp decline in total resource flows after the COVID-19 pandemic for LDCs and LLDCs; for SIDS the flows remain stagnant

(Billions of current US\$, SDG 10.b.1)



Source: UNCTAD calculations based on data from OECD (2023a) and United Nations (2023)

Foreign direct investment to developing economies up by 30 per cent in 2021

FDI flows to developing economies grew by 30 per cent in 2021, to US\$837 billion, the highest ever recorded. At the same time, this growth was slower than the growth of FDI to developed regions (UNCTAD, 2022). Strong growth was seen in FDI flows to Asia, a partial recovery in Latin America and the Caribbean, and an upswing in Africa. The share of developing countries in global flows remained just above 50 per cent.

FDI together with other external financing flows, ODA and remittances, amounted to 15 per cent or more of total GNI of LDCs, LLDCs and SIDS (Figure 2). In recent years, this share has been decreasing, driven mostly by decreasing FDI or ODA flows. In 2020, however, ODA for LDCs and LLDCs increased substantially followed by a significant drop in 2021. In these groups, this was balanced by the slowly rising share of FDI and remittances. For SIDS, on the other hand, remittances rose sharply during and after the COVID-19 pandemic to more than offset the declining FDI for this group. ODA flows to SIDS also slightly decreased in 2021. Combined financing flows for SIDS stood at 13.9 per cent of GNI in 2021, compared to around 10 per cent just before the pandemic.

Financing flows from FDI, ODA and remittances in SIDS reached 14% of GNI in 2021

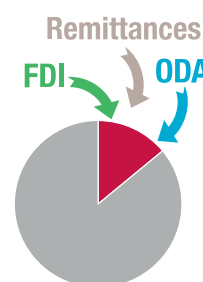
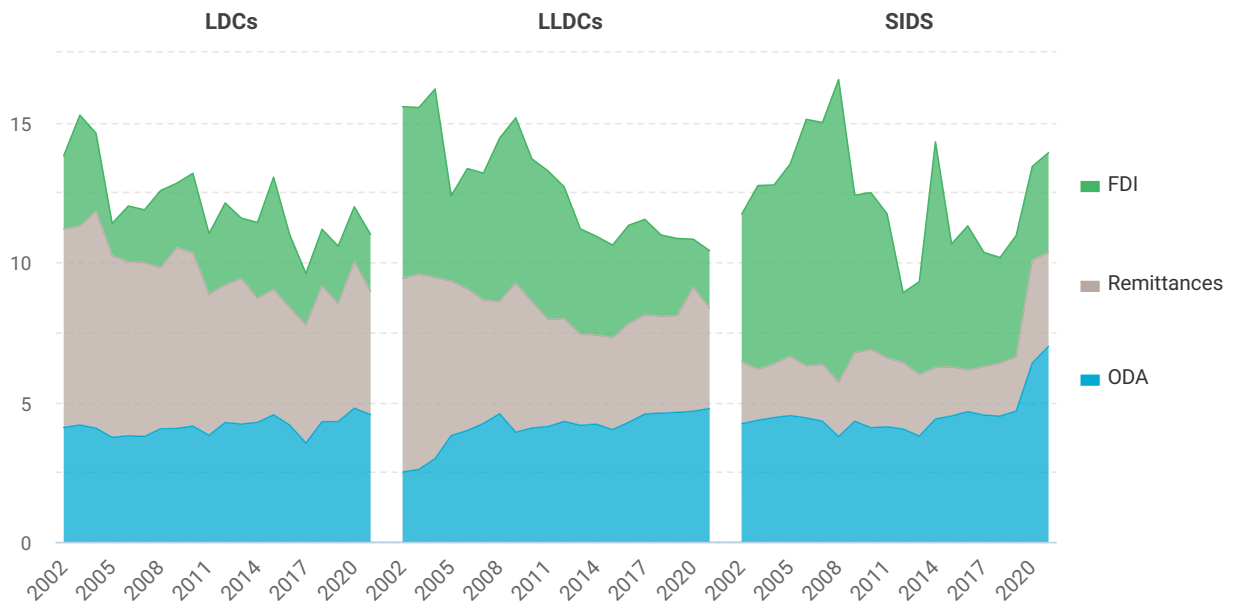




Figure 2. Sharp increase in remittances drove an upward trend in SIDS' external financing after the pandemic

(Percentage of GNI)



Source: UNCTAD calculations based on OECD (2023a) and World Bank (2023)

Note: The ODA figures refer to net ODA

FDI inflows to developing economies reached all-time high, with



US\$837 billion in 2021



The all-time high of FDI flows to developing economies in 2021 was good news (UNCTAD, 2023a) since FDI inflows are vital for financing development as they are directly linked to the drivers of productive growth and job creation. However, they are not distributed evenly. Rather they tend to concentrate in countries with higher growth prospects, stronger rule of law and respect for contracts, and stable institutions. Moreover, of the three financial flows, FDI shows the highest volatility and an overall downward trend in offering financing for the three country

groupings since 2008. For LDCs, however, FDI has been a stable source since 2017, standing at around 2 per cent of GNI.

ODA plays a unique role in supporting global development. In addition to its concessional nature, ODA is the only source of financing available in many cases. Especially in situations of low rentability or high risk, official support can become important for mobilizing additional resources. While ODA has been somewhat less volatile than FDI, it is concerning that ODA has exhibited a slight downward trend for LDCs and LLDCs, except for a temporary rise in 2020. For SIDS, the long-term average for ODA was 2 per cent of GNI until 2020, when it rose to 3.7 per cent and diminished only slightly in 2021. This source of funding is described in greater detail in [Official international assistance insufficient to reach 2030 Agenda](#).

Remittances lack the job creation potential of FDI because they are managed directly by individuals and are mostly directed towards household consumption. Their capacity to raise productive investment is, therefore, limited. However, remittances are an indispensable source of income for many people. Moreover, they represent the most stable inflow at about 4 per cent of GNI in LDCs, LLDCs, and SIDS, with a notable rise to nearly 7 per cent for SIDS in 2021.


Volatility of net private capital flows to developing countries continues

Net private capital flows to developing countries since the 2008 crisis remained extremely volatile (Figure 3), as a reaction to the increasing occurrence of jitters or shocks in global financial markets. The mobilization of these resources was unsurprisingly challenged during the COVID-19 pandemic. Expansionary monetary policies in the North, alongside measures from the international community, such as the G20 Debt Suspension Initiative and the allocation of new SDRs by the IMF, managed to eventually contain the huge capital flight of the first quarter of 2020. The emergence of new COVID-19 variants, looming inflation and prospects for tightening of monetary conditions in the United States of America led net private capital flows to developing countries to plummet in 2021. In 2022, however, despite earlier projections of cascading effects to a world economy due to the war in Ukraine, compounded with the COVID-19 pandemic and climate change (United Nations, 2022), the net private capital flows to developing countries recovered and reached a positive value for the first time in the last six years: US\$37.7 billion.

Net private capital flows to developing countries are positive in 2022 for the first time since 2016: US\$37.7 billion



Net private capital flows experienced a positive surge in the last quarter of 2022, driven by several factors. The anticipation of a lower terminal interest rate by the US Federal Reserve, following a decrease in inflationary pressures in the United States of America, led to significant inflows of capital. Additionally, investors were increasingly flocking to emerging market stocks and bonds due to expectations over falling global inflation and the reopening of China's vast economy. With key economic uncertainties lifting, the stage is set for further inflow rebounds in 2023 (*Financial Times*, 2023).

 **Figure 3. Net private capital flows to developing countries recovered after the COVID-19 pandemic and are now positive**

(Billions of US\$)



Source: IMF (2023)

Outward investment promotion instruments increasingly integrate sustainability criteria

SDG target 17.5 encourages countries to promote investment for LDCs. Although most outward FDI promotion regimes do not prioritize certain destination countries over others, a selected number of investment instruments from national promotion regimes limit their eligibility to investments made in developing countries. In 2022, at least 9 countries had implemented policies that specifically promote outward investment in developing countries, including LDCs (Austria, Denmark, Germany, Japan, Netherlands, Norway, Portugal, United Kingdom, United States of America).

Policies specifically promoting outward investment in developing countries, including LDCs, by:

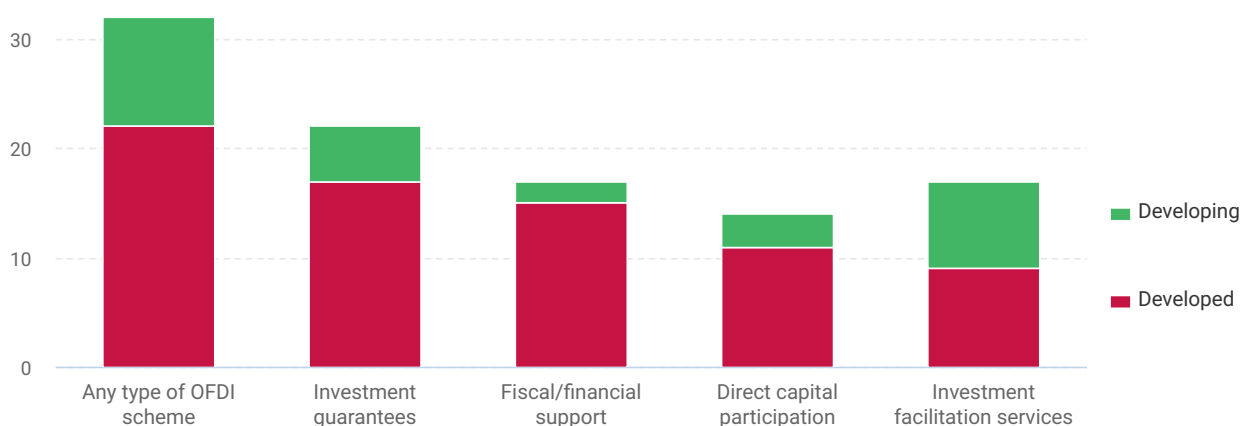


Austria, Denmark, Germany, Japan, Netherlands, Norway, Portugal, United Kingdom, United States of America

As a custodian of SDG indicator 17.5.1, on investment promotion regimes for developing countries, including LDCs, UNCTAD carries out an annual survey of countries. In this survey, UNCTAD (2023b) identified 32 countries that provide for at least one type of instrument for promoting OFDI in developing countries, including LDCs (Figure 4). Almost one-third of them are developing economies (e.g., Brazil, Chile, China, India), which is consistent with the trend of increasing South-South FDI inflows. The most common policy instruments are investment guarantees or insurance policies (22 countries), but countries also provide loans for the internationalization of local companies (17), state-sponsored programmes providing equity participation in investment projects abroad (14). In addition, at least 17 countries offer investment facilitation tools to promote FDI in developing countries including LDCs. Some countries provide for all four types of investment promotion instruments (e.g., France, Poland, United States of America).

Figure 4. Outward FDI promotion schemes towards developing countries, including LDCs, are predominantly provided by developed countries

(Number of countries, SDG 17.5.1)



Source: UNCTAD (2023b)

A novel aspect of OFDI promotion schemes for developing countries, including LDCs, is the inclusion of sustainability considerations among the eligibility criteria for accessing the schemes. Accordingly, several outward investment promotion schemes require the proposed investment project to generate positive economic, social and/or environmental impact in the host country, which may include specific ESG criteria. Non-binding guidelines by international organizations, such as the OECD's "Common Approaches" (2023b), or industry-based frameworks for risk management, such as the Equator Principles (2023), are often used for the sustainability assessment of proposed investments benefitting from OFDI promotion (e.g., in Australia). In

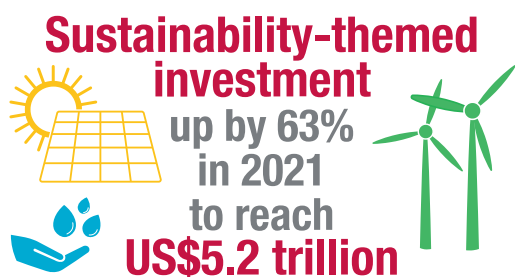
some countries, sustainable investment is also promoted by offering more beneficial conditions for investment projects aligned with the objectives of the Paris Agreement (e.g., Spain).

Conversely, some countries have created exclusion lists to ban OFDI promotion support for certain sectors or economic activities deemed incompatible with sustainability or ESG. For example, in Denmark, the IFU (2023) has extended, since 2022, its exclusion list to fossil fuel as well as other non-sustainable industries such as “*export-oriented agribusiness models that focus on long-haul air cargo for commercialization*” or “*biomaterials and biofuel production that makes use of feedstock that could otherwise meaningfully serve as food or compromise food security*”.

Alternatively, creating schemes targeting specific sustainable development objectives, Norway has launched a new investment guarantee scheme (Ministry of Foreign Affairs of Norway, 2021), in partnership with MIGA, to mitigate non-commercial risks involved in FDI in renewable energy projects in developing countries. This scheme is targeting specifically renewable energy investments and aims to increase decarbonization in developing countries.

A long way towards aligning global investment flows with SDGs

The need for investment in SDGs, productive capacity, and climate mitigation and adaptation is pressing. UNCTAD's World Investment Report (2022) finds that although global FDI flows rebounded strongly in 2021, industrial investment remains weak and well below pre-pandemic levels, especially in the poorest countries. It also notes that SDG investment, in areas such as infrastructure, food security, water and sanitation, and health, is growing but not enough to reach the goals by 2030. The data show that investment in climate change mitigation, especially renewables, is booming but most of it remains in developed countries and adaptation investment continues to lag. There is a need for more targeted information on the costs of achieving SDGs to identify investment areas that can accelerate progress across multiple SDGs. First insights in this direction are discussed in this year's In-Focus (SDGs costing) with UNCTAD's cost estimates of SDG transition pathways, developed as a contribution to a UN-wide effort. In addition, the World Investment Report (UNCTAD, 2023) will provide an assessment of investment gaps by SDG investment areas which link SDGs to traditional investment sectors to facilitate alignment of efforts.



UNCTAD (2022) estimates that the value of sustainability-themed investment products reached US\$5.2 trillion in 2021, up by 63 per cent from 2020. These investment products include sustainable funds (US\$2.7 trillion), green bonds (over US\$1.5 trillion outstanding), social bonds (US\$418 billion), mixed-sustainability bonds (US\$408 billion) and sustainability-linked bonds (US\$105 billion). Most of these, however, are domiciled in developed countries and targeted at assets in developed markets. Moreover, the war in Ukraine led to disruptions in the energy

markets (Resilience at risk), with fears of setbacks in the energy transition, and increased fossil fuel production. Challenges in aligning global investment flows with SDGs remain to be fully addressed.

Notes

1. Values refer to net disbursements.

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Escalating debt challenges are inhibiting achievement of the SDGs

SDG indicators

Goal 17: Partnerships for the goals

Target 17.4: Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress.

Indicator 17.4.1: Debt service as a proportion of exports of goods and services (Tier I)

An increasing number of developing countries are on the brink or already in debt distress as they face cascading and overlapping crises – the COVID-19 pandemic, the war in Ukraine, a deepening climate crisis, and a cost-of-living crisis (UNCTAD, 2021). Added to this, the daunting global macroeconomic environment including higher interest rates and banking stress in developed countries, tightening global financial conditions, US dollar appreciation, growth slowdown and falling commodity prices, have also taken their toll.

Keeping debt default at bay to prevent a systemic debt crisis has come at a cost, with debt servicing draining resources away from SDG priorities and the Paris Climate Agreement. The high increase evidenced by debt statistics indicate that we are living a development crisis.

An ambitious and comprehensive multilateral response is paramount to avoiding a possible systemic debt crisis which would deepen the existing development crisis.

As the UNCTAD Bridgetown Covenant (UNCTAD, 2021) stresses further efforts needed to implement initiatives that contribute to debt sustainability in developing countries, it also invites efforts to advance the discussion on debt treatment, debt transparency, data quality, debt management capacity-building and the rules of engagement, including with the private sector.

External debt stocks of developing countries more than doubled in a decade to reach US\$11.4 trillion

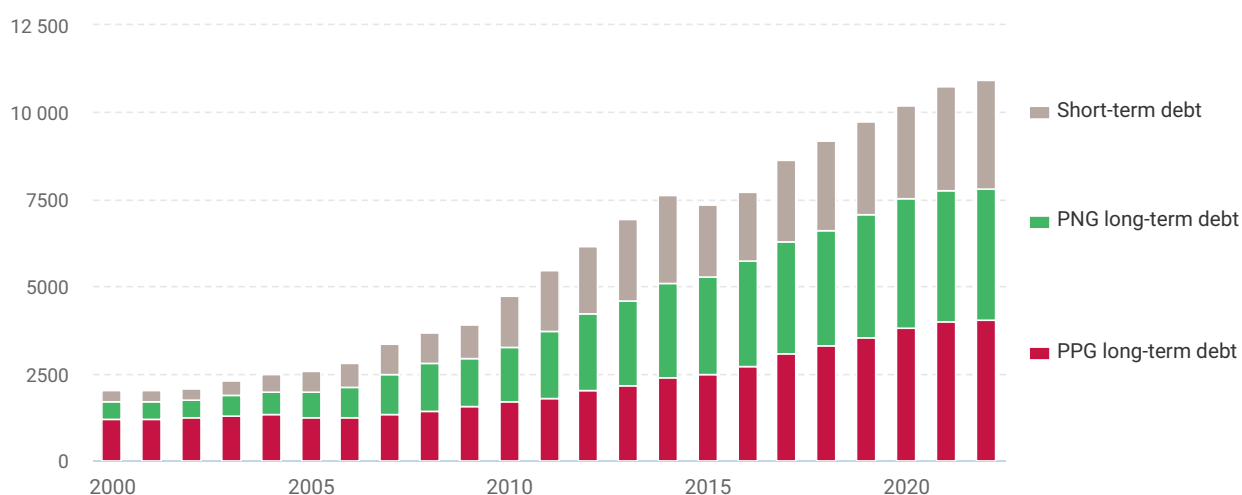
The external debt stocks of developing countries reached US\$11.4 trillion in 2022, more than double that recorded a decade ago (Figure 1). Compared to the pre-pandemic level (2019), the total external debt of developing countries in 2022 grew by 15.4 per cent. Since 2009, external debt stock has increased on average by 8.3 per cent per annum, compared to an average annual growth rate of 7.5 per cent in the decade before the Global Financial Crisis (2000-2008).

Total external debt of developing countries grew by more than 15% in 2022 compared to pre-pandemic 2019



Figure 1. Total external debt of developing countries continues to rise

(Billions of current US\$)



Source: UNCTAD calculations based on data from World Bank (2023a), IMF (2023) and national sources.
Note: Figures for 2022 are UNCTAD estimates. Data does not include IMF credit lines.

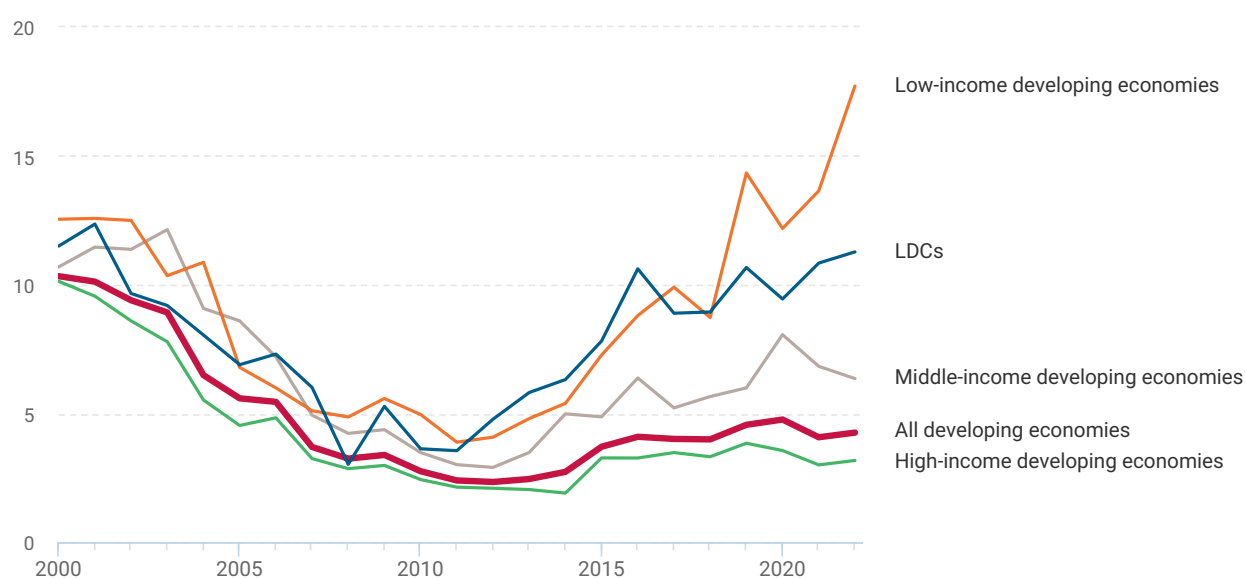
Meanwhile, the risk profile worsened. During 2009-2022, short-term debt rose at an average annual growth rate of 9.5 per cent compared to 7.8 per cent for long-term external debt. Consequently, although long-term external debt continues to account for most of the external debt stock of developing countries (68.4 per cent in 2022), the share of short-term debt in total external debt stock increased from 24.2 per cent in 2009 to 27.7 per cent in 2022. Regarding the long-term debt, the Public and PPG accounted for 51.7 per cent of the total and the PNG for 48.3 per cent in 2022, a slight change compared to 2009 (52.6 per cent and 47.4 per cent of the total, respectively).

Low-income developing countries face highest and worsening debt servicing ratios

Rising external debt burdens, along with increased risk profiles, translate into higher servicing costs. Debt service as a proportion of exports of goods and services (SDG indicator 17.4.1) measures a government's ability to meet external creditor claims on the public sector through export revenues. Thus, it is an important indicator of debt sustainability. A fall (increase) in this ratio can result from increased (reduced) export earnings, a reduction (increase) in debt servicing costs, or a combination of both. A persistent deterioration of this ratio signals an inability to generate enough foreign-exchange income to meet external creditor obligations on a country's PPG debt, and, thus, potential debt distress without multilateral support or effective sovereign debt restructuring.

Figure 2. Debt service increased significantly for LDCs and low-income developing economies

(Long-term external PPG debt, percentage of exports of goods and services)



Source: UNCTAD calculations based on data from World Bank (2023b) and Economist Intelligence Unit (EIU, 2023).
Note: Figures for 2022 are UNCTAD estimates. Groups follow UNCTAD's definition.

As Figure 2 shows, only high-income developing countries have maintained a stable ratio of external long-term PPG debt service to export revenues of around two to four per cent in the last decade. In contrast, a marked increase in debt service ratios was registered across all other income categories. In particular, the ratio for LICs increased dramatically from 4.1 per cent in 2012 to 17.7 per cent in 2022. The temporary fall in 2020 and 2021 was due to the G20 DSSI. A similar trend was observed for the group of LDCs, with the ratio of debt service on external long-term PPG to export increased significantly in the past decade from 4.8 per cent in 2012 to 11.3 per cent in 2022. For middle-income developing countries, although less pronounced, the increase was also significant: this ratio more than doubled, from 2.9 per cent in 2012 to 6.4 per cent in 2022.

Similarly, the share of government revenues dedicated to servicing long-term external PPG debt also rose sharply in recent years, particularly in the poorest developing economies (Figure 3). Whereas in 2012, LICs spent 4.7 per cent of their government revenues to meet external public debt obligations, this figure rose to 19.2 per cent in 2022, along the same lines as those observed for indicator 17.4.1. For the group of LDCs, this nearly tripled, with the ratio rising from 6.3 per cent in 2012 to 17.0 per cent in 2022. In the case of middle-income developing countries, this ratio more than doubled, from 3.9 per cent to 9.5 per cent in this period. These statistics underline the substantial diversion of domestic resources into servicing external debt.

LICs spent 19.2% of government revenues servicing external debt in 2022, up 4x from 2012


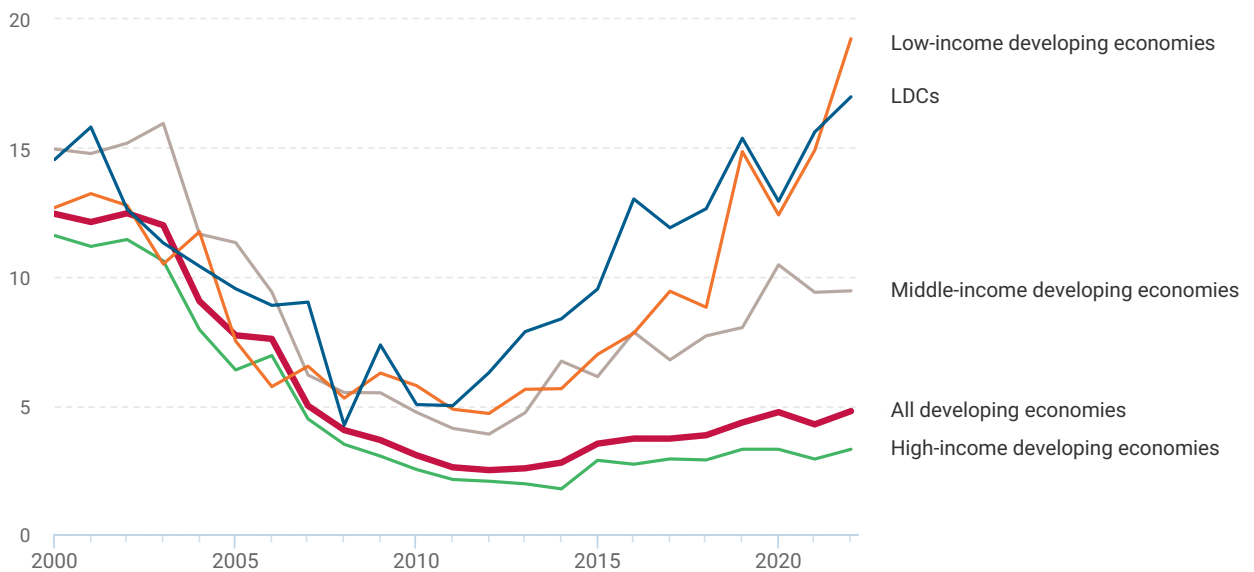


Figure 3. Government revenues to service debt rising sharply for LDCs and low-income developing economies

(Long-term external PPG debt, percentage of government revenue)



Source: UNCTAD calculations based on data from World Bank (2023b), Economist Intelligence Unit (EIU, 2023), and IMF (2023). Note: Figures for 2022 are UNCTAD estimates. Groups follow UNCTAD's definition.

The worsening of these two external debt sustainability indicators for LICs is of concern. As LICs cut expenditures to free up resources to meet debt payments, pressure on essential public expenditure categories will continue to increase. Simultaneously, the capacity to generate export revenues to pay the external debt service will shrink even more in 2023 as global growth is estimated to slow down from 3.1 per cent in 2022 to 2.1 per cent in 2023, according to UNCTAD (2023).

Debt overhang becoming a major obstacle to development and reaching the SDGs

Despite multilateral efforts, the debt problem in low-income and also many middle-income developing countries, three years after the COVID-19 pandemic, continues to deepen. External creditors continue to be paid while the SDGs are increasingly out of reach. This jeopardizes the delivery on existing international commitments, including the 2030 Agenda and the Paris Climate Agreement.

To achieve the SDGs, a radically different multilateral policy approach is needed, requiring a commitment by the international community to transform the global financial system by prioritizing the needs of developing countries, as put forward by the UNCTAD Bridgetown Covenant (UNCTAD, 2021) and the SDG Stimulus Plan (United Nations, 2023).

DMFAS strengthening debt management for good governance and transparency

SDG Target 17.4 recognises the importance of assisting developing countries to attain long-term debt sustainability and reduce the risk of debt distress. Similarly, the Addis Ababa Action Agenda (United Nations, 2015) stresses the value of prudent borrowing as a tool for financing investment needed for development, and of the critical role of sound debt management in conjunction with debt relief and debt restructuring.



DEBT MANAGEMENT AND
FINANCIAL ANALYSIS SYSTEM

The Bridgetown Covenant (UNCTAD, 2021) also recognizes the importance of continued inclusive dialogue and cooperation with international financial institutions to advance discussions on debt transparency, data quality and debt management capacity. To this end, UNCTAD continues its analytical and policy work and technical assistance on debt issues, including DMFAS.

Debt data are a prerequisite for effective debt management

Many governments lack the appropriate human and technical capacity to handle public resources and liabilities effectively, as well as to prepare risk analysis and debt strategy. Weak capacity for debt recording and reporting is a significant challenge for developing countries especially. The DMFAS Programme helps governments to address these problems.

DMFAS showed a high level of overall effectiveness in the 2020-2021 period. [...] DMFAS Programme enables countries to mobilize debt financing to address the needs of developing countries

— Independent Evaluator, Mid-Term review of the DMFAS Programme 2022

(Oyola, 2022)

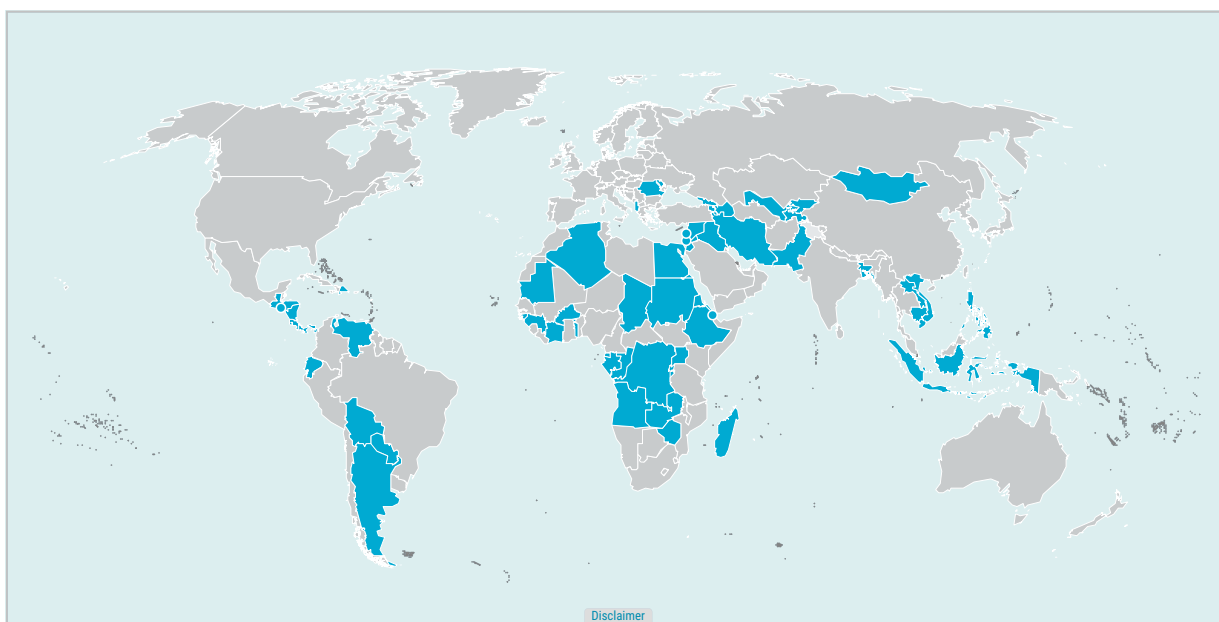
Mandated by the UN General Assembly (United Nations, 2022) and UNCTAD member States, the [UNCTAD DMFAS programme](#) advises developing economies in debt management and helps them to record and report reliable debt statistics for policymaking. The programme offers countries a set of practical solutions for the management of public liabilities and the production of debt statistics, supported by the DMFAS debt management and financial analysis software, capacity development and advisory services. After its inception in the 1980s, DMFAS software is now used by 60 countries and 85 institutions around the world for debt management (Map 1). The software is available in four languages (English, French, Russian and Spanish).



60 countries use the DMFAS software on a daily basis to manage their public debt



Map 1. 60 countries around the world use DMFAS software for debt management, 2022



Source: UNCTAD reporting.
Note: Status as of end of 2022.

**Nearly
7000 participants
from debt offices
trained since 2011**

UNCTAD has trained 6 977 officers in debt management procedures and best practices between 2011 and 2022. In addition, 380 experts participated in each UNCTAD Debt Management Conference held every second year since 2011 – except for 2021 due to the COVID-19 pandemic. The participant numbers show a remarkable increase in female participants reaching 48 per cent in 2022 compared to 33 per cent in 2018. Nevertheless, this share still falls slightly short of the equal distribution observed in 2016 (Table 1).



Table 1. Women are on average well represented in DMFAS capacity development

(Number of participants and share of women)

Capacity development category	2016		2018		2020		2021		2022	
	Total participants	Share of women	Total participants	Share of women	Total participants	Share of women	Total participants	Share of women	Total participants	Share of women
Capacity development for debt offices	751	50%	697	33%	361	45%	613	46%	609	48%
Training in debt validation, reporting, analysis and procedures	282	54%	209	35%	72	32%	350	47%	211	52%
Functional training in using DMFAS	244	56%	216	37%	91	55%	225	46%	236	48%
IT related training and advisory services	152	43%	132	17%	54	50%	35	31%	62	34%
Other advisory services	73	33%	140	39%	144	44%	3	33%	100	45%
UNCTAD Debt management conference	-	-	-	-	-	-	-	-	431	44%

Source: UNCTAD reporting.

Debt data transparency and quality of reporting increasing

Over the last ten years, the use of DMFAS software by new countries and comprehensive reporting within the system have increased. In 2022, 93 per cent of countries recorded comprehensive external debt instruments in DMFAS and 79 per cent comprehensive domestic debt records.

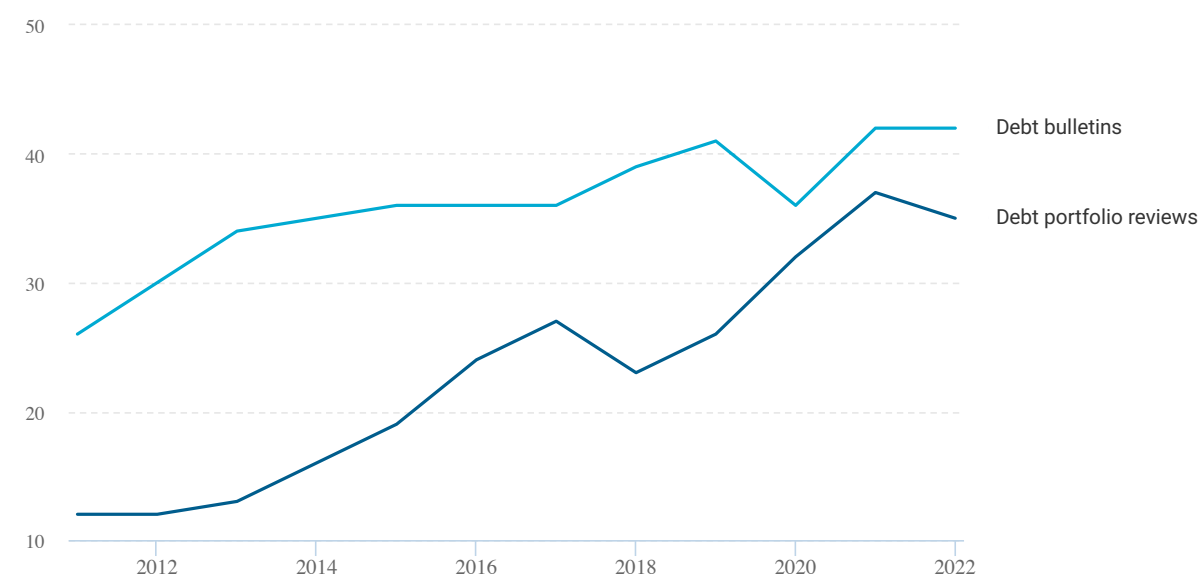
The DMFAS capacity building also supports disseminating debt statistics and debt analysis. The number of DMFAS user countries that publish debt statistics bulletins and debt portfolio reviews on a regular basis has increased during the last ten years (Figure 4), despite a setback in 2020 mainly due to the disruptions related to the COVID-19 pandemic.

Number of countries publishing debt statistics has increased

26
in 2011

42
in 2022

 **Figure 4. Number of DMFAS user countries publishing regular debt reports has increased but plateaued last year**



Source: UNCTAD reporting.

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First official estimates on illicit financial flows

SDG indicators

Goal 16: Peace, justice and strong institutions

SDG target 16.4: By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime

SDG indicator 16.4.1: Total value of inward and outward illicit financial flows (in current United States dollars) (Tier II)

IFFs impact sustainable development negatively, especially in developing countries where resources are in dire need. They drain resources from development not only when they leave a country (outflows), but also when they enter a country (inflows), they can have detrimental impact by fuelling money laundering and corruption thus undermining the rule of law and the stability of markets. The COVID-19 pandemic, conflicts, and the increasing costs of climate change and environmental challenges have had a particularly devastating impact on developing economies highlighting the critical need for addressing the financing gap, including to curb illicit financial flows.

The ability to achieve the SDGs remains fragile when IFFs continue to drain resources that would be needed to fulfil human rights and pursue sustainable development. In Bridgetown, member States (UNCTAD, 2021a) expressed their great concern over the negative impact of illicit financial flows on sustainable development, especially in developing countries. They emphasized the need for global cooperation, and strengthening of existing work avenues to tackle illicit financial flows and the activities that underlie their occurrence.

The 2030 Agenda identifies the reduction of IFFs as a priority area, as reflected in target 16.4 which aims to significantly reduce illicit financial flows. This target is critical for financing efforts to achieve SDGs. Regardless of its importance, data on SDG indicator 16.4.1, “*total value of inward and outward illicit financial flows*”, are not yet comprehensively reported (United Nations, 2017). The world needs comparable and reliable statistics on IFFs to shed light on the activities, sectors and channels most prone to illicit finance, pointing to where actions should be undertaken as a priority to curb these flows. First official estimates of IFFs are now available, covering some crime-related IFFs for the first countries.¹

Country pilots show that illicit financial flows can be estimated

As co-custodians of SDG indicator 16.4.1, UNCTAD and UNODC lead global methodological work to develop statistical definitions and methods to measure IFFs to support member States in monitoring progress towards target 16.4. UNCTAD leads methodological work and enhancing national capacities to measure tax and commercial IFFs, and UNODC focuses on crime-related IFFs (see section: [UNCTAD leads global efforts to measure illicit financial flows jointly with UNODC and United Nations Regional Commissions](#)). To date, 22 countries across three continents have tested the measurement of IFFs. The experience shows that, while estimating illicit financial flows is challenging, it can be done.

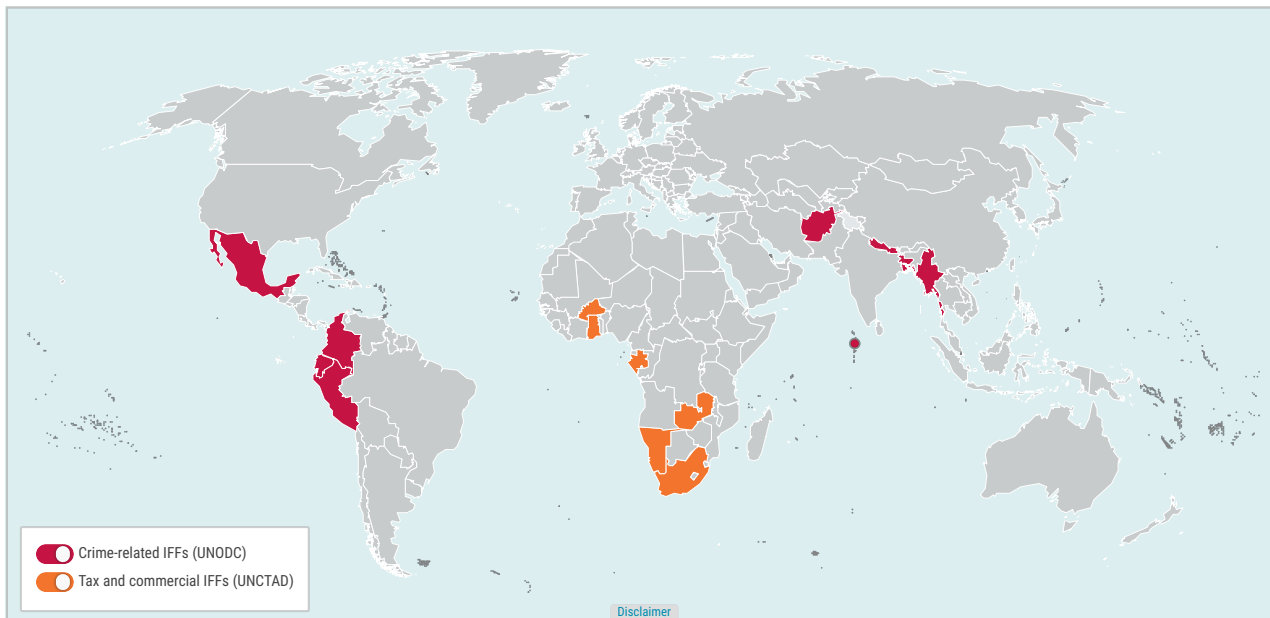
IFFs can be generated by many illicit tax and commercial practices, illegal markets, corruption or exploitation. To date, 14 countries, 12 in Africa and two in Asia, have tested methods to measure selected types of tax and commercial IFFs using datasets available to customs or tax and revenue authorities, and eight countries have tested measurement of crime-related IFFs. Several countries prepared preliminary unofficial estimates of IFFs from trade misinvoicing by analysing asymmetries in customs reporting between countries (PCM+) or abnormal prices in transaction-level customs data (PFM+) using UNCTAD’s (2021b) Methodological Guidance. Trade misinvoicing affects trade in various commodities: for example, beverages, petroleum,

ore in Burkina Faso; precious metals and stones, electrical machinery in South Africa (Map 1). While values indicate billions of IFFs, it is noteworthy that differences in time and spatial coverages (trading partners) render direct comparison unwarranted. Offering relative measure as a percentage of IFFs in respective official trade, these values are far from insignificant: IFFs may reach even a half of officially recorded trade.



Map 1. Preliminary estimates from pilot studies indicate a significant IFFs presence

(US\$ millions, annual average)



Source: UNODC (UNODC, 2023a) ; UNCTAD and United Nations Economic Commission for Africa (2023); and UNCTAD calculations based on data from UNCTADstat (UNCTAD, 2023)

Note: This figure shows first official estimates for different types of crime-related IFFs and early unofficial estimates resulting from 2021-2022 country pilots using different methods to measure tax and commercial IFFs from trade misinvoicing. Annual averages are shown (and ranges, where these not available) in US\$ million for indicated period covered. Where applicable (tax and commercial IFFs), a share of IFFs in total merchandise trade is shown in percentage. Direct comparison between countries' preliminary estimates and between different types of IFFs is not possible. Preliminary estimates are likely to be refined and extended by national authorities in the future.

Statistics on SDG indicator 16.4.1 are published



Drug trafficking is a major proceeds-generating crime, and in countries affected by intensive cross-border drug flows it generates significant inward and outward IFFs. First estimates reveal that for example Mexican drug cartels generated inward IFFs for an estimated US\$12.1 billion on average between 2015 and 2018, an amount comparable to the value of agricultural products exports of Mexico². Similarly, in Colombia, cocaine trafficking between 2015 and 2019 was estimated to have generated inward IFFs between US\$1.2 and US\$8.6 billion (from 3 per cent to 23 per cent of legal commodity exports)³, while in Peru cocaine trafficking-related inward IFFs (were valued at US\$1.3-1.7 billion) represent 3.5 to 4.5 per cent of total exports.⁴

Significant IFFs are generated in the context of opiates trafficking. According to latest estimates, traffickers have generated inward IFFs worth between US\$5.8 and US\$9.8 billion in the three countries with the highest opiates production - Afghanistan, Myanmar, and Mexico.⁵ Opiates trafficking in Asia has spillover effects in countries close to major opium poppy cultivation areas. Here opiates are manufactured and traded for local consumption and in some cases re-exported to other destination countries. Opiates imports are at the origin of outward IFFs in South Asian countries. Their value is significant compared to legal economic activities. For example, in Nepal heroin trafficking generated IFFs similar to the value of imports of pharmaceutical goods⁶.

Inward IFFs are a major source of income for drug trafficking groups in these countries. Money laundering from such inflows cause significant harm to security and justice by fueling further criminal activities, violence and corruption, as well as to the economy by infiltrating ill-gotten gains that undermine integrity of financial markets and contribute to monetary instability.


22 countries on 3 continents tested IFFs measurement

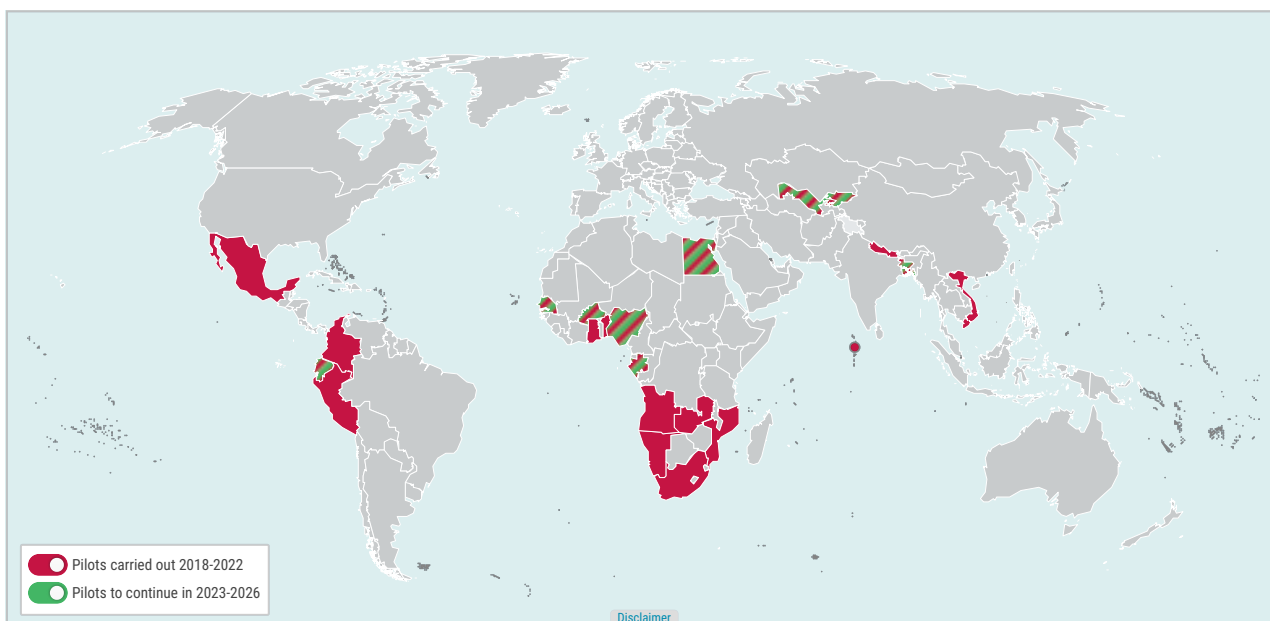
9 countries joining global testing in 2023



remittance flows or tax compliance (OECD, 2022).

These insights and the preliminary estimates resulted from pilot studies conducted by 22 countries, jointly with UNCTAD, UNODC, the United Nations Regional Commissions and other partners (Map 2). In addition to the first estimates, the pilots have provided or continue to provide critical information for refining statistical methods to measure IFFs and for accumulating country experiences in applying these or alternative methods. For instance, in Kyrgyzstan trade misinvoicing methods were extended by studying grey re-exports (Maga et al., 2023) and inspecting

 **Map 2. 22 countries have studied the measurement of IFFs in 2018-2022 and nine countries will do so in 2023-2026**



Source: UNCTAD and UNODC

Note: Situation reflected on the map as in May 2023.

Illicit financial flows are generated by a wide range of activities

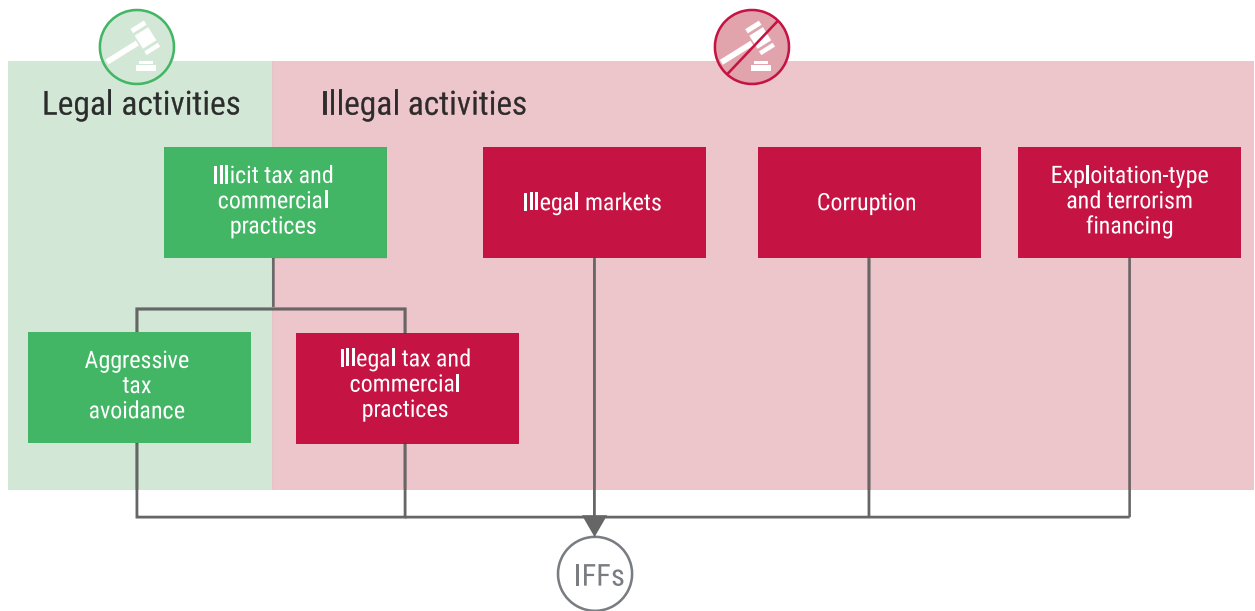
As the above preliminary estimates show, countries are affected by many different activities that may generate IFFs. The types vary greatly across countries, while some countries are more affected by tax evasion, some struggle with IFFs related to extractive industries, and others are impacted by trafficking in persons or drug trafficking. IFFs are hidden but also take many forms making them challenging to measure. Therefore, countries usually select a few types of IFFs for first measurement exercises among the flows affecting them most and for which data can be acquired. Due to the wide range of IFFs, defining their scope was a long, consultative journey. To this end, UNCTAD and UNODC established a Task Force on the Statistical Measurement of IFFs⁷ and engaged in a series of expert consultations since 2017. The result is reflected in the UNCTAD and UNODC (2020)

Now we have agreed definitions and tested methods



Conceptual Framework for the Statistical Measurement of Illicit Financial Flows which was endorsed by all member states in the UN Statistical Commission in March 2022 (UNSC, 2022), based on concepts and standards approved by the IAEG-SDGs in October 2020. The Framework identifies the main types of activities that may generate IFFs (Figure 1) and defines IFFs as *financial flows that are illicit in origin, transfer or use, that reflect an exchange of value, and that cross country borders*.

 **Figure 1. Four main types of illicit financial flows**



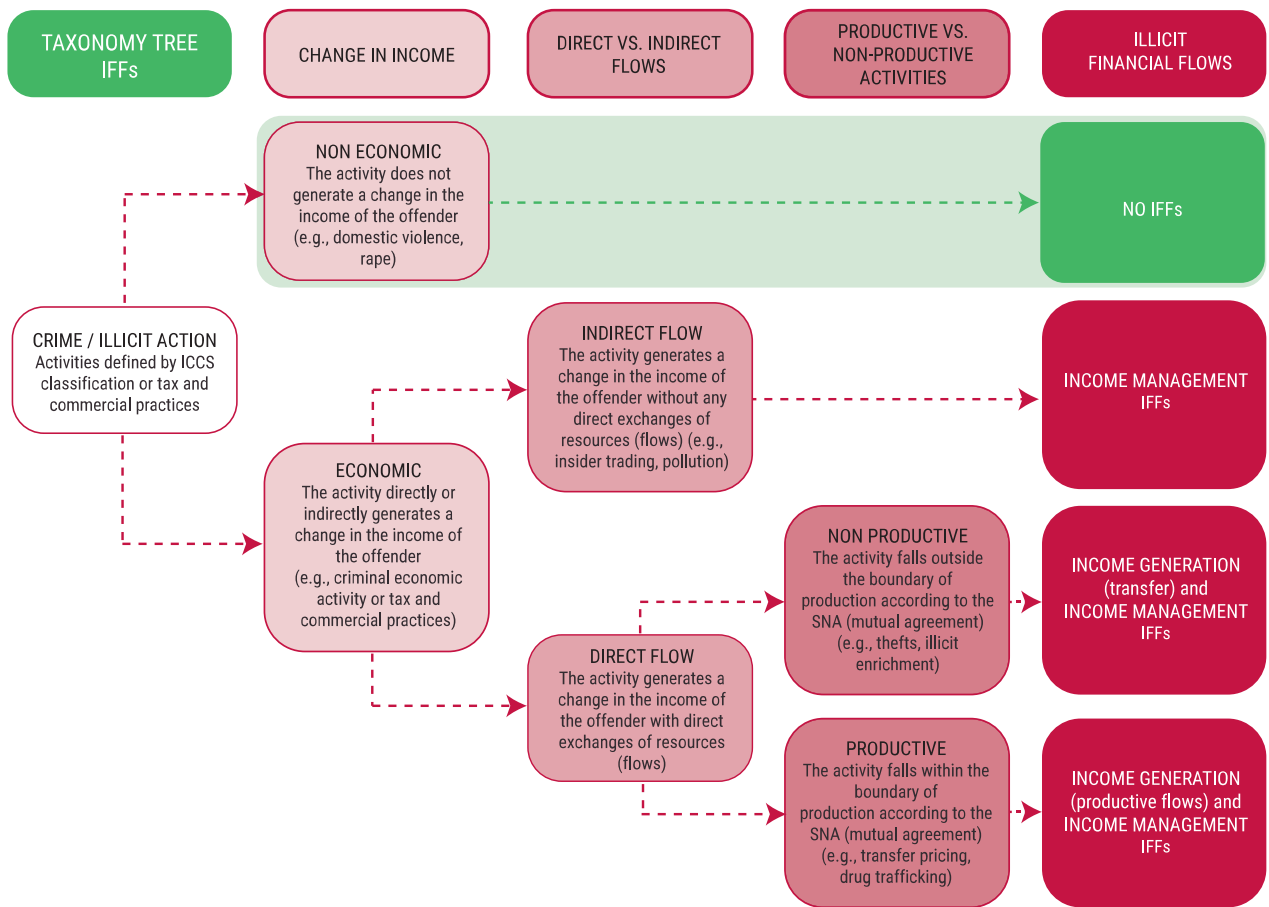
Source: UNCTAD and UNODC (2020)

IFFs need to be classified using a discrete, exhaustive and mutually exclusive statistical classification aligned with existing statistical frameworks and principles. The ICCS (UNODC, 2015) provides a good starting point for identifying the activities that could generate IFFs. As the ICCS does not cover all tax and commercial activities that may generate IFFs, for instance IFFs related to aggressive tax avoidance, a more exhaustive classification is being developed, where each activity is being analysed considering three aspects (Figure 2):

- Change in income: whether the activity is economic (directly or indirectly generating a change of income) or non-economic;
- Direct or indirect flows: activity generating a change of income with or without direct exchange of resources;
- Productive or non-productive activities: falling within or outside the production boundary as defined in the SNA.



Figure 2. A decision tree helps to identify and classify IFFs



Source: Deliberations by Task Force on the Statistical Measurement of IFFs.

★ UNCTAD in Action ★

UNCTAD leads global efforts to measure illicit financial flows jointly with UNODC and United Nations Regional Commissions

Between 2017 and 2023, UNCTAD and UNODC held 21 expert meetings, including Task Force meetings, to develop concepts and methods to measure IFFs. This collaborative effort to enable estimating of progress towards SDG 16.4.1 has involved over 500 experts (Table 1). Additionally, UNCTAD organised sessions at 11 international events (with 868 participants) to raise awareness on concepts and methods on tax and commercial IFFs, often accompanied by UNODC to discuss crime-related IFFs. These events include the ESCAP Asia-Pacific Stats Café Series, the UNCTAD Illicit Trade Forum, the Pan African Conference on IFFs and Taxation, as well as side events at the United Nations Statistical Commission and at the Financing for Development Forum.

**Table 1. 32 events to develop methods to measure IFFs reached over 1 400 experts**

Type of meeting	Number of meetings	Total number of participants	Total share of women
UNCTAD-UNODC Expert consultations	3	126	32%
UNCTAD-UNODC Task force meetings	18	413	38%
UNCTAD-UNODC organised sessions in events	11	868	N/A
Total	32	1 407	35%

Source: UNCTAD, MPED, ECA and ESCAP.

Note: For some events organized by other organizations or where part of a larger event, the exact number of participants or the exact share of women were unavailable. Approximations, when appropriate, were made.

Between 2021 and June 2023, UNCTAD and its regional partners, ECA and ESCAP, held 39 national workshops in Africa and Asia. In total, 1 919 participants were trained, of whom 29 per cent women. These include five regional workshops, 11 national kick-off workshops, 28 national training events and an interregional training workshop for both regions.

**Table 2. 45 events to train over 1 900 experts to measure IFFs**

Type of workshop	Number of workshops	Total number of participants	Total share of women
Regional workshop	5	637	16%
National kick-off workshop	11	302	32%
National training workshop	28	744	21%
Interregional training workshop	1	236	35%
Total	45	1 919	29%

Source: UNCTAD, MPED, ECA and ESCAP.

Note: The six-day online interregional training had an overall participation of 1 185 participants, from 146 to 236 participants per day. To avoid double counting between the days, a conservative estimate of the maximum value for one day has been used as a total number of participants while it is likely that some people participated only on some days making the real total number larger. The share of women can be calculated for registered participants only, which amounts to 35 per cent on average per day. Similarly, for other events, share of events is calculated based on data available.

The feedback from participants of the inter-regional training events revealed that 72 per cent considered knowledge gained in the workshop useful for their work and more than 90 per cent found that the resource persons demonstrated mastery of the subject. As a result of these activities nine countries have already produced estimates of selected types of tax and commercial IFFs and many established new collaboration mechanisms between agencies to track and curb IFFs⁸. Repeated requests for national and country-specific training have been voiced, indicating the need for further support to member states.



*...interviews with country focal points have indicated that the **project has made relevant authorities and technical staff aware of the relevance and feasibility of estimating IFFs**, in addition to enhancing cross-department collaboration and improving the quality of information related to IFFs.*

— Independent evaluation of the UNCTAD-ECA Project on Illicit Financial Flows in Africa



For more information on the independent evaluation of the UNCTAD-ECA Project on “Defining, estimating and disseminating statistics on Illicit Financial Flows in Africa” see (UNCTAD Independent Evaluation Unit, Forthcoming).

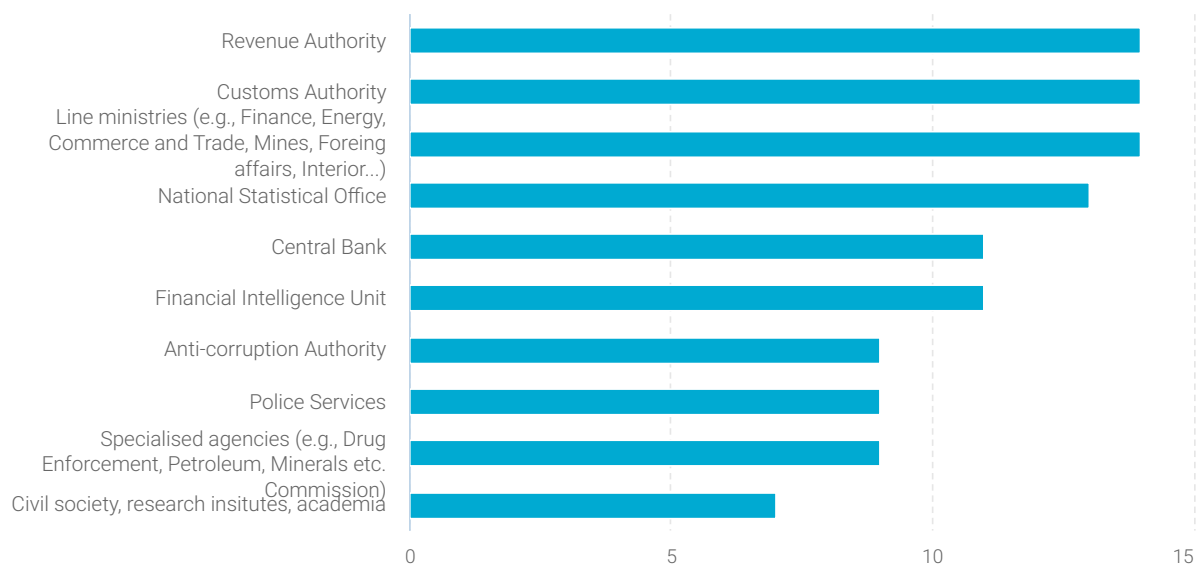
National institutions track IFFs together

All countries involved in measuring tax and commercial IFFs formed a technical working group to bring together key experts from across government agencies and sometimes other stakeholders to address IFFs. These inter-agency groups often include national statistical offices, central banks, tax and customs authorities, relevant ministries including international cooperation, financial intelligence units etc (Figure 3). The composition depends on the national institutional set-up. IFFs leave traces in many administrative and statistical records. The data scattered across various institutions need to be pooled together to estimate IFFs.

To ensure provision of objective information for SDG reporting, the national statistical office is often involved to support and coordinate work, as foreseen in the General Assembly resolution A/RES/71/313 and the Fundamental Principles of Official Statistics (United Nations, 2014).

 **Figure 3. Multiple national stakeholders address tax and commercial illicit financial flows**

(Number of countries where the institution was engaged)



Source: UNCTAD, MPED, ECA and ESCAP

Note: The data indicate institutions involved in the measurement exercise in 14 countries

Each involved agency has their distinct mandates and expertise in addressing IFFs. This may include data or knowledge about key data gaps. In the first pilots to measure tax and commercial IFFs, countries were invited to test one or two methods considering the complexity of the exercise. Countries chose the method based on the expected relevance of the type of IFF and data availability for measuring it in the country. UNCTAD offered a suite of six methods for testing (Table 3). Of the 12 countries in Africa and two in Asia, all tested measurement of trade misinvoicing: all countries applied method #1, the partner country method plus (PCM+), and ten applied the price filter method plus (PFM+). Far fewer countries applied the remaining methods to measure multinational profit shifting and offshore wealth and faced significant challenges in arriving at estimates. Available preliminary estimates are shown in [Map 1](#).

**Table 3. Methods to estimate IFFs from trade misinvoicing tested by all countries**

Method	Number of countries applied it	Estimates produced – descriptive	Estimates produced – numeric
#1: Partner Country Method Plus	14	5	9
#2: Price Filter Method Plus	10	2	7
#3: Global distribution of MNEs' profits and corporate taxes	3	2	0
#4: MNE vs comparable non-MNE profit shifting	1	1	0
#5: Flows of undeclared offshore assets indicator*	1	0	1
#6: Flows of offshore financial wealth by country	1	0	1

Source: UNCTAD, MPED, ECA and ESCAP.

* Used alternative/complementary method of tax compliance by individuals.

Scaling up IFFs measurement and policy formulation

There is a need for continued capacity strengthening and support through the technical expertise from custodian agencies UNCTAD and UNODC, and partners including United Nations Regional Commissions and their experts. In its latest resolution adopted in December 2022, the United Nations General Assembly (United Nations, 2022) calls for concerted actions and effort, both at national and international levels to train and report on SDG indicator 16.4.1 using the recommended methodology and to work in coordination with UNCTAD and UNODC.⁹

Concerted efforts to report data on SDG indicator 16.4.1 with harmonised methods



Estimating IFFs will not only provide clarity on the scope of IFFs, but also help improve the quality of key macroeconomic statistics, such as GDP, by improving their coverage and exhaustiveness. Standardized concepts and full alignment with other relevant frameworks, such as SNA and BoP, will increase IFF statistics applicability and add value in pursuing sustainable development for all.

Measurement of IFFs is the first step in identifying threats and risks from IFFs, and serves as evidence base for further policy formulation.

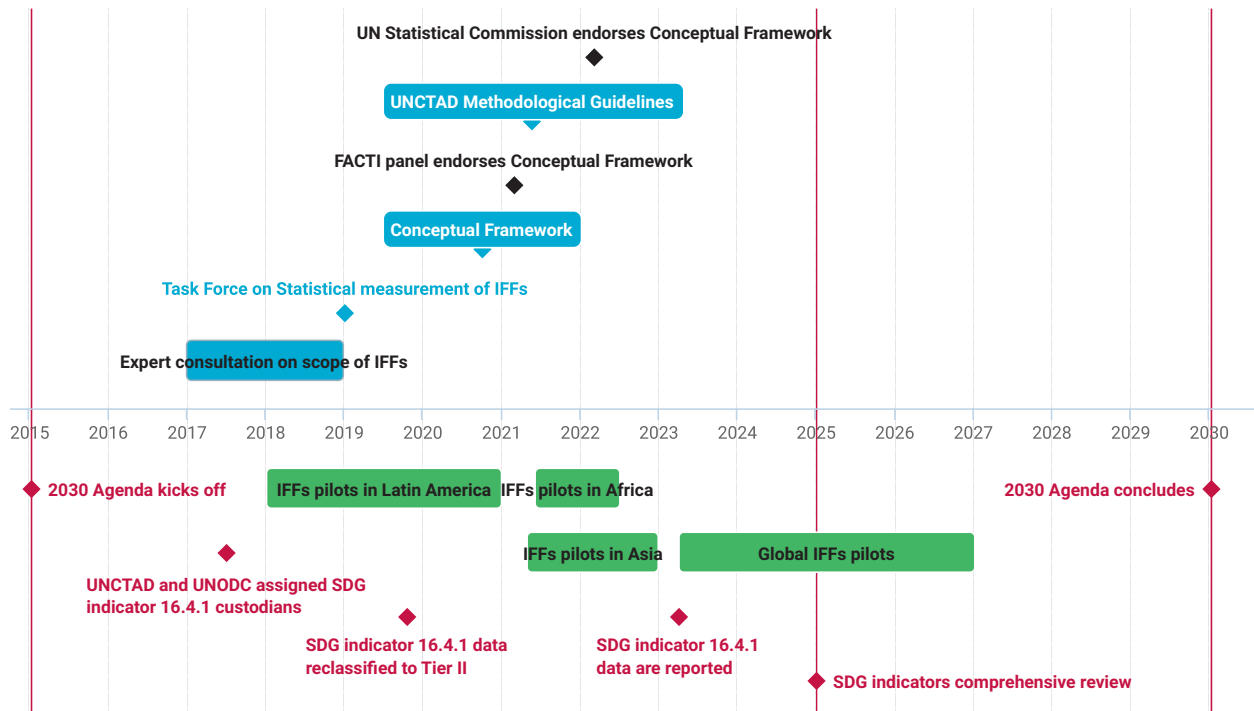
Estimating IFFs will thus also help improve policy agenda and actions towards reducing economic inequalities and reinforcing fundamental human rights for all. African countries, for example, with high IFFs are deemed to spend on average 25% less on health and 58% less on education (UNCTAD, 2020).

A global 2023-2026 United Nations Development Account capacity enhancing project is currently starting, relying on methodological support, guidance and training by UNCTAD and UNODC. It is carried out in coordination by ECA with all UN Regional Commissions. The project will enhance statistical capacities of nine developing countries across regions to measure and curb IFFs, but also enhance investigative and analytical capacities and improve domestic resource mobilisation to strengthen socio-economic resilience to pursue the 2030 Agenda.

Work by custodian agencies continues to develop a comprehensive classification of IFFs and design methods to aggregate various types of IFFs into a single indicator on IFFs, towards measuring and reporting on SDG indicator 16.4.1. Deliberations of Task Force members are ongoing on aggregation measures to report IFFs as a single SDG indicator, exploring the use of a matrix approach to identify areas of (potential) overlap between different methods and types of IFFs and prevent double counting. Further practical studies in countries will be needed to design suitable and robust aggregation methods in the future.



Figure 4. UNCTAD and UNODC have engaged in close collaboration with partners to advance work on SDG indicator 16.4.1



Source: UNCTAD and UNODC

Global and concerted action is needed: to all countries and international organizations, start by reviewing available resources ([here](#)) and stay tuned for future activities and updated figures from countries working jointly with UNCTAD and UNODC. 2030 Agenda is a global commitment by all, and we all need to step up and scale up our joint work on measuring and curbing IFFs.

Notes

- Selecting data series to reflect SDG indicator 16.4.1 on SDG Indicators Database: <https://unstats.un.org/sdgs/dataportal/database> returns Indicator 16.4.1 series: Total value of inward illicit financial flows (DI_ILL_IN) and Total value of outward illicit financial flows (DI_ILL_OUT).
- UNODC estimates based on pilot study conducted in Mexico by UNODC-INEGI Center of Excellence for Statistical Information on Government, Crime, Victimization and Justice. See also United Nations (2023) and UNODC (2021).
- Pilot estimates conducted by UNODC Colombia Country Office. See also United Nations (2023) and UNODC (2021).
- See also <https://unctad.org/news/first-ever-official-data-illicit-financial-flows-now-available>. Data sourced from UNODC work in Peru (UNODC, 2021).
- In [Mexico](#), the value of IFFs from heroin exports in 2018 was comparable to that of beer exports, amounting to over \$4 billion USD (UNODC, 2021). In [Afghanistan](#), opiates are the most valuable commodity exported, potentially generating IFFs from a value estimated between 1.5 to 2.5 times that of total legal commodity exports in 2021 (UNODC, 2022). In [Myanmar](#), opiate exports have generated IFFs averaging between 3% and 7.5% of total legal exports between 2018 and 2021, or a value comparable to legal corn exports (for latest results, see UNODC, 2023b).
- Pilot estimates conducted by UNODC in Nepal. See also UNODC and ESCAP (2022) and United Nations (2023).
- The Task Force is composed of statistical experts from Brazil, Finland, Ireland, Italy, Peru, South Africa and the United Kingdom. The Task Force also includes experts from international organisations with recognised expertise in this field: ECA, ECLAC, ESCAP, Eurostat, IMF, OECD, UNSD, WCO, UNCTAD and UNODC.

8. <https://unctad.org/news/counting-cost-illicit-financial-flows>; <https://unctad.org/news/un-project-supports-egypt-measure-illicit-financial-flows>
9. A/RES/77/154 resolution 'Promotion of international cooperation to combat illicit financial flows and strengthen good practices on assets return to foster sustainable development' "Invites all institutions involved in measuring and reporting on illicit financial flows to use the statistical concepts and methods to estimate illicit financial flows, and encourages all Member States to report on Sustainable Development Goal indicator 16.4.1, using the methodology adopted by the Statistical Commission, and calls upon the United Nations system entities, international organizations and donors to work in coordination with the custodian agencies to train national statistical offices and other entities in charge of reporting on illicit financial flows on these agreed methods".

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A woman wearing a yellow hard hat and a high-visibility safety vest is adjusting the helmet with both hands. She is looking directly at the camera with a neutral expression. The background is a blurred industrial or construction site. The entire image has a warm, orange-toned overlay.

THEME 3

Diversification

“Digital technologies are a game-changer. They are critical to achieving the global goals and overcoming COVID-19. Yet, we will not see the full benefits of the digital age if we do not address the digital divide and ensure equitable digital empowerment for all.”

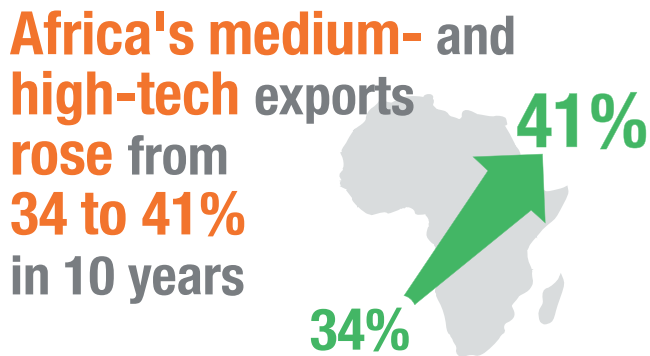
– Mr. Csaba Kőrösi, President of the 77th session
of the United Nations General Assembly, 27 April 2021.

Diversification

The global economy has faced a series of persistent and emerging challenges to ensuring stable economic growth, including, among others, commodity dependence, weak information and communications technology infrastructure, and challenges in transport and trade logistics. Digitalization has changed the way that people produce, consume, trade and live, but digital divides risks leaving many behind. To respond to these challenges, member States in Bridgetown (2021) called for strengthening the international maritime and air transport networks, enhancing the role of services and building productive capacities of developing countries to facilitate economic diversification. These themes are discussed based on an analysis of SDG indicators and other official statistics in the following sections:

1. [Towards sustainable industrialization and global access to high technologies](#)
2. [Resilient and sustainable transport is a pre-condition for an inclusive world of shared prosperity](#)
3. [Digital technologies are key to economic diversification](#)
4. [Fostering productive capacities for more resilient, sustainable, and inclusive development](#)

“
Digital technologies are a game-changer. They are critical to achieving the global goals and overcoming COVID-19. Yet, we will not see the full benefits of the digital age if we do not address the digital divide and ensure equitable digital empowerment for all.
 — Mr. Csaba Kőrösi, President of the 77th session of the United Nations General Assembly, 27 April 2021.
 ”



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Towards sustainable industrialization and global access to high technologies

SDG indicators

Goal 9: Industry, innovation and infrastructure

Target 9.2: Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries.

Indicator 9.2.1: Manufacturing value added as a proportion of GDP and per capita (Tier I)

Indicator 9.2.2: Manufacturing employment as a proportion of total employment (Tier I)

Target 9.b: Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.

Indicator 9.b.1: Proportion of medium and high-tech industry value added in total manufacturing value added (Tier I)

Target 9.5: Enhance scientific research, upgrade technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and increasing the number of research and development workers per 1 million people and public and private research and development spending.

Indicator 9.5.1: Research and development expenditure as a proportion of GDP (Tier I)

Indicator 9.5.2: Researchers (in full-time equivalent) per million inhabitants (Tier I)

Structural transformation has been an important driving force of economic development, initiated by developments in sciences centuries ago, and driven by technological progress, as Kuznets (Kuznets, 1957), Chenery (1960) and Fourastié (1963) describe. Technology and innovation skills, including through international cooperation, are key components for driving structural transformation (UNCTAD, 2021). Technical progress has led to a shift of economic activity from the extraction of raw materials and other primary sector activities to transformation processes, commonly referred to as manufacturing. This is often continued by a sectoral shift from manufacturing to services. According to Haraguchi and Rezonja (2010), this level is reached when GDP per capita amounts to around US\$13 000 at 2005 prices and manufacturing accounts for around one fifth of value added. UNIDO (2021) considers countries to be industrialized when their manufacturing value added, adjusted to purchasing power parities, exceeds US\$2 500 per capita.

Structural transformation helps raise productivity levels and factor incomes, but also promotes diversification of production, thereby limiting the exposure of the economy to demand or supply shocks in specific markets. The Bridgetown Covenant (UNCTAD, 2021) considers “transforming the economies through diversification” as one of the key transformations needed for an inclusive world of shared prosperity. Access to the technologies needed for the emergence of high value-added manufacturing or service activities is a crucial factor for successful structural transformation, especially in an increasingly digitalized world. The Bridgetown Covenant (UNCTAD, 2021) underlines that “to ensure industrialization contributes to the 2030 Agenda, its sustainability and inclusiveness, as well as the harnessing of its benefits, must be assured”.

No sign of further industrialization in Africa and LDCs

In 2021, manufacturing value added per capita amounted to US\$5 265 at constant 2015 prices in developed economies (Figure 1). It was 2.7 times higher than in developing Asia and Oceania (US\$1 436) and 4.2 times higher than in developing Latin America and the Caribbean (US\$1 005). It exceeded the value in Africa (US\$204) by almost 25 times.

Over the last 20 years, manufacturing value added per capita in developing Asia and Oceania has steadily increased, to 3.6 times its value of 2001. In 2016, the region overtook Latin America and the Caribbean where the indicator has remained constant over the last 20 years. Africa has seen an increase of 14 per cent over 20 years, with a very low starting value. Developed economies have recorded modest steady growth, disrupted however by the economic downswings in the global financial crisis, from 2007 to 2010, and, very recently, in 2020, during the COVID-19 pandemic.

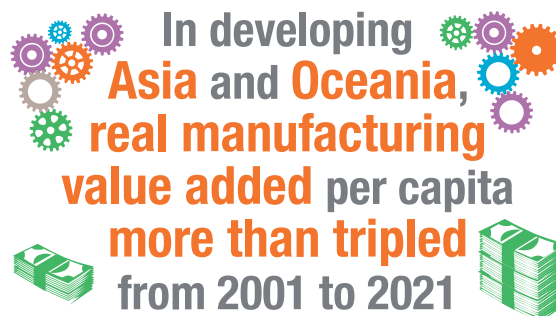
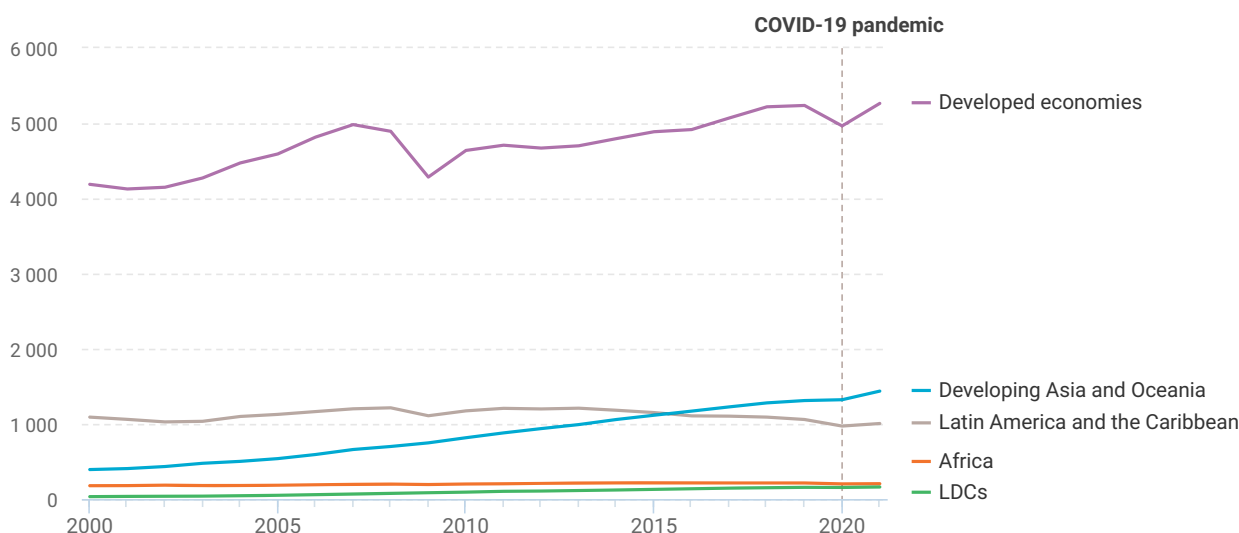


Figure 1. Manufacturing value added per capita: stable in most regions, rapid growth in Asia and Oceania
(US\$ in constant 2015 prices, SDG 9.2.1)




Source: UNCTADstat (UNCTAD, 2023).

Temporary pandemic-related disruptions to most regions, longer recovery for LDCs

In Figure 1, the COVID-19 pandemic shows up as a dent in the longer-term trends of manufacturing value added in all world regions. In fact, the related containment measures caused a sharp temporary drop of output in 2020 in all economic sectors (UNIDO, 2021). In developed economies, in Latin America and the Caribbean, and in LDCs, this drop was more accentuated for manufacturing and services than for the primary sector (Figure 2). Only in the developing economies of Asia and Oceania, manufacturing value added recorded still positive, albeit considerably reduced, annual growth (+1.6 per cent) in 2020, while



output in the other sectors declined slightly, with a fast recovery in 2021 (+9.4 per cent). It is notable that the recovery has been long for many vulnerable countries, like LDCs which had not yet reached pre-pandemic levels in 2021.

 **Figure 2. Manufacturing value added in developing Asia and Oceania did not stop growing in the pandemic**
(Percentage)



Source: UNCTADstat (UNCTAD, 2023).
Note: In constant 2015 prices.

UNIDO (2021) describes the relocation of industrial production to Asia as a long-term trend. The pandemic has also led to reevaluation of the risks involved in globally diversified production and a rearrangement of global value chains. Many multinational enterprises now try to shorten their value chains, to regionally diversify the sourcing of inputs, and to build up more stocks, to avoid that a default of production at, or delivery from, one location does not stall production in the successive links of the chain.

Digitalization, and especially the use of the Internet, was notably accelerated by the pandemic (UNIDO, 2021). According to data collected through UNIDO's COVID-19 firm-level survey, one third of the responding firms in Africa, Asia and Latin America reported having started new or increased online business activity. Most of these firms, from 86 per cent in Asia to 95 per cent in Latin America, expected that change to remain in the future (UNIDO, 2021).

LDCs falling behind the target path towards industrialization

In 2021, the LDCs' manufacturing sector produced on average US\$160 per head, at 2015 prices, almost 32 times less than the average produced in the developed world. However, LDCs' manufacturing value added per capita has steadily increased over the last 20 years. The level in 2021 was already 3.6 times as high as the level of 2001, averaging to a growth of eight per cent each year (Figure 1).

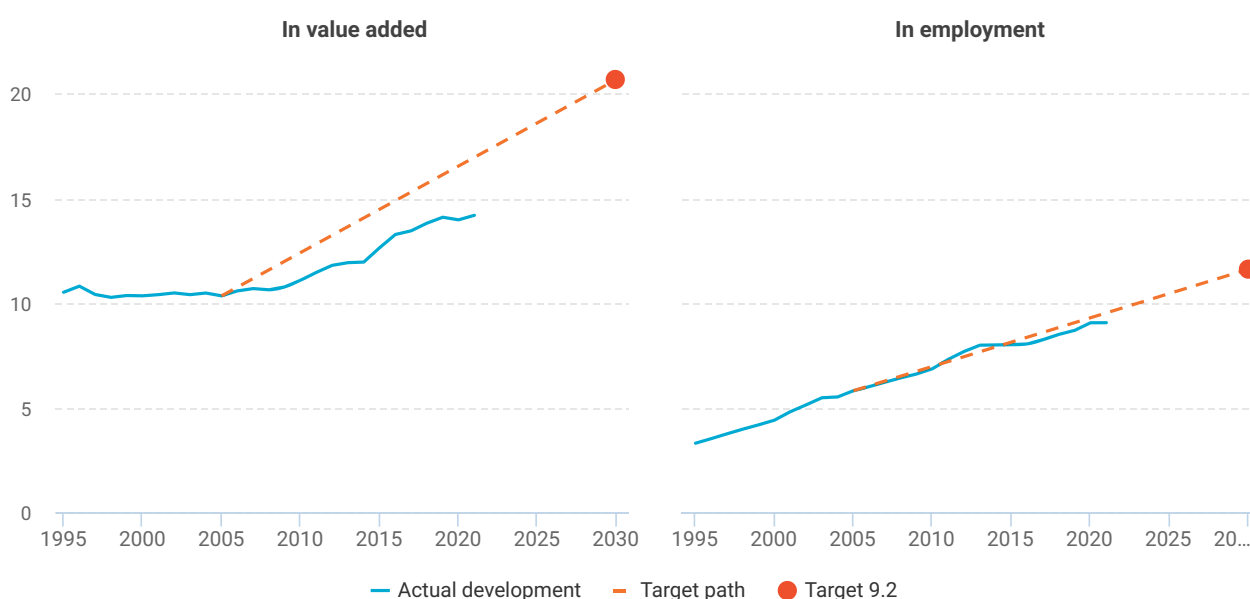
The manufacturing share in value added, the focus of SDG target 9.2 for LDCs, increased from 10.4 per cent in 2001 to 14.2 per cent in 2021. Most of that progress was made between 2014 and 2019. In 2020, during the COVID-19 pandemic, the expansion of the manufacturing sector was interrupted, when it stagnated at about 14 per cent (Figure 3). Extrapolating the trend into the future, the growth achieved since 2005 on average appears to be too slow to achieve the SDG target of doubling the manufacturing share in value added by 2030. From 2005 onwards, an average annual increase of 0.42 percentage points would have been required to reach the target. The actual annual average increase until 2020 was 0.24 percentage points.

The development of the share of manufacturing in employment has been closer to the target path than the manufacturing share of value added. Until 2015, growth in that indicator was even slightly higher than needed, on average, to reach the SDG target 9.2.2 set up for employment by 2030. Due to stagnation for three successive years, from 2013 to 2016, and with a halt in growth again in 2021 including a slower recovery from the COVID-19 crisis in manufacturing than in other sectors of the labour market, meeting the target now requires further impetus.

LDCs' manufacturing output share stagnated during COVID-19; employment followed suit a year later

Figure 3. LDCs unlikely to reach the target of doubling the manufacturing share of value added by 2030; for employment it appears to be within reach

(Percentage, SDG 9.2.1; SDG 9.2.2)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023) and ILOSDG (ILO, 2023).
 Note: Target and target path set with reference to the base year 2005.¹

Productivity-driven and employment-driven transformations

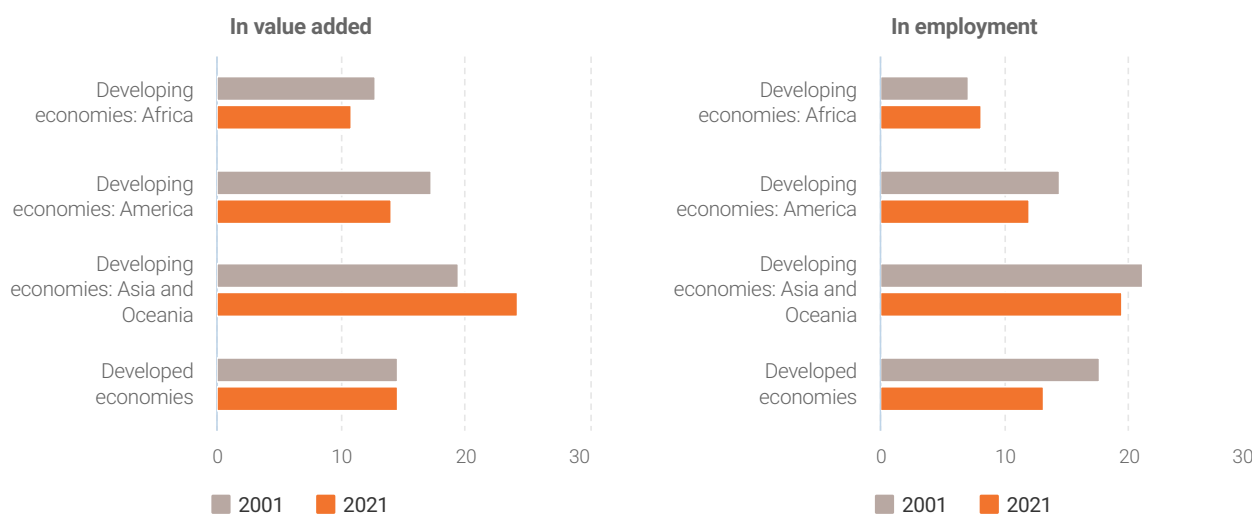
Between 2001 and 2021, developing Asia and Oceania saw a considerable increase of the share of manufacturing in value added (from 19.4 to 24.2 per cent), underlining the growing importance of that region in global industrial production and the resolute growth in manufacturing output per capita outlined above, while the share of manufacturing in employment declined (from 14.2 to 12.0 per cent). By contrast, in Africa, the manufacturing share increased in employment (from 7.1 to 8.2 per cent) and declined in value added (from 12.7 to 10.9 per cent), over the same period. These trends indicate different transformations: one driven by high manufacturing productivity growth with higher value added and lower employment share, and the other driven by increasing manufacturing employment share, while productivity remained low. In Latin America and the Caribbean, the share of manufacturing decreased in both value added and employment. In the developed economies, the share in value added remained almost constant, while the share in employment fell.

From 2001 to 2021, largest manufacturing productivity gains in developing Asia and Oceania



Figure 4. Manufacturing productivity increased most in Asia and Oceania from 2001 to 2021

(Percentage, SDG 9.2.1; SDG 9.2.2)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023) and ILOSTAT (ILO, 2023).

Persistent technology gap in manufacturing

The 2030 Agenda promotes technological development through research and innovation, especially in developing economies. Progress towards the achievement of that target is measured by the proportion of medium and high-tech industry value added in total manufacturing value added (SDG indicator 9.b.1). A positive change in this means a shift from lower to higher technology value added, usually raising the average value added per worker. R&D and innovation play a crucial role in this transformation by providing the grounds for the use of new and more efficient technologies.

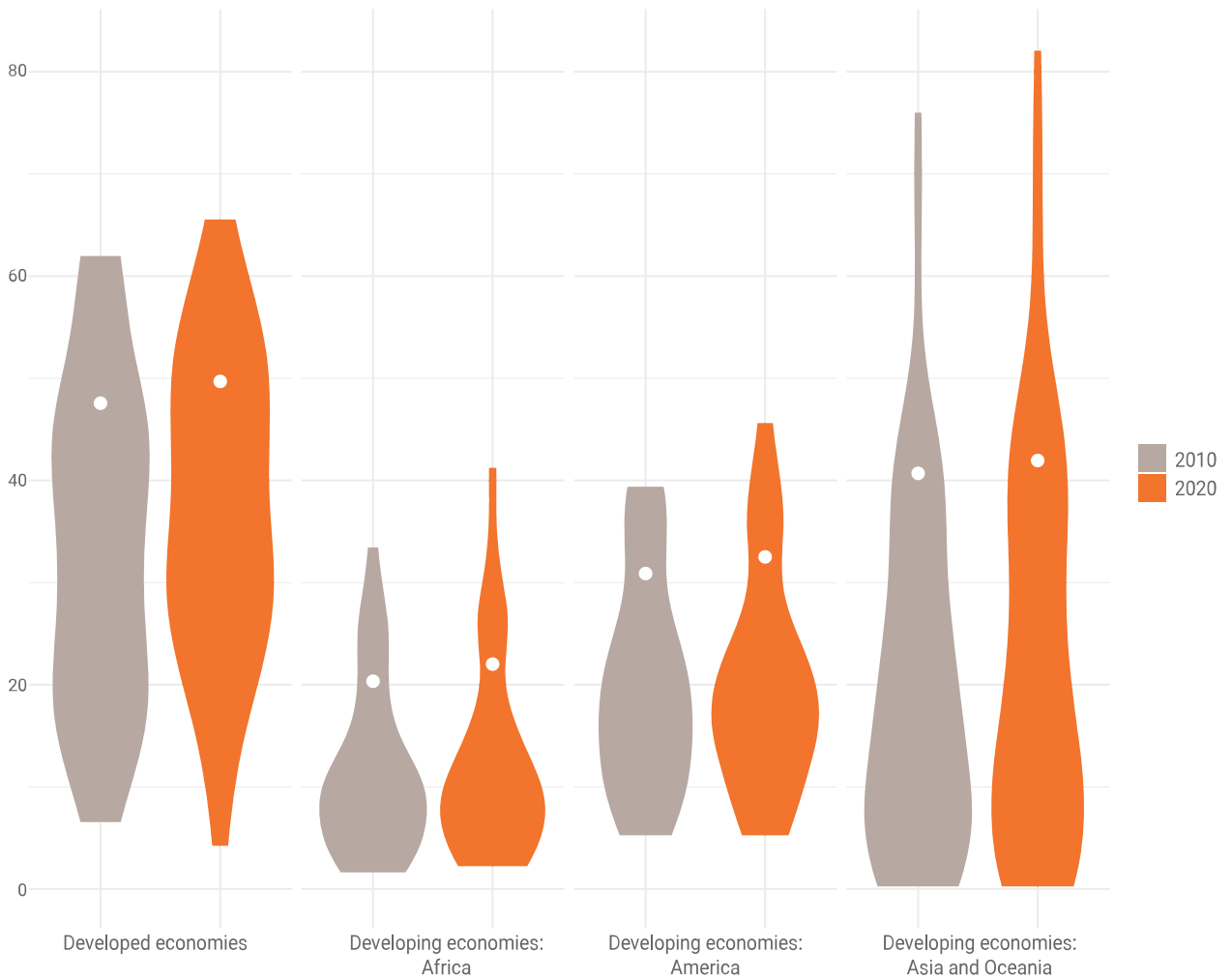
In 2020, medium and high-tech industry accounted for higher shares of manufacturing value added in developed than in developing economies. The weighted regional averages, represented by the dots in Figure 5, reveal that 50 per cent of developed economies' manufacturing output was obtained in medium and high-tech industries. Among developing countries, this share varied considerably across regions. In developing Asia and Oceania, it was 42 per cent, while it reached 33 per cent in developing America and only 22 per cent in Africa.

From 2010 to 2020, the share of medium and high-tech manufacturing increased in all regions. While developed economies managed to raise this share by 2.1 percentage points, it increased 1.7 percentage points in developing Asia and Oceania, 1.6 percentage points in developing America and only 1.3 percentage points in Africa. These figures suggest that Africa has become increasingly uncoupled from the global technological advancements in manufacturing. Figure 5 also shows considerable variation across individual economies of the same region, especially in developing Asia and Oceania, a region that encompasses, on one hand, the two economies with the world's most innovative manufacturing sectors, namely, Singapore (82 per cent in 2020) and Taiwan Province of China (71 per cent), and, on the other hand, several countries in which the share of medium and high-tech industries in value added has persistently remained below three per cent, such as Cambodia, Tonga, Yemen, Macao SAR, and Maldives.



Figure 5. The proportion of medium and high-tech industry in manufacturing value added indicating a technology divide between developed and developing regions

(Percentage, SDG 9.b.1)



Source: UNCTAD calculations based on the Competitive Industrial Performance Index dataset (UNIDO, 2023).

Notes: A violin plot shows the distribution of individual countries' medium and high-tech industry shares in manufacturing value added within each country group and year. The coloured area indicates the distribution of individual countries, smoothed by kernel density estimation, around the regional average (white dots). The wider the violin shape, the higher the possibility to find a country around the corresponding indicator value.

High-tech intensity of exports increasing globally

Africa's medium- and high-tech exports rose from 34 to 41% in 10 years

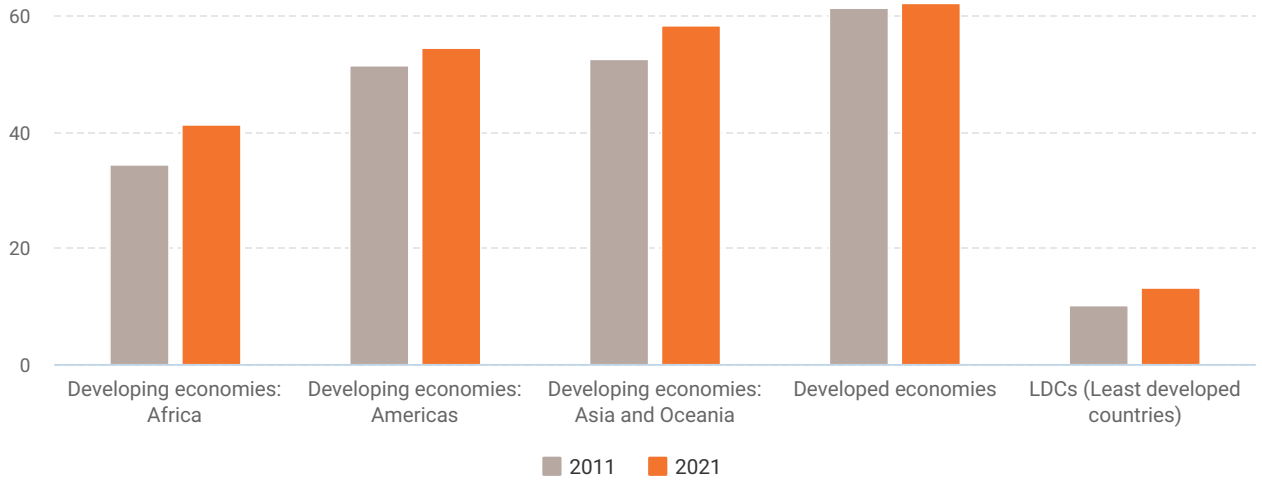
Looking at international trade, we can observe a convergence of the share of medium and high-tech manufacturing exports in total manufacturing exports throughout world regions. In 2021, almost two thirds (62 per cent) of the manufacturing exports from developed economies consisted of medium- or high-tech products. This share has increased over the last ten years by one percentage point. By contrast, in Africa, only 41 per cent of manufacturing exports were high- or medium-tech in 2021, with an increase of 7 percentage points from 10 years

before.



Figure 6. Many developing economies catching up with developed in high-tech intensity of exports

(Share of medium and high-tech manufactured exports in total manufacturing exports, percentage)



Source: UNCTAD calculations based on the Competitive Industrial Performance Index dataset (UNIDO, 2023).

R&D spending increasingly concentrated in a few economies

Between 2015 and 2021, world R&D expenditures grew strongly: 6.2% annually

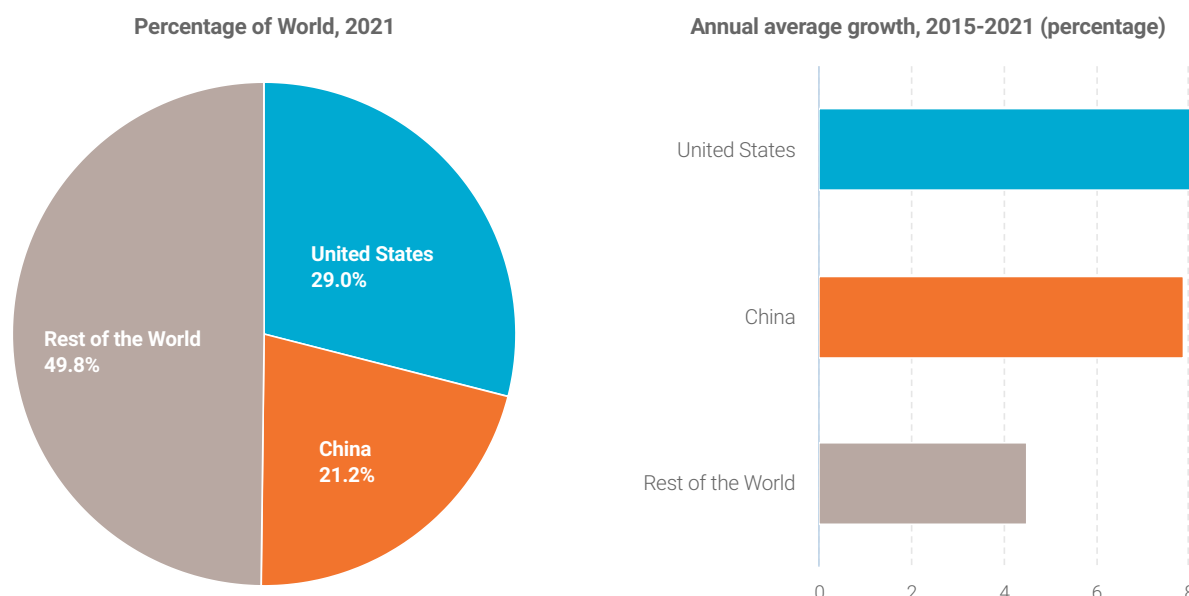


Global R&D spending was estimated at 1.93 per cent of GDP in 2020, a not insignificant increase compared to 1.70 per cent of GDP recorded over five years before the pandemic (UNESCO Institute for Statistics, 2023). That means, around US\$1.6 trillion of the US\$85.3 trillion global GDP (UNCTAD, 2023) was spent on R&D in 2020. Between 2015 and 2021, world R&D expenditures grew strongly, by 6.2 per cent, on

average, annually. Spending on R&D obtained an impetus by the COVID-19 pandemic, due to high innovation needs in the medical sector. Large proportions of funding for research were reallocated to IT, electronic equipment, pharmaceutical and biotechnology companies.

Figure 7. United States of America and China dominate global R&D spending

(Spending in US\$ - PPP)



Source: UNCTAD estimates based on UNESCO Institute for Statistics (2023) and OECD.Stat (OECD, 2023).

The bulk of global R&D investment is concentrated in a few economies. Estimates indicate that China and the United States of America alone accounted for half of it in 2021 (Figure 7). Four fifths were spent in only ten countries, compared to three quarters in 2010. This indicates that R&D spending is becoming more concentrated, contrary to the SDG target 9.5.1, which calls for upgrading of technological capabilities of industrial sectors in all countries. The COVID-19 pandemic influenced the trend heavily. For example, to fight the pandemic in the United States of America, more funds were directed to R&D than before. Measured in proportion of GDP, the United States' R&D investment increased from 2.8 per cent, on average, before the pandemic, to 3.1 per cent in 2020, and further to 3.2 per cent in 2021. Thereby, the country caught up with the rapid growth of R&D expenditure observed in China over the last seven years of around 8 per cent annually. In the rest of the world, R&D spending grew on average by 4.5 per cent annually between 2015 and 2021.

**Table 1. Developing countries lag behind developed in their R&D expenditures, 2020**

(SDG 9.5.1)

	Gross domestic expenditure on R&D (Percentage of GDP)	Gross domestic expenditure on R&D (Millions of US\$-PPP)	R&D-related services exports ^{2,3} (Millions of US\$)
Global top 5			
Israel	5.4	21 146	10 207
Republic of Korea	4.8	111 116	4 826
Sweden	3.5	20 281	13 294
Belgium	3.5	21 121	6 622
United States of America	3.4	730 329	95 331
Top 10 developing economies			
China ²	2.4	..	12 426
Singapore	1.9	12 370	1 457
United Arab Emirates	1.5	..	966
Thailand	1.3	..	71
Brazil	1.2	..	766
Türkiye	1.1	25 391	355
China, Hong Kong SAR	1.0	..	533
Egypt	1.0	..	2
Malaysia	1.0	..	636
Iran (Islamic Republic of) ¹	0.8	..	6

¹ Figure refers to 2019.² UNCTAD estimates.³ Figures include R&D services and IP charges related to R&D.

Sources: UNESCO Institute for Statistics (2023) and OECD.Stat (OECD, 2023); UNCTAD estimates.

Notes: Economies are ranked by gross domestic expenditure on R&D as percentage of GDP.

The economies investing the highest proportion of GDP in R&D, globally, are Israel, the Republic of Korea, Sweden, Belgium, and the United States of America (Table 1). Most of these economies report steady and proportionally important international trade in R&D-related services, namely R&D services and charges for the use of intellectual property resulting from R&D activities. Among developing economies, China had the highest R&D investment equivalent to 2.4 per cent of GDP in 2020. In all other developing economies, the indicator remained below two per cent. Only nine recorded an R&D intensity of one per cent of GDP or above.

The findings correlate highly with the Global Innovation Index (WIPO, 2022) that relies on invested inputs related to innovation and the return on that investment as main indicators. The index shows Switzerland, the United States of America and Sweden as top performers in innovation in 2020. Among developing economies, Singapore, China, Hong Kong SAR and the United Arab Emirates ranked highest, followed by Malaysia, Türkiye, India, Thailand, Mauritius and Viet Nam. According to WIPO (2022) Türkiye and India entered the top 40 for the first time. In Africa, Botswana took the biggest leap forward, reaching the 86th

position, overtaking Kenya (88th) among the top 3 countries for the region. Other notable improvers within the region are Mauritius (45th), Ghana (95th), Namibia (96th) and Senegal (99th).

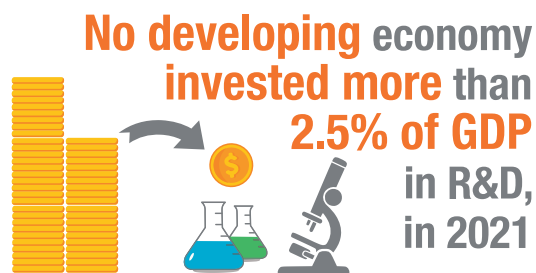
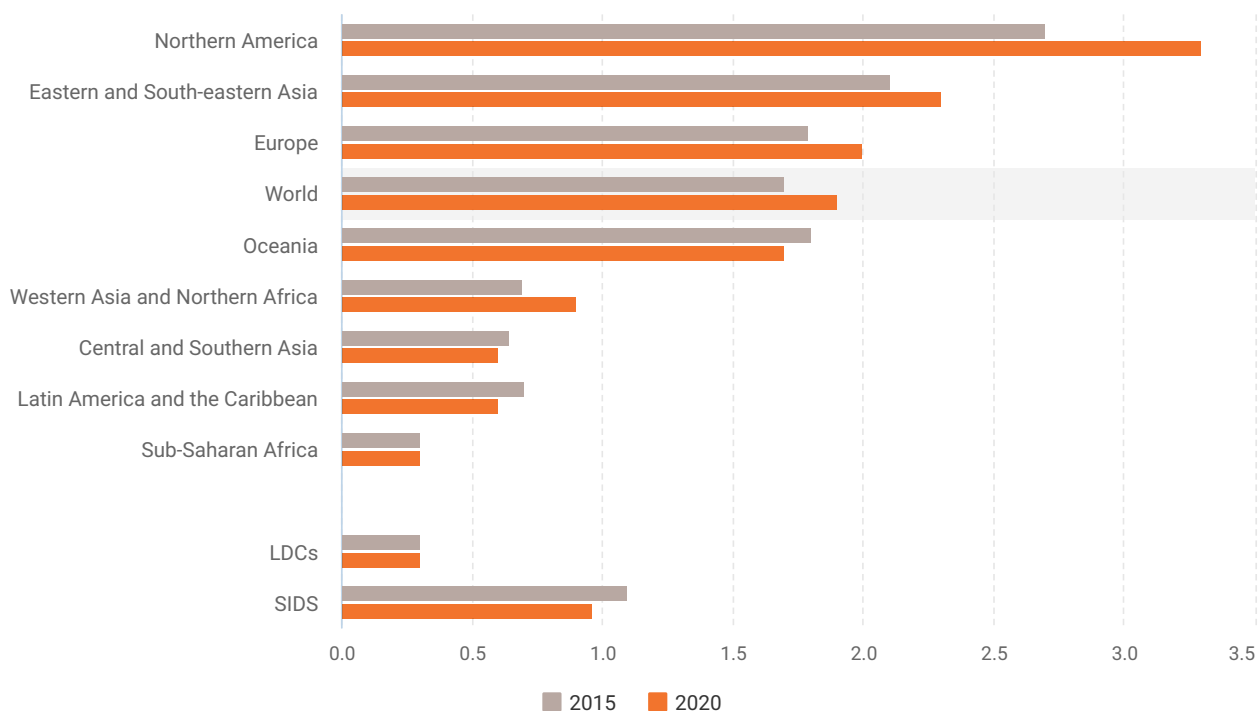


Figure 8. Research and development expenditure in proportion to GDP
(Percentage, SDG 9.5.1)



Sources: UNESCO Institute for Statistics (2023)
Note: Regions as defined by UNESCO.

R&D intensity in Northern America up from 2.7% in 2015 to 3.3% in 2020



Northern America recorded the highest increase in R&D intensity from 2.7 in 2015 to 3.3 per cent of GDP in 2020. Eastern and South-Eastern Asia maintained their strong progression, and Europe's R&D investment intensified further. Western Asia and Northern Africa also gained in R&D intensity, while other regions recorded either stagnating (Sub-Saharan Africa) or declining trends. In LDCs, R&D expenditure as percentage of GDP remained constant at 0.3 per cent. SIDS saw slight decrease from

1.1 per cent in 2015 to just below one per cent in 2020. These figures suggest that many developing economies face difficulties to allocate more resources to increase their R&D intensity.

The number of persons directly employed in R&D, as FTE, per million inhabitants, is measured by SDG indicator 9.5.2. The top performers in 2020 were the Republic of Korea (8 714), Sweden (7 930), Denmark (7 692), Finland (7 527), and Singapore (7 280). Besides Singapore, other highly ranked developing economies included Hong Kong SAR (4 352), Macao SAR (4 283), the United Arab Emirates (2 443), Thailand (2 070), and Türkiye (1 775). These statistics consider not only researchers, but also R&D technical and supporting staff. According to figures available for 50 countries, on average, 40 per cent of the R&D workforce

were women, in 2020. Interestingly, developing economies registered higher percentages of female R&D staff than developed economies. (UNESCO Institute for Statistics, 2023).

About 40% of R&D employees are women.



In developing economies even more

Notes

1. In this report, progress in target 9.2 is measured with reference to the base year 2005. This is in line with the practice applied in the monitoring of the Millennium Development Goals, where the baseline was set to the year 1990, thus ten years before the adoption of the Millennium Development Declaration (United Nations, 2005). The 2030 Agenda for Sustainable Development does not specify any base year for target 9.2.

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Resilient and sustainable transport is a pre-condition for an inclusive world of shared prosperity

SDG indicators

Goal 9: Industry, innovation and infrastructure

Target 9.1: Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

Indicator 9.1.2: Passenger and freight volumes, by mode of transport (Tier I)

Infrastructure, including transport infrastructure, directly and indirectly influences the attainment of all the SDGs, including 92 per cent of the 169 individual targets (Thacker et al., 2018). Transport infrastructure and services enable trade, support global supply chains, propel growth, and promote social progress. While multimodality is key to door-to-door delivery of goods, maritime transport is the dominant mode, accounting for over 80 per cent of world merchandise trade (UNCTAD, 2022a). The Bridgetown Covenant emphasized the strategic importance of transport for sustainable economic growth and development, regional integration, and for developing countries' participation in the global economy. Resilient transport systems that can withstand shocks, recover and resume operations while adapting to change are crucial for a more inclusive world and shared prosperity. The Covenant stressed the need to enhance the sustainability and resilience of transport infrastructure and services and promote the conservation and sustainable use of oceans and their resources (UNCTAD, 2021).

Maritime transport and trade defied the COVID-19 pandemic and continue to show resilience

Underpinned by business continuity in transport and logistics and the sector's prompt response to the challenges arising from the disruption, maritime trade volumes fell less dramatically than expected in 2020 before recovering swiftly in 2021. Maritime trade bounced back by 3.2 per cent in 2021, after a 3.8 per cent decrease in 2020. Globally, loaded cargo recovered to 11 billion tons in 2021 (Figure 1) with developing countries, particularly the Asian region, acting as the main global maritime

cargo handling centre. Of all international seaborne trade, 58 per cent were loaded or discharged in developing economies, and 43 per cent in developing economies in Asia (calculations based on UNCTADstat (UNCTAD, 2023a)).

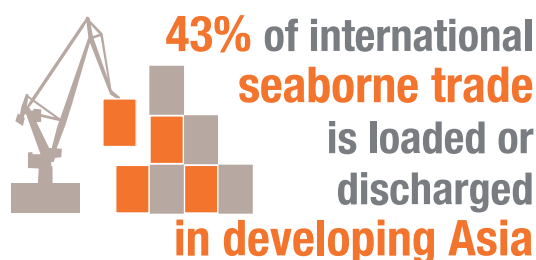
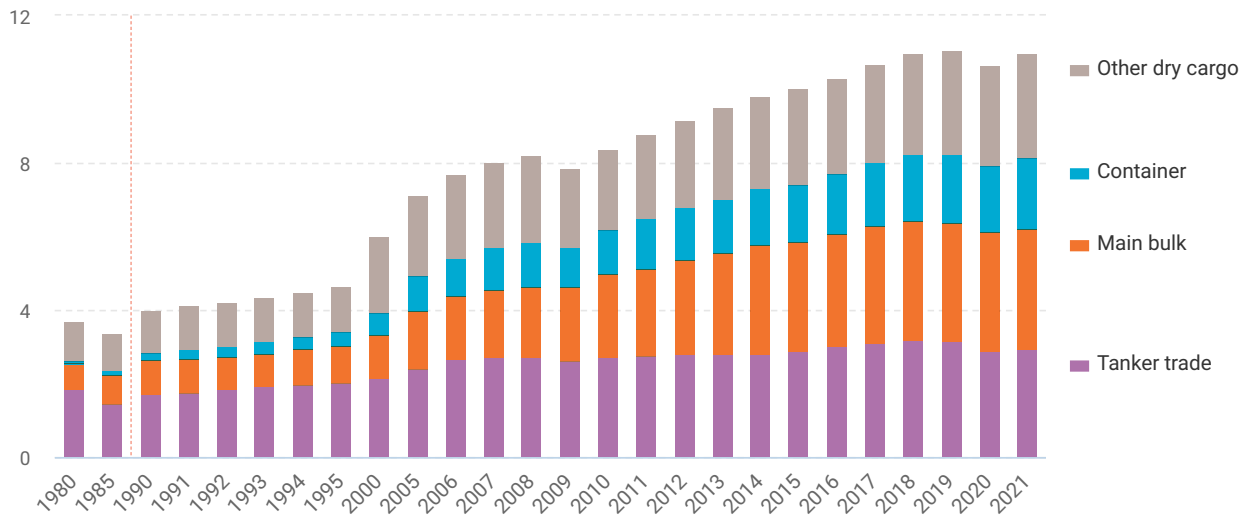




Figure 1. International maritime trade volumes regain their course upward

(Billion of tons loaded, SDG 9.1.2)



Source: UNCTAD (2022a)

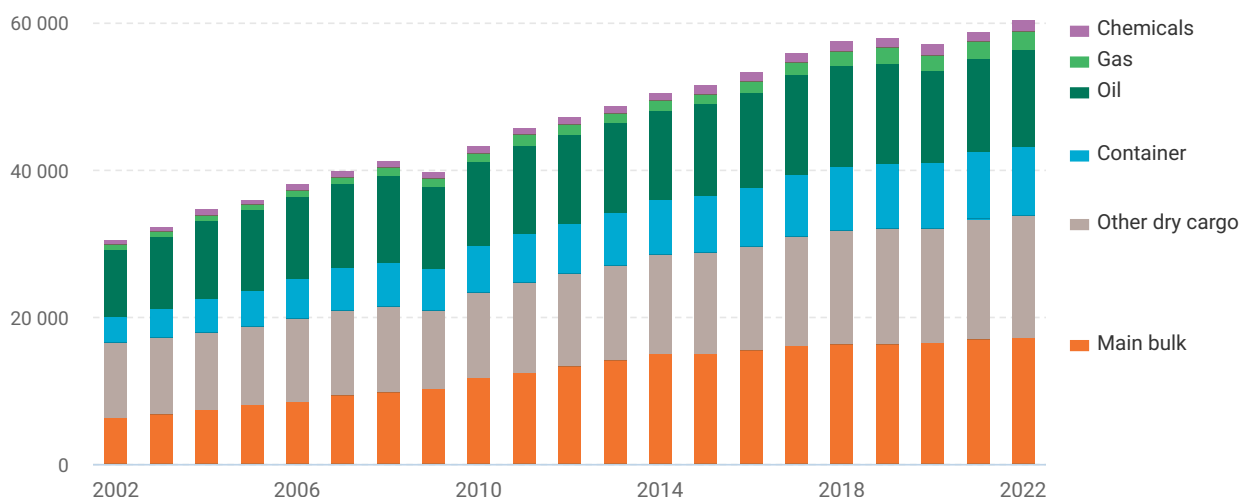
Notes: 1980–2005 figures for *Main bulk* include iron ore, grain, coal, bauxite/alumina, and phosphate. Starting in 2006, *Main bulk* includes iron ore, grain, and coal only. Data relating to bauxite/alumina and phosphate are included under *Other dry cargo*. *Tanker trade* includes crude oil, refined petroleum products, gas, and chemicals.

Containerized trade and dry bulk commodity trades have been more resilient as compared with tanker trade. There was also a revival in trade adjusted for distance travelled. Maritime trade in ton-miles fell by 1.4 per cent in 2020 but in 2021 increased by 3.3 per cent taking the total to an estimated 59 trillion (Figure 2). Container port traffic also declined in 2020 and rebounded in 2021 with the top leading world container ports being concentrated in Asia, in particular China (UNCTAD, 2022a).



Figure 2. The weight and distance travelled for international maritime trade keep growing

(Billions of cargo ton-miles)



Source: UNCTAD (2022a) based on estimates from Clarksons Research (2022)

Notes: *Main bulk* includes iron ore, grain, coal, bauxite/alumina, and phosphate. Figures for 2021 are estimates and forecasts for 2022. Ton-miles are estimated by Clarksons Research based on its own data on seaborne trade and maritime distances.

Port calls changed amid a global supply chain crisis that heightened in 2021

A large upswing in global demand matched with acute supply-side capacity shortages culminated in an unprecedented logjam in global logistics with port congestion reaching historical records. The COVID-19 pandemic brought with it logistical problems, especially for container traffic, which persisted in 2022. In terms of time in port, the median for container ships increased by 12 per cent in 2021, from 0.71 to 0.80 days and stayed at this level in 2022 (UNCTAD, 2023a). Though the total number of port calls rebounded in 2021 (Figure 3), supported by the recovery in seaborne trade volume, calls by container ships were hindered by heavy port congestion. The impacts cascaded to developing regions. Shipping lines redeployed ships to the busier and more profitable routes of the United States of America and China; other countries suffered even more. Africa and Latin America and the Caribbean, for example, lost more than 10 per cent of their direct liner shipping connections from the third quarter of 2020 to the second quarter of 2022 (UNCTAD, 2022a). In 2022, the war in Ukraine brought with it new uncertainty and complexity for shipping logistics (UNCTAD, 2022a).

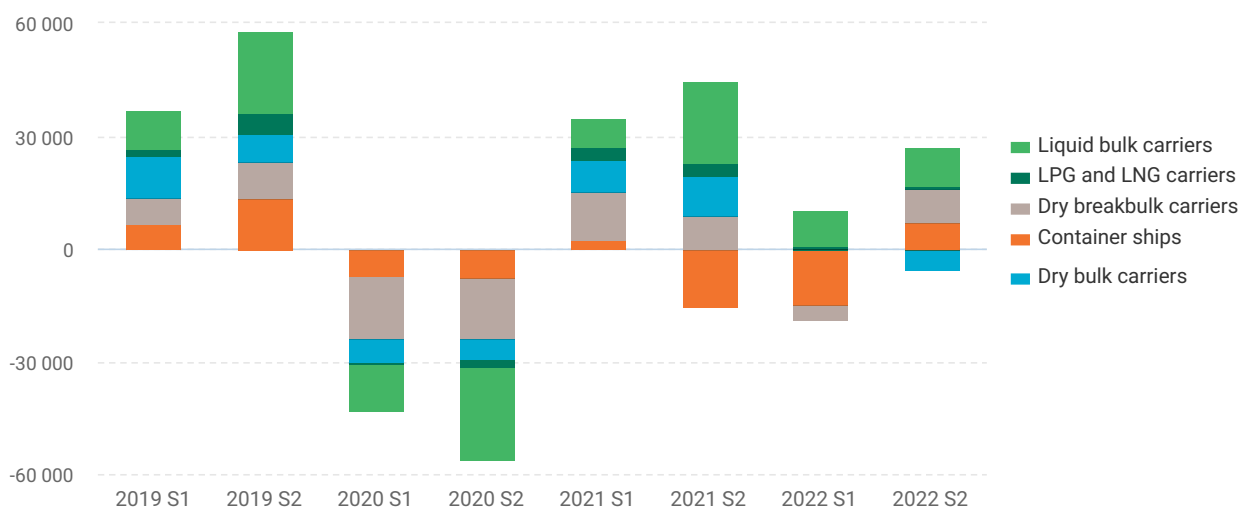
Median time in port for container ships was 12% higher in 2021 and 2022 compared to 2020



calls rebounded in 2021 (Figure 3), supported by the recovery in seaborne trade volume, calls by container ships were hindered by heavy port congestion. The impacts cascaded to developing regions. Shipping lines redeployed ships to the busier and more profitable routes of the United States of America and China; other countries suffered even more. Africa and Latin America and the Caribbean, for example, lost more than 10 per cent of their direct liner shipping connections from the third quarter of 2020 to the second quarter of 2022 (UNCTAD, 2022a). In 2022, the war in Ukraine brought with it new uncertainty and complexity for shipping logistics (UNCTAD, 2022a).

Figure 3. Merchant ships are again calling ports in ever higher numbers

(Year-on-year differences per semester)



Source: UNCTADstat (UNCTAD, 2023a)


Note: Ships of 1000 GT and above, not including passenger ships and RO/RO ships. S1 refers to the first semester of the year (January to June) and S2 to the second (July to December).

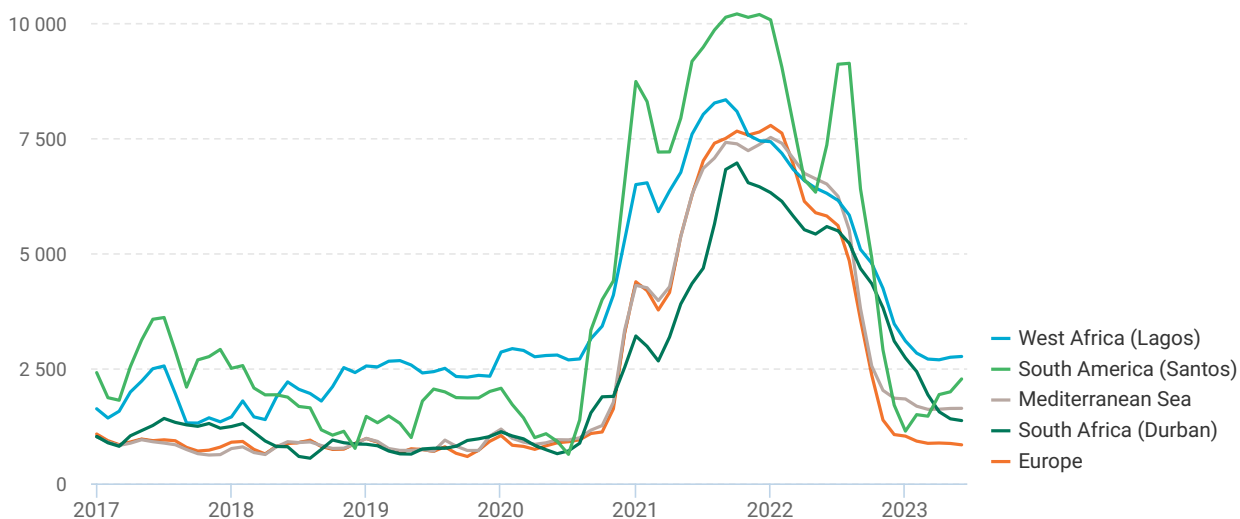
In addition, many developing countries were faced with late arrival of vessels and shortage of containers. Meanwhile, container freight rates jumped to record levels and by mid-2021, peaked at four times their pre-pandemic levels (Figure 4). Spot container freight rates surged on many routes, including those to developing regions. For example, in 2019 on the Shanghai, China to South America (Santos) route the rates per TEU were around US\$2 000 but by December 2020 were US\$6 543, and by December 2021 had reached US\$10 196. Over the same period, between December 2020 and December 2021, rates per TEU on the Shanghai to South Africa (Durban) route increased from US\$2 521 to US\$6 450 and on the Shanghai to West Africa (Lagos) route increased from US\$2 521 to US\$7 452. By the spring of 2023, as the logjam and port congestion eased and



Freight rates in June 2023 were back down to a fifth of the high in January 2022

global demand moderated, freight rates declined and returned to pre-pandemic levels. In June 2023, a comprehensive index of costs of shipping from Shanghai was down to only 20 per cent of the peak in January 2022 (Clarksons Research, 2023).

 **Figure 4. Prices of ship containers have returned to pre-pandemic levels**
(Shanghai Containerized Freight Index monthly spot rates, US\$/TEU, selected routes)



Source: UNCTAD (2022a) based on data from Clarksons Research (2023)

Note: The Shanghai Containerized Freight Index reflects the price level for exports by container from Shanghai, per destination.

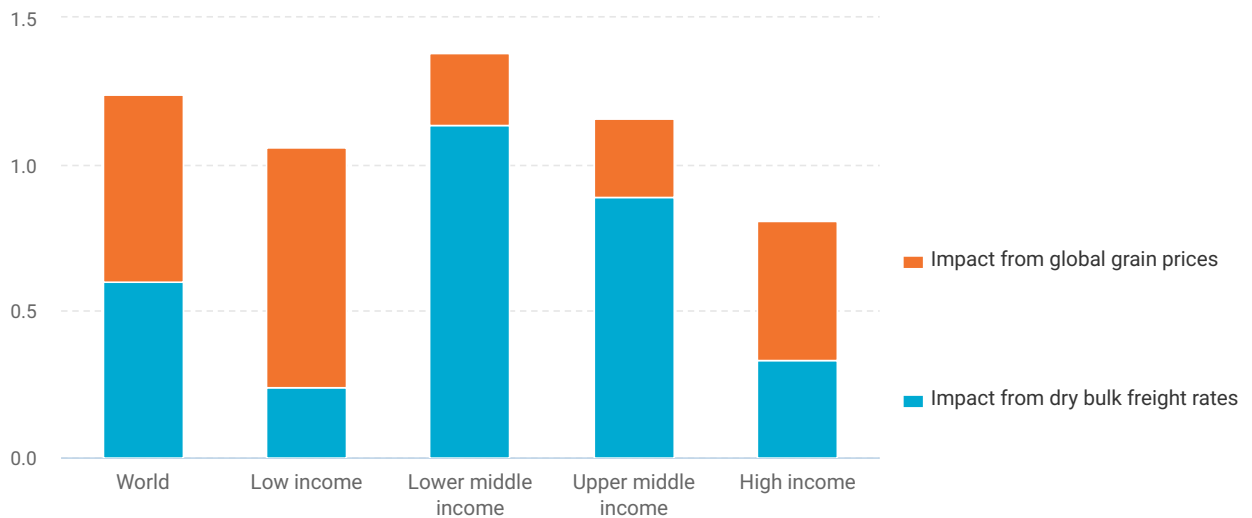
The war in Ukraine disrupted food and energy supplies and put maritime transport and trade under the spotlight

The war in Ukraine stopped grain shipments through Black Sea ports. Food prices soared together with dry bulk freight rates (see also [Trade and Food Security](#)). An UNCTAD simulation projects that higher grain prices and dry bulk freight rates can contribute to a 1.2 per cent increase in consumer food prices (Figure 5). The price increases will be slightly higher in middle-income economies, whose food imports depend more on dry bulk shipping. Low-income economies have limited capacity in primary food processing and import more processed food which arrives in containers. Trade patterns are also shifting as buyers seek substitute suppliers, who are usually more distant, adding to ton-miles.



Figure 5. The cost of grains and the cost of their transport both contribute to higher food prices

(Impact of dry bulk freight rates and grain prices on consumer food prices, percentage)

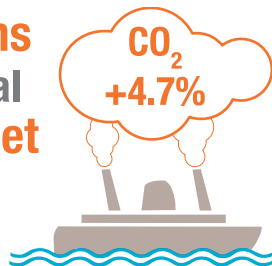


Source: UNCTAD (2022a)

Note: Groups are World Bank (2023) income groups.

Energy transition in maritime transport as a climate risk mitigating strategy and a resilience building lever

CO₂ emissions from the global merchant fleet increased by 4.7% in 2021



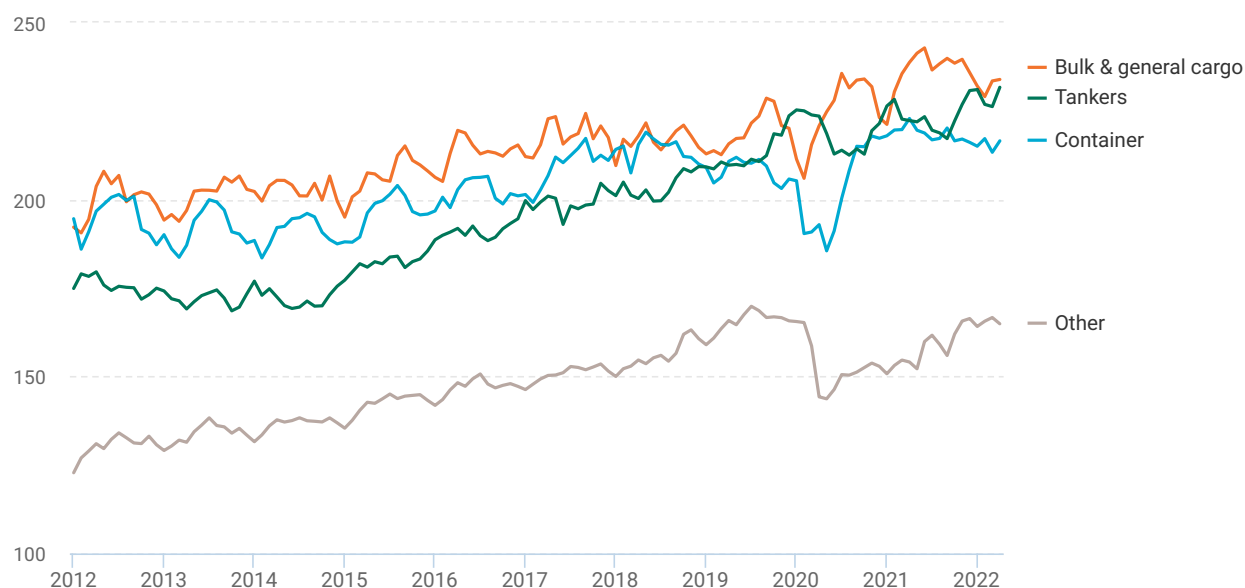
The previous decade saw a steady reduction in carbon intensity measured in grams of CO₂ emitted per ton-mile (UNCTAD, 2022a). However, emissions from the world fleet, i.e., the product of carbon intensity and shipping volume, increased by 4.7 per cent between 2020 and 2021, reflecting the swift recovery in maritime transport activity in 2021. Most of the increases came from container ships, dry bulk and general cargo vessels (Figure 6). Maritime transport is currently at a

turning point given the global momentum arising from the Paris Climate Agreement. The sector is committed to curbing its greenhouse gas emissions and taking up lower carbon alternative fuels. While energy efficiency gains from technical and operational measures are important, the use of non-fossil fuels or technologies that capture and store carbon emitted by shipping is key for the sector's decarbonization. Alternative fuels currently cost two to five times as much as conventional fossil fuels and are not yet available at scale and commercially viable. To expand the use of alternative fuels, ships need to invest in vessels running on alternative fuels and ports need to support this transition by providing low-emission energy supply infrastructure and alternative fuel bunkering facilities (UNCTAD, 2023b).



Figure 6. CO₂ emissions from maritime shipping remain stubbornly high

(Million of tons, annualized)



Source: UNCTAD (2022a) based on data provided by Marine Benchmark (2022).

Note: *Other* includes vehicle and RO/RO ships, passenger, offshore vessels, and services vessels, such as tugboats, fishing vessels and others.

Maritime transport resilience is a requirement for supply chains as well as the national economies (UNCTAD, 2023c). Ensuring the integrity and the well-functioning of maritime transportation is critical for all economies, developed and developing alike, in particular SIDS and LLDCs. These vulnerable economies depend heavily on maritime transport networks for their livelihood and access to the global marketplace. Building the capability of countries to anticipate, prepare for, respond and recover from significant multi-hazard threats affecting their maritime transport systems requires as a matter of priority investing in risk management, emergency response and preparedness (UNCTAD, 2022b)

Since 2020, UNCTAD's Building Port Resilience Against Pandemic component of the [TrainForTrade](#) programme has been deployed supporting a total of 4 573 port managers and operators across 163 countries in English, French and Spanish. It covers four main areas: (1) crisis protocol and communication strategies, (2) staff management and well-being, (3) technology preparedness and, (4) cargo flow continuity (UNCTAD, 2022c).

Adapting ports and other key transport infrastructure to the impacts of climate change

Ports are critical for global trade but are at the forefront of climate change. Many climatic hazards can affect ports, including heat waves, which can be dangerous for human health and significantly increase energy needs and costs; heavy precipitation, giving rise to flash floods; extreme winds and waves (e.g., long waves and associated swell) that endanger the operation of cranes and berthing operations; or changes in wave direction that can make access to ports more hazardous (Becker et al., 2013). Mean sea-level rise and associated extreme sea-levels pose a particularly important threat of coastal flooding (WMO, 2023; Izaguirre et al., 2021), which is growing with potentially devastating impacts on port infrastructure and operations, in particular in developing regions, with low adaptive capacity, such as in SIDS (Asariotis, 2021; UNCTAD, 2023d). Critical coastal transport infrastructure in these countries, notably ports and airports, are lifelines for external trade, food and energy security, as well as tourism, and in the context of disaster risk reduction (UNCTAD, 2019, 2020a). However, these assets are projected to be at high and increasing risk of coastal flooding, from as early as in the 2030s, unless effective adaptation action is taken (Monioudi et al., 2018; IPCC, 2022).

Resilience at risk discusses the continued growth of greenhouse gas emissions. If emissions are not cut, the risks of extreme heatwaves, droughts, and flooding will grow rapidly with potentially devastating consequences (IPCC, 2022). Climate-related extreme events and disasters can result in significant damage, as well as disruption and delay across supply-chains, giving rise to extensive economic costs (WMO, 2023; UNCTAD, 2020a; Verschuur et al., 2023; Environmental Defense Fund, 2022) and underlining the critical need for infrastructure investment and climate adaptation. Recent projections suggest that by 2100, the total value of assets exposed to episodic coastal flooding could increase significantly (Kirezci et al., 2020; Jevrejeva et al., 2018). See **Resilience at risk**.

Without timely planning and implementation of appropriate adaptation measures, the projected impacts on critical transport infrastructure may have broad economic and trade-related repercussions and could severely compromise the sustainable development prospects of the most vulnerable nations (UNECE, 2020; UNCTAD, 2019; Asariotis, 2020; Becker et al., 2013). However, knowledge gaps remain about vulnerabilities and the exposure individual coastal transport facilities face (UNCTAD, 2017).

To increase levels of preparedness and help mitigate impacts, there is also an important need to upscale support for Early Warning Systems, as discussed in **Resilience at risk** (WMO, 2022). Flexible and adaptive infrastructure, systems and operations, and engineered redundancy to improve resilience are needed (PIANC, 2020, 2023), as are other technologies to avert, minimize and address loss and damage in coastal zones (UNFCCC, 2020). While progress has been made in technical guidance (PIANC, 2020, 2023; European Commission, 2021), standards (ISO, 2019, 2021) and methodologies (UNCTAD, 2018, 2020b; UNEP, 2022), including in a number of SIDS, more needs to be done (UNDRR and UN DESA, 2022).

There is an increasingly urgent need to step up affordable climate adaptation finance, including in the form of grants (UNCTAD, 2022d) for developing economies. Investing in climate resilience makes good economic sense: The World Bank estimates suggest that overall net benefits of investing in resilient infrastructure in developing countries could amount to US\$4.2 trillion, a US\$4 return for each dollar invested in resilience (Hallegatte et al., 2019).

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Digital technologies are key to economic diversification

SDG indicators

Goal 9: Industry, innovation and infrastructure

SDG target 9.c: Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in LDCs by 2020

SDG indicator 9.c.1: Proportion of population covered by a mobile network, by technology (Tier I)

Goal 17: Partnerships for the goals

SDG target 17.6: Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism

SDG indicator 17.6.1: Fixed Internet broadband subscriptions per 100 inhabitants, by speed (Tier I)

SDG target 17.8: Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for LDCs by 2017 and enhance the use of enabling technology, in particular information and communications technology

SDG indicator 17.8.1: Proportion of individuals using the Internet (Tier I)

Digitalization has changed the way that people produce, consume, trade and live (UNCTAD, 2021a). Narrowing the technological gap and closing the digital divide between and within developed and developing countries provides an opportunity for improving incomes and resilience, as well as reducing the vulnerabilities, of the poorest, and in particular of women and youth.

The COVID-19 pandemic has further accentuated the importance of the digital dimension of the economy, changing the landscape of international trade and how countries can be affected by it. This and other crises have highlighted the role of digital technologies in building resilient systems that are open, inclusive and secure and benefit everyone. Supporting countries' digital transformation, while taking account of the challenges and opportunities of swift technological change, must be a priority to successfully address existing digital inequalities.

It all starts with getting people and businesses online

To be able to engage in and benefit from the digital economy and digital trade, individuals and businesses must first be online. This means being covered by Internet infrastructure that is sufficiently fast and reliable, and furthermore by electricity infrastructure to power digital devices. By 2022, 88 per cent of world population was covered by 4G mobile networks, double the share in 2015 (ITU, 2023a). However, there is considerable variation in 4G deployment between regions; while 4G is available to all in Eastern Asia and in Europe, only half of people in Africa live in areas covered by 4G networks (Figure 1). Furthermore, mobile networks continue to evolve, with 4G being superseded by 5G technology. Preliminary data (ITU, 2023a) show that 19

per cent of the global population was covered by a 5G network in 2021. The widest roll-out was in Europe with 52 per cent of the population being covered, followed by the Americas (38 per cent) and the Asia-Pacific (16 per cent).

World population covered by mobile networks

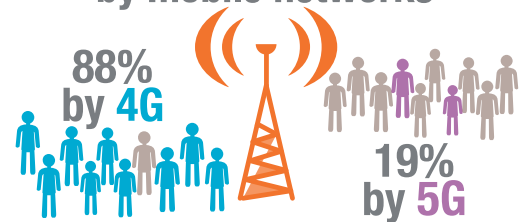
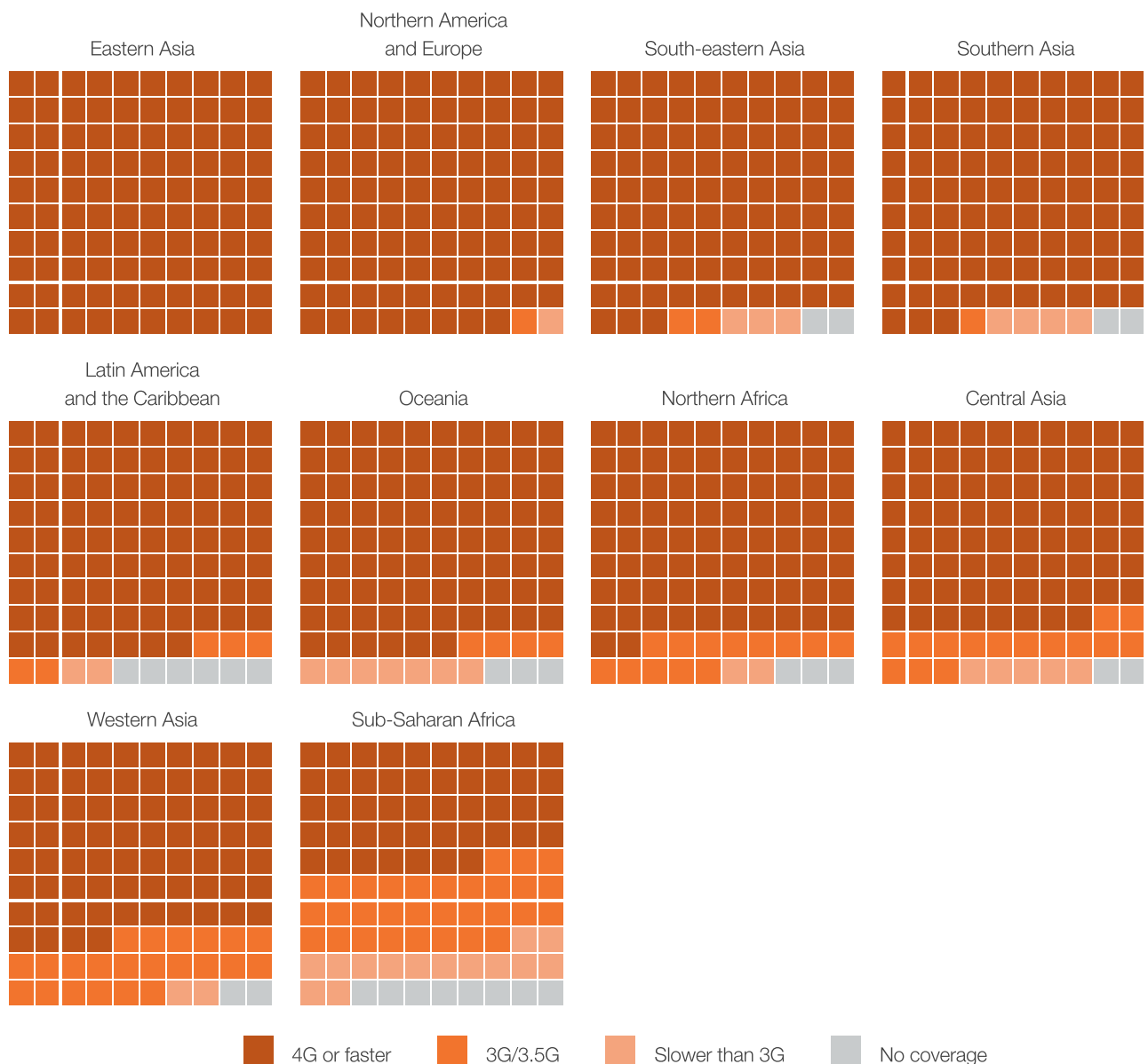


Figure 1. Twelve per cent of people worldwide live outside 4G mobile network coverage

(Distribution of population by mobile network coverage, by technology, 2021, SDG 9.c.1)



Source: UNCTAD calculations based on ITU (2023b).

Note: The values for 2G and 3G networks show the incremental percentage of the population that is not covered by a more advanced network technology.



Coverage alone is not enough

While 95 per cent of the world population are covered by mobile broadband (3G or above) networks, many other factors create a gap between those who *could* access the Internet and those who *do* use it. In 2022, two thirds of the world's population used the Internet, leaving 2.7 billion people offline. Furthermore, while almost all people in developed countries are online, only one third of those in the least developed countries (LDCs) use the Internet (ITU, 2023a).

2022 price of an annual subscription in LDCs

Fixed broadband 18.5% of GNI per capita

Mobile broadband 5.7% of GNI per capita

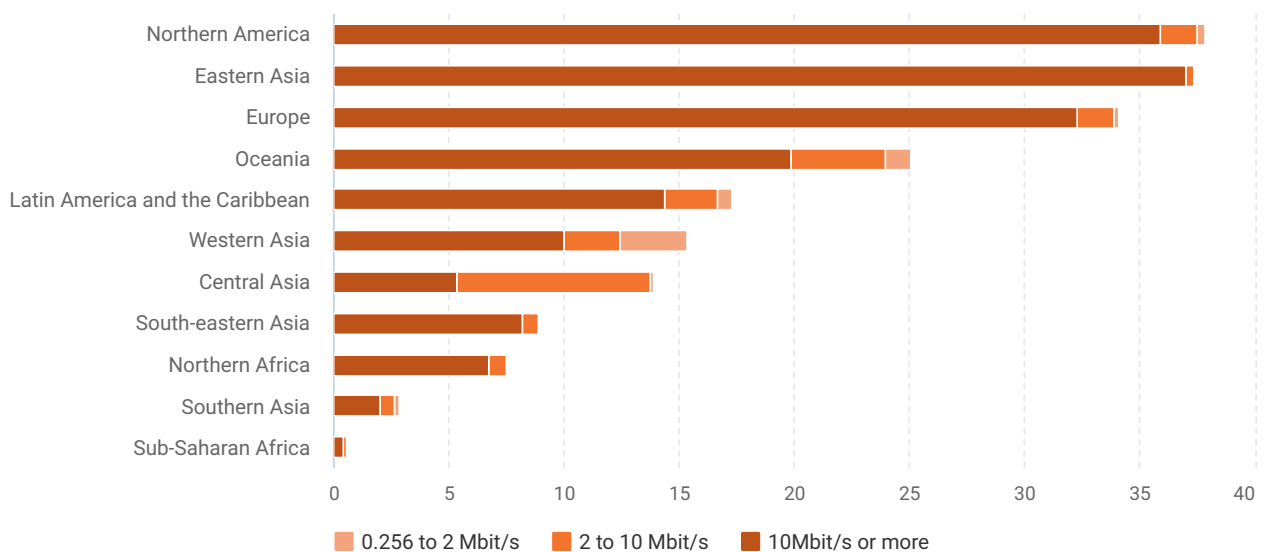
One key reason is that the costs involved in getting online can be prohibitive for many. In 2022, the annual cost of a mobile broadband subscription was equivalent to 5.7 per cent of per capita gross national income (GNI) in LDCs while a fixed broadband subscription equated to almost one fifth of GNI per capita (ITU, 2023a). Given disparities in income distribution within countries, for many people connectivity will be even less affordable. Furthermore, the digital devices needed to access the Internet, such as smartphones, also need to be available and affordable.

Additionally, the skills required to use the Internet, to make orders online and to consume digital services, as well as awareness of the opportunities of the digital economy and digital trade, must be sufficiently widespread amongst the population and especially among those working at firms that stand to benefit from digital transformation.

Speed matters

The speed of an Internet connection is a crucial determinant of the online activities that can be undertaken. The slowest connections may only support basic online communications, such as email and instant messaging, while faster connections can facilitate online activities such as accessing government and financial services, social media, and making online purchases. The digital delivery of services from suppliers domestically or abroad often relies on greater bandwidth to support high-quality video calls or streaming.

Figure 2. Slow Internet connection speeds limit engagement in the digital economy
(Fixed broadband subscriptions per 100 inhabitants, by contracted speed, 2021, SDG 17.6.1)



Source: UNCTAD calculations based on ITU (2023b).

In many countries, fixed line technologies play a crucial role (alongside mobile) in delivering Internet connectivity. While fixed broadband is, in general, widespread in Northern America, Europe, Oceania and Eastern Asia, other regions have much lower subscription rates. Furthermore, the contracted speed of fixed broadband subscriptions varies considerably between regions (Figure 2).

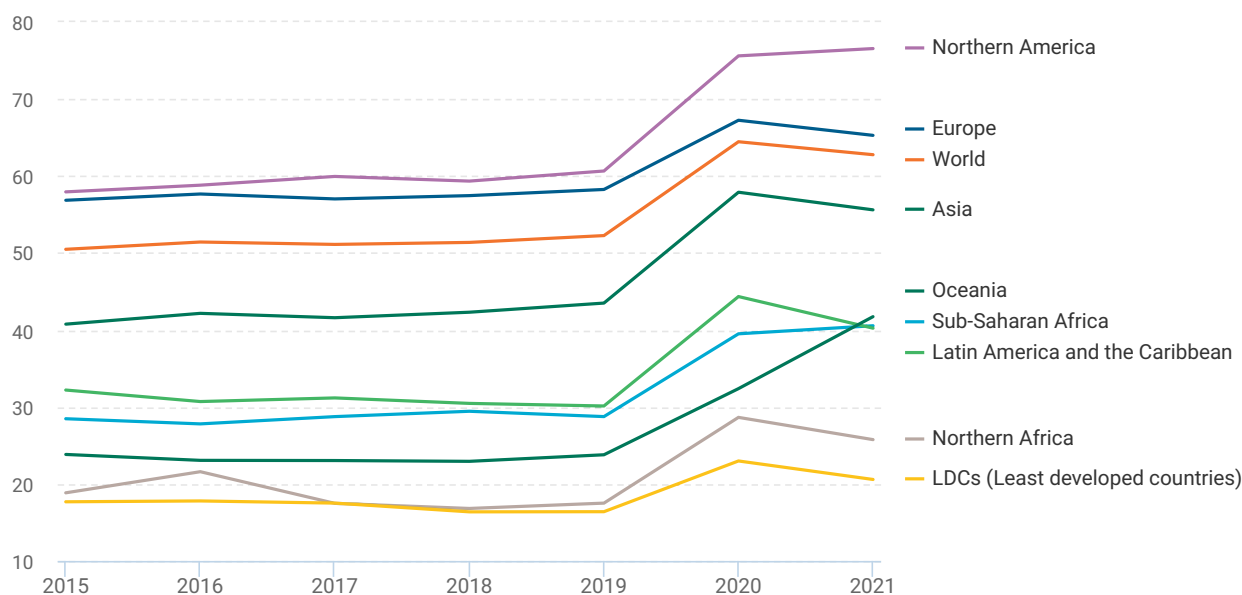
Digital technologies offer a vital opportunity for economic diversification

Digital technologies, including the Internet, underpin e-commerce - in which buyers place and sellers receive orders online. Additionally, they enable instantaneous remote delivery of services directly into businesses and homes. Both digitally ordered and digitally delivered transactions increasingly take place across borders. The possibility to engage in such digital trade offers new opportunities for the diversification of developing economies. Digitally deliverable services – those that can be delivered remotely over computer networks such as the Internet - now account for almost two thirds of all services exports worldwide and grew especially during the disruptions caused by the COVID-19 pandemic (UNCTAD, 2022b).

Digitally deliverable services
now account for almost $\frac{2}{3}$ of all services exports worldwide

Figure 3. Trade in digital services has sharply increased in importance, especially in 2020

(Exports of digitally deliverable services as a percentage of total services exports)



Source: UNCTADstat (UNCTAD, 2023a) dataset on international trade in digitally-deliverable services.

Notes: Digitally deliverable services are those that “can be delivered remotely through computer networks”. The measure presented is an aggregation of insurance and pension services, financial services, charges for the use of intellectual property, telecommunications, computer and information services, other business services and audio-visual and related services.

Seizing the opportunities of digital trade requires not only investments in ICT connectivity but also actions to boost digital skills and awareness of the opportunities and risks associated with digital trade, measures to facilitate digitally ordered goods transiting the border, and regulatory actions to encourage digital payments, ensure privacy and data protection, and establish channels for recourse in case of loss or detriment related to digital trade (UNCTAD, 2022a).

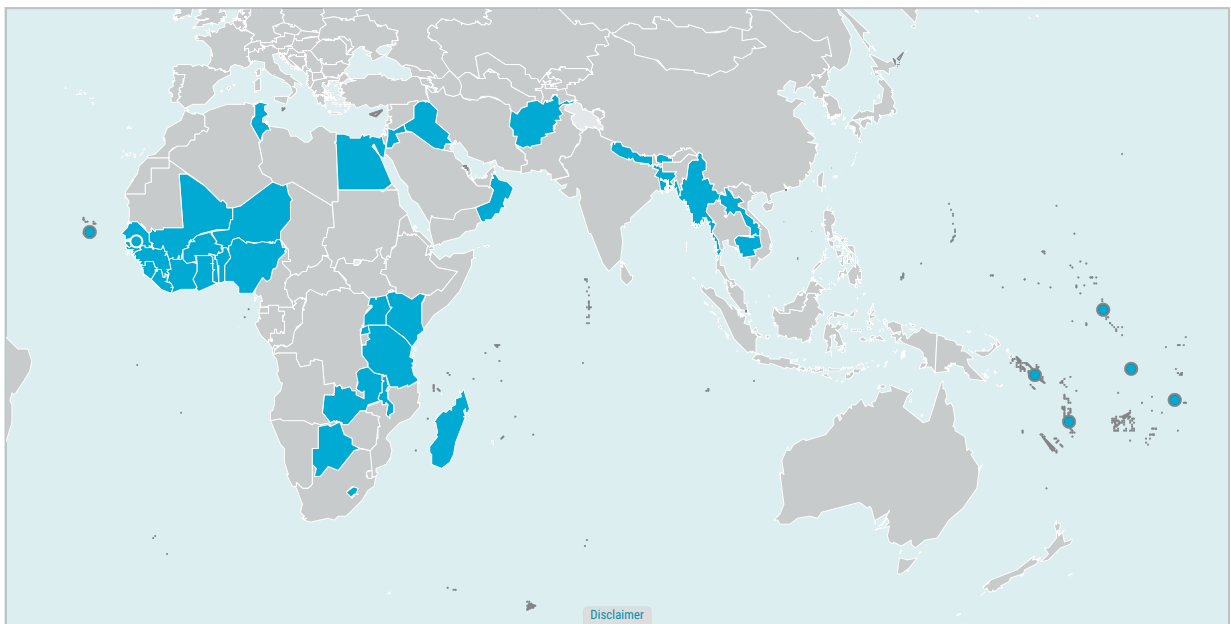
UNCTAD promotes ICT as a tool for development

The rapid changes taking place as a result of widespread Internet access, increasing e-commerce, and other digital advances require new approaches to adapt to and maximize opportunities from these changes. UNCTAD is implementing several initiatives in response. “eTrade for all” (UNCTAD, 2020) has established a global partnership of 35 organizations working together to support an enabling environment for sustainable development through e-commerce. At the heart of this initiative is an online knowledge-sharing platform through which countries can navigate the technical and financial assistance offered by partnering institutions in key policy areas such as ICT infrastructure and services, payments, trade logistics, regulatory frameworks, skills development and finance.

UNCTAD has also undertaken 32 eTrade Readiness Assessments in LDCs and other developing countries, covering 55 countries in their status of implementation of UNCTAD eT Readies, E-Commerce Strategies, or Action Plans; 41 have successfully launched at least one of the three (Map 1). These identify areas for action across various policy areas to increase countries’ capacity to participate in and benefit from e-commerce. They help give countries the information and awareness to effectively formulate their needs for development assistance related to e-commerce and to seek support for action from donors. UNCTAD also works with developing countries on e-commerce strategies and policies.



Map 1. 41 countries have launched UNCTAD eT Ready, E-Commerce Strategy or Action Plan



Source: UNCTAD (2023b)

Another key area of action is on improving the measurement of the digital economy and digital trade. UNCTAD is a founding member of the Partnership on Measuring ICT for Development (ITU, 2020) and the UNCTAD Working Group on Measuring Ecommerce and the Digital Economy (UNCTAD, 2019) provides an international forum for countries to discuss measurement challenges. In 2020, UNCTAD published the revised Manual for the Production of Statistics on the Digital Economy (UNCTAD, 2021b), which provides guidance and specifications for key indicators to help countries with measuring the digital economy. In 2022, an online learning course was launched based on the manual. In response to member interest, UNCTAD is also focussing on measuring the value of e-commerce (UNCTAD, 2023c) through a Task Group bringing together interested countries and international organisations to develop measurement guidelines. UNCTAD also collaborates with the OECD, WTO and IMF on the Handbook on Measuring Digital Trade (upcoming).

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Fostering productive capacities for more resilient, sustainable, and inclusive development

The Bridgetown Covenant emphasizes UNCTAD's critical role in “formulating and promoting policies fostering productive capacities and structural transformation in developing countries” (UNCTAD, 2021a). Productive capacities are key to achieving the SDGs in a multidimensional and coherent manner. They enable kick starting structural economic transformation, which adds value to the economy and, if properly managed, leads to economic diversification, accelerated growth, greater resilience and ultimately faster poverty reduction and improved standard of living, with resources and space to ensure environmental sustainability and social cohesion.

Productive capacities are more specifically defined as “the productive resources, entrepreneurial capabilities and production linkages, which together determine the capacity of a country to produce goods and services and enable it to grow and develop” (UNCTAD, 2006). From this definition, which hints at the latent nature of productive capacities, it is clear that measuring productive capacities is a complex endeavour. However, UNCTAD stands out as the pioneer in taking on this measurement challenge.


No nation has ever developed without building the requisite productive capacities, which are key to enabling countries to achieve sustained economic growth with accelerated poverty reduction, economic diversification and job creation.

— UNCTAD Secretary-General Rebeca Grynspan.

The Productive Capacities Index (PCI)

To measure productive capacities, UNCTAD developed a multidimensional PCI which assists in identifying gaps and limitations in productive capacities (UNCTAD, 2021b). Within the PCI, there are eight categories – human capital, natural capital, energy, transport, ICT, institutions, private sector, structural change – measured by 42 indicators. Each of the categories refers to a particular aspect of productive capacities development and organic links between and among the categories. Out of these 42 indicators, 11 relate directly to SDG indicators (Table 1), thus contributing to the important interdependence between the PCI and the SDG indicators. PCI is also highly correlated with other conventional measures of economic and sustainable development (UNCTAD, 2021b).

In June 2023, UNCTAD released a second-generation PCI to help countries make more accurate diagnostics and measurements of their economic performance in that regard. In turn, this can shape the formulation of sound policies and their effective implementation. The PCI is available through a dedicated online portal with publications, manuals, resources and tools (UNCTAD, 2021b). It maps the productive capacities of 194 economies over the period 2000-2022 and provides a better measure of development outcomes than other traditional benchmarks such as GDP. It is multidimensional and measures economic inputs and potential as opposed to outputs.



**The PCI covers
194 economies
over the period 2000-2022**

**Table 1. 11 PCI indicators relate directly to SDG Indicators**

PCI Categories*	SDG indicators included
Energy	7.1.1: Proportion of population with access to electricity
	7.2.1: Renewable energy share in the total final energy consumption
Human capital	9.5.1: Research and development expenditure as a proportion of GDP
	9.5.2: Researchers (in full-time equivalent) per million inhabitants
	1.a.2: Proportion of total government spending on essential services (education, health and social protection)**
ICTs	17.6.1: Fixed Internet broadband subscriptions per 100 inhabitants, by speed
	5.b.1: Proportion of individuals who own a mobile telephone, by sex**
	17.8.1: Proportion of individuals using the Internet
Institutions	16.1.3: Proportion of population subjected to (a) physical violence, (b) psychological violence and (c) sexual violence in the previous 12 months**
Natural capital	15.1.1: Forest area as a proportion of total land area
Transport	9.1.2: Passenger and freight volumes, by mode of transport

* Only PCI categories including SDG indicators are shown here.
 ** The SDG indicator is taken in a slightly different form in the PCI.
 Source: UNCTAD

Ensuring high-quality PCI requires availability of reliable and harmonized source statistics that are consistent over time. In the years ahead, concerted efforts are necessary to improve data availability which calls for statistical capacity building, particularly in low-income countries.

High-quality PCI requires reliable and harmonized source statistics that are consistent over time



Global disparities in productive capacities: developed economies are leading while some developing economies are gradually converging

The PCI reveals that developed economies have higher productive capacity scores (Figure 1), with economies such as Denmark, Australia and the United States of America leading the pack with an average score of 70 out of 100 on the composite index.



Among developing regions, Asia and Latin America, overall, perform better than the African region. Some economies like China, Hong Kong Special Administrative Region and Qatar gradually converge towards the performance of developed economies with the average score of 63. On the other extreme are African economies such as Chad, Malawi, and Niger, which each register an overall PCI score of below 20.

Economies such as Rwanda, Senegal and Togo showed improved PCI scores from 2018 to 2022, but this better performance has not substantially altered their overall global ranking.

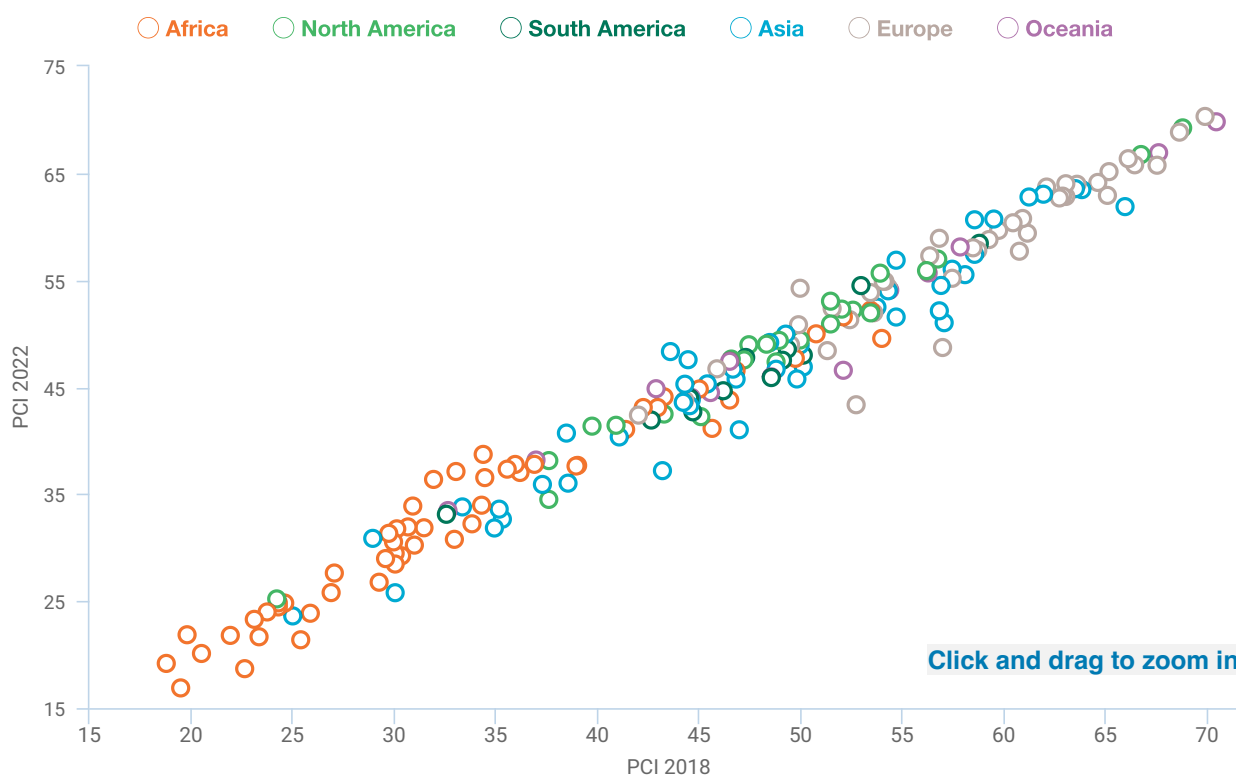
In Latin America and the Caribbean, Barbados, the Dominican Republic, and Panama made notable progress in developing their productive capacities during the same period. Similarly, Asian economies such as Bangladesh, Saudi Arabia and Timor-Leste made notable performance gains on the composite index.

But several developing economies from various regions regressed on their productive capacities. These include Brunei Darussalam, Guatemala, Kyrgyzstan, Lebanon, Namibia, Suriname, and Uganda.

Since 2018, several developing countries from various regions regressed on the PCI



Figure 1. COVID-19 hit productive capacities globally, but some regions showed resilience
(overall PCI score in 2022 versus 2018)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023).

20 economies show a PCI score below 60 per cent of the world median

In terms of their productive capacities, 20 economies are notably lagging behind, with overall PCI scores falling below 60 per cent of the global median which stands at around 28 out of 100. They include Benin, Cameroon, Sudan, Afghanistan, Haiti, Guinea-Bissau, Burundi, the Central African Republic, Eritrea, Burkina Faso, the Yemen Arab Republic, South Sudan, Somalia, the Democratic Republic of the Congo, Mali, Uganda, Sierra Leone, Chad, Malawi, and Niger. 17 of these economies (85 per cent) are located in Sub-Saharan Africa, 13 are LDCs (65 per cent) and 4 are LLDCs (20 per cent). Economies with a history of past or ongoing conflicts are also disproportionately present in this assembly. Lastly, the majority of economies in the list are acknowledged for their susceptibility to the adverse impacts of climate change, stemming from factors such as extreme weather events, severe droughts, and the looming threat of rising sea levels.

Among the 20 economies with a PCI score below 60% of the world median,

17 are in Sub-Saharan Africa

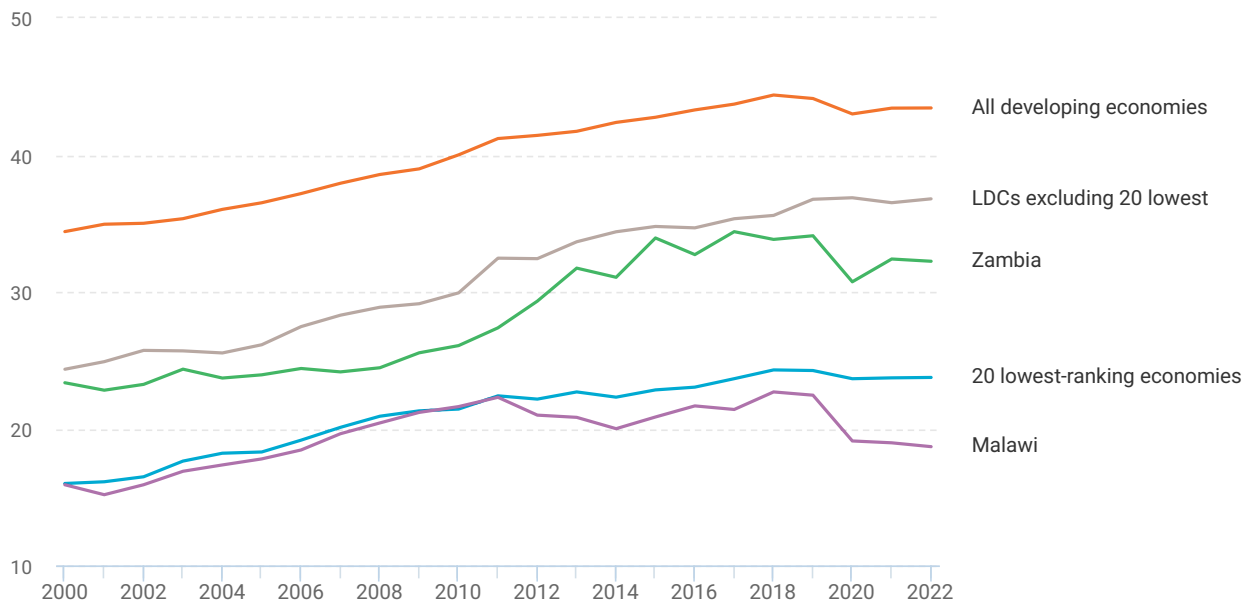
and

13 are LDCs



Figure 2. Progress in productive capacities has stagnated in the 20 lowest-ranking economies since the late 2010's

(overall PCI score, median; selected economies and groups)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023).

The gap in productive capacities between the 20 lowest-ranking economies and other LDCs has widened by 5 points between 2000 and 2022



Figure 2 compares the historical evolution of the median PCI score of the 20 lowest-ranking economies with that of other LDCs and all developing economies. While their median PCI score has consistently remained below that of LDCs, the gap remained relatively stable between 2000 and 2008, with similar growth in productive capacities overall. However, starting in 2009, likely due to the effects of the 2008 crisis, these economies began to lag behind other LDCs. Between 2009 and 2019, other LDCs showed rather robust growth, significantly narrowing the gap with other developing

economies, while the PCI score of the 20 lowest-ranking economies stagnated. As a result, the gap between the two groups increased by 5 points between 2000 and 2022.

Figure 3 shows that the 20 lowest-ranking economies perform far below other LDCs and developing economies in all PCI categories, except natural capital. The largest gap is observed in the Energy category, which assesses the availability, sustainability, and efficiency of power sources, with an almost 20-point difference from the median for all developing economies. Subsequently, the ICT sector exhibits a 24-point difference, followed by Institutions, measuring political stability and efficiency, with a gap of 20 points, and Transports with a difference of 19 points.

The 20 lowest-ranking economies perform far below other developing economies in all PCI categories, except natural capital

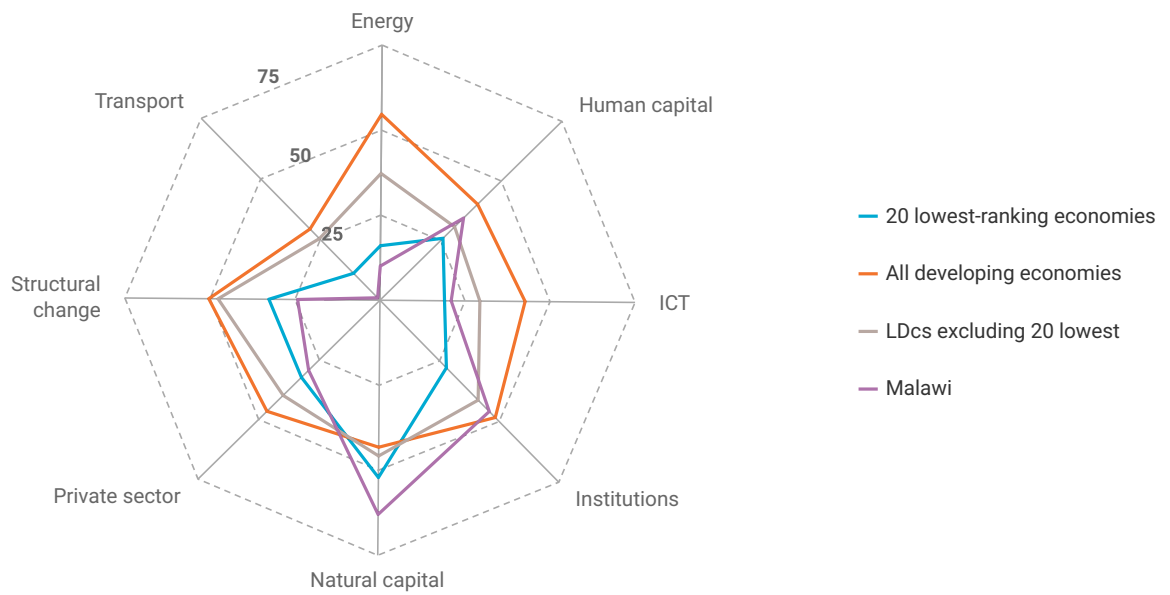




Figure 3. The 20 PCI lowest-ranking economies exhibit very low scores in all categories but natural capital,

2022

(PCI category scores, median; selected economies and groups)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023).

UNCTAD Programme on Fostering Productive Capacities and Structural Economic Transformation: completed

Weak productive capacities lead to economic vulnerability to shocks, making the fostering of productive capacities crucial for socioeconomic resilience. Developing countries in the three regions have sought support for new policies focused on productive capacities and structural transformation due to past policy failures in delivering inclusive growth and sustainable development.

In this regard, UNCTAD has developed a comprehensive programme on fostering productive capacities and structural economic transformation in support of developing countries. The project is structured around four main activities, co-led by UNCTAD and relevant ministries in the country:

1. Strengthen countries' statistical capacity for improving data collection on and measurement of productive capacities and related vulnerabilities.
2. Develop National Productive Capacities Gap Assessments (NPCGAs) by applying PCI to identify gaps, limitations, and challenges to foster productive capacities, structural transformation, and economic diversification.
3. Formulate Holistic Productive Capacities Development Programmes (HPCDPs), which are holistic, economy-wide, and long-term roadmaps to address the gaps and facilitate the development of critical economic sectors based on comparative advantages
4. Train policymakers, national technical experts, private sector entities, academia, and civil society stakeholders in addressing gaps in productive capacities and facilitating structural transformation and economic diversification.

HPCDPs have been designed for Angola, Ethiopia, Kenya, and Zambia and are being prepared for Malawi, Mozambique, Nigeria, and Zimbabwe. Moreover, the gaps in productive capacities have been assessed for Cambodia, Comoros, Djibouti, and Senegal, while a number of other countries, including Honduras, Jamaica, and Mongolia, have expressed interest in the programme.

Building on the HPCDPs and by applying the PCI, UNCTAD has finalized a new strategy for SIDS. The holistic UNCTAD strategy for SIDS is designed to effectively address the multiple and systemic vulnerabilities of SIDS by sustainably harnessing their comparative advantages and unlocking key binding constraints to their development. It articulates a new development approach in SIDS, combined with a revamped global partnership in support of their development efforts.

In October 2023, UNCTAD launched the programme in Malawi with a [statistical training](#) and a [policy-level workshop](#). The former trained around 20 statisticians from a wide range of ministries, organizations, and the academic sector, enabling them to compute and interpret the PCI scores and facilitating knowledge-sharing on statistical, methodological, and computational aspects of the PCI. The primary objective of the policy-level workshop was to set the ground for the NPCGA of Malawi.

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THEME 4

Sustainability and resilience

“Every year of insufficient action to keep global warming below 1.5 degrees, drives us closer to the brink, increasing systemic risks and reducing our resilience against climate catastrophe.”

– Mr. António Guterres, United Nations Secretary-General,
on the World Meteorological Day, 23 March 2023.


Sustainability and resilience

In 1964, when UNCTAD was created, the risk of ecological disaster was hardly on the international agenda. Today, the grave threat of climate change, and the immense challenge of biodiversity loss and environmental degradation, have become key development challenges, as highlighted by the UNCTAD Bridgetown Covenant (2021). We need to rethink the path forward towards prosperity for all that is sustainable and decoupled from both greenhouse gas emissions and environmental degradation. The crises have exposed the multidimensional nature of the vulnerability of developing economies to external shocks, climate change, natural disasters, and pandemics. The following sections discuss these sustainability and resilience issues drawing on SDG indicators and other official statistics:

1. [Resilience at risk](#)
2. [Can we turn the tide towards sustainable economy?](#)
3. [New data on sustainable oceans, plastics and biotrade offer a tool for global action](#)


“
Every year of insufficient action to keep global warming below 1.5 degrees, drives us closer to the brink, increasing systemic risks and reducing our resilience against climate catastrophe.
— Mr. António Guterres, United Nations Secretary-General, on the World Meteorological Day,
23 March 2023.
”

Greenhouse gas emissions up by 4.2% in 2021 and continue to grow, while a cut of 45% is needed by 2030





The number of enterprises with sustainability reports more than doubled in five years in a sample study

x2



Plastic exports surpassed US\$1.2 trillion in 2021; 2X their value in 2005



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Resilience at risk

SDG indicators

Goal 1: End poverty in all its form everywhere

Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

Indicator 1.5.1: Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population.

Indicator 1.5.2: Direct economic loss attributed to disasters in relation to global gross domestic product (GDP).

Goal 6. Ensure availability and sustainable management of water and sanitation for all.

Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

Indicator 6.1.1: Proportion of population using safely managed drinking water services.

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Target 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.

Indicator 9.4.1: CO₂ emission per unit of value added.

Human well-being is closely connected to the air, water, land, and ecosystems as foundations for life. Achieving the 2030 Agenda and the Paris Agreement depends on safeguarding these resources. Yet, we have seen a trail of greenhouse gas emissions causing the Earth's climate to change at a frightening pace, compromising the progress achieved in the field of development and the opportunities for future generations to live in an environmentally safe and sustainable world (UNCTAD, 2021).

We need to change course. If the trajectory towards climate change, biodiversity loss, pollution and the degradation of ecosystems continues, progress on the SDGs could unravel, exacerbating hunger, poverty, conflict, disasters, and health emergencies. The COVID-19 pandemic combined with other crises showed how vulnerable socio-economic progress is in the face of shocks (WMO, 2023a). Developing countries with lower capacity for natural resource management and disaster risk reduction, lack of regulations, technology and financing are particularly vulnerable to shocks.

Another record-breaking year with emissions

The year 2022 took a heavy toll on the environment. Glaciers in the European Alps showed indications of record-shattering melt. The Greenland ice sheet lost mass for the 26th consecutive year. In 2021, the main greenhouse gases, carbon dioxide, methane, and nitrous oxide, all reached new record highs. The concentration of methane, a gas 30 times stronger than carbon dioxide in contributing to global warming, increased more than ever before in the 40 years of measurement history (WMO, 2023a).

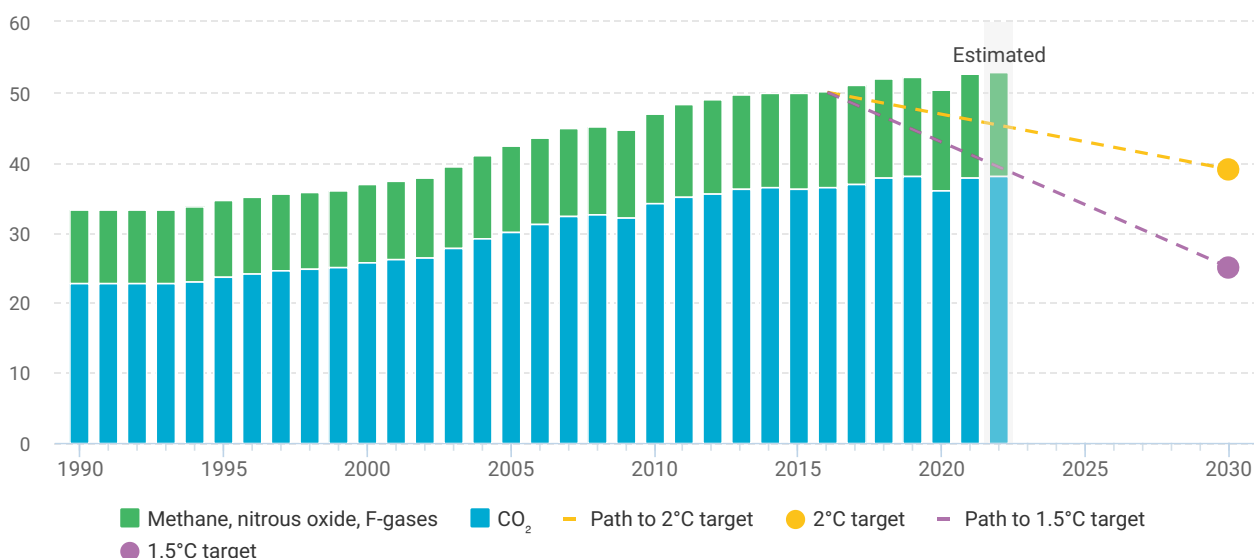
In 2022, the global mean temperature was estimated at 1.15 °C above the 1850-1900 pre-industrial average (WMO, 2023a). We are getting close to the limits set by the 2015 Paris Climate Agreement to keep the increase below 2 °C from pre-industrial levels

and pursue efforts to remain below 1.5 °C (UNFCCC, 2016). UNEP (2022a) warns that only an urgent system-wide transformation can deliver a cut of 45 per cent in emissions by 2030 to limit global warming to below 1.5 °C.

But greenhouse gas emissions continued to increase, after the temporary decline of 3.6 per cent in 2020 during the COVID-19 pandemic (Figure 1). In 2021, total emissions bounced back by 4.2 per cent reaching 52.6 Gt CO₂e, 0.5 per cent more than before the pandemic in 2019. The first figures for 2022 show that energy-related greenhouse gas emissions increased by 1.0 per cent to 41.5 Gt CO₂e, with a 0.9 per cent increase in energy-related CO₂ emissions and 1.8 per cent increase for methane (IEA, 2023a, 2023b). These emissions cover nearly 80 per cent of all greenhouse gas emissions.

Greenhouse gas emissions up by 4.2% in 2021 and continue to grow, while a cut of 45% is needed by 2030

 **Figure 1. Huge cuts are needed, but greenhouse gas emissions continued to increase**
(Greenhouse gas emissions, Gt of CO₂e, SDG 9.4.1)



Source: UNCTAD calculations based on EDGAR Community GHG database version 7.0 (2022) for CO₂ emissions & greenhouse gases and IEA (2023a).

Note: Emissions from land-use change are not included. The baseline year for the target path is 2016. The 2022 estimates are based on partial data covering energy-related greenhouse gas emissions, i.e., nearly 80 per cent of total emissions.

World's waistline needs trimming for a low carbon path

Africa accounts for only 3–4 per cent of the world's carbon dioxide emissions from energy and industrial sources, with African countries typically emitting around 22 kg/km² (median). According to the World Risk Index (2022), it is the continent with the highest overall vulnerability with 13 of the 15 most vulnerable countries in the world. Its agriculture is heavily affected by changes in rainfall and temperatures, and it accounts for a large share of GDP and employment.

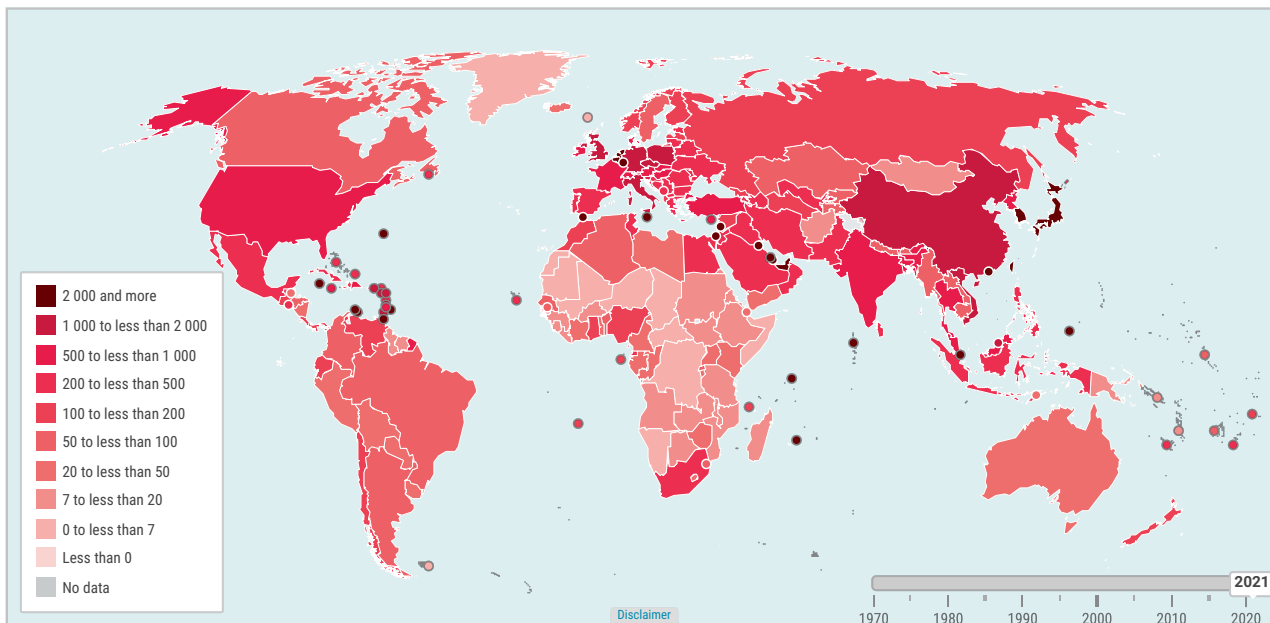
In Latin America, countries' emissions were typically at around 200 kg/km² with the average exceeding 900 kg/km² due to some countries with higher emissions compared to their smaller geographic size. Emissions exceeding 400 kg/km², and in 20 per cent of cases even 2 000 kg/km², were common for countries located in a band that ranges from the United States of America to Western, Southern and Eastern Europe and the Near East to Southern, Eastern and South-Eastern Asia. Within that band, particularly high emissions per km² were recorded in the Benelux countries and in Eastern Asia. In 2021, 44 per cent of global

CO₂ emissions were produced in East and South-East Asia. Farther to the North, in Canada, Northern Europe but also in Central America and Central Asia, emission levels were lower, ranging between 70 and 400 kg/km².



Map 1. African countries emitting least per square kilometer while most vulnerable to impacts

(Geographic concentration of carbon dioxide emissions, kg/km² per year, 1970-2021, SDG 9.4.1)

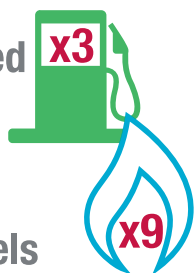


Source: UNCTAD calculations based on EDGAR Community CO₂ emissions database version 7.0 (2022).

Note: CO₂ emissions from fossil fuel use (combustion, flaring), industrial processes (cement, steel, chemicals and urea) and product use are shown. Emissions from fuels burned on ships and aircrafts in international transport are not included.

High energy prices in 2022 increased vulnerabilities

In August 2022, fuel prices peaked at nearly 3x and natural gas 9x higher than pre-pandemic levels



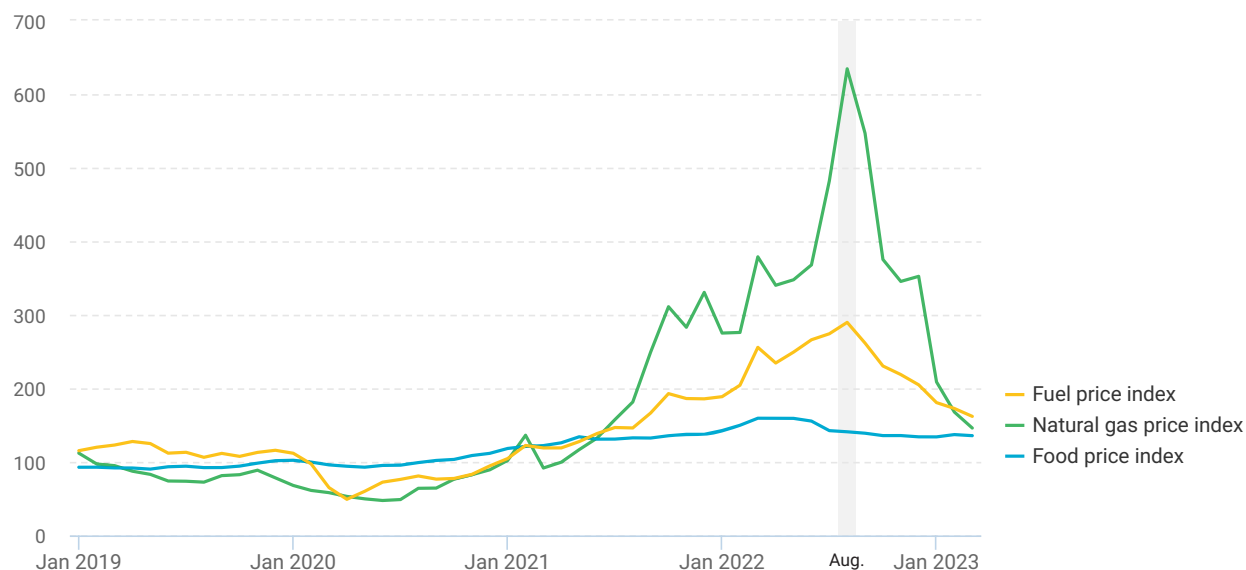
In 2022, fuel prices increased, largely affected by the war in Ukraine and the related bans on gas and oil imports. In August 2022, fuel prices were nearly three times higher than in August 2019, and natural gas was almost nine times more expensive (Figure 2). Households and businesses struggled due to the high price volatility, and it also set back progress towards universal access to energy as millions of people no longer afforded to use electricity (IEA, 2022). The high fossil fuel prices also increased food prices and led to disruptions in supply chains (see [Trade, food security and agriculture](#)).

This turmoil also contributed to growth in renewables (see [Transforming to a sustainable economy?](#)). By early 2023, the prices of fuels and natural gas had returned to their mid-2021 levels.



Figure 2. Prices of natural gas and fuels peaked in August 2022

(2015=100)



Source: UNCTADstat (UNCTAD, 2023)

LDCs and SIDS most affected by disasters

Greenhouse gas emissions from energy use and other sources are at the origin of the growing frequency and intensity of climate-related disasters. According to UNDRR (2022), human actions are creating greater, more dangerous, and systemic risks, pushing societies and the planet towards their limits. The number of disasters is projected to increase from around 400 in 2015 to about 560 per year by 2030 (UNDRR, 2022). According to WMO (2021a), 50 per cent of disasters in the past 50 years were associated with weather, climate and water extremes.

Disasters impact human lives, from the loss of life to injuries, economic losses and forcing people to flee their homes (UNDRR, 2022). Globally, on average 2 113 people per 100 000 were affected by disasters in 2012–2021, up by 75 per cent from 2005 to 2015 (United Nations, 2023).¹ The poor are more affected, as more than one-third of the world's poor live in multi-hazard zones, and low-income countries account for more than 70 per cent of the world's disasters (World Bank, 2023). LDCs, LLDCs and SIDS bear the brunt of disaster impacts (Figure 3). In LLDCs, average mortality due to disasters was more than twice as high as the global average and in SIDS 3.2 higher. For LDCs, the mortality rate was over 40 per cent higher.

The number of disasters is projected to increase by 40% from 2015 to 2030

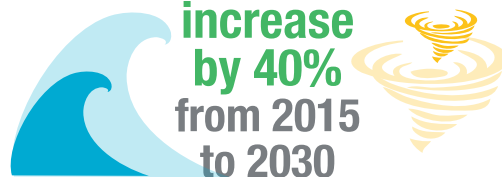
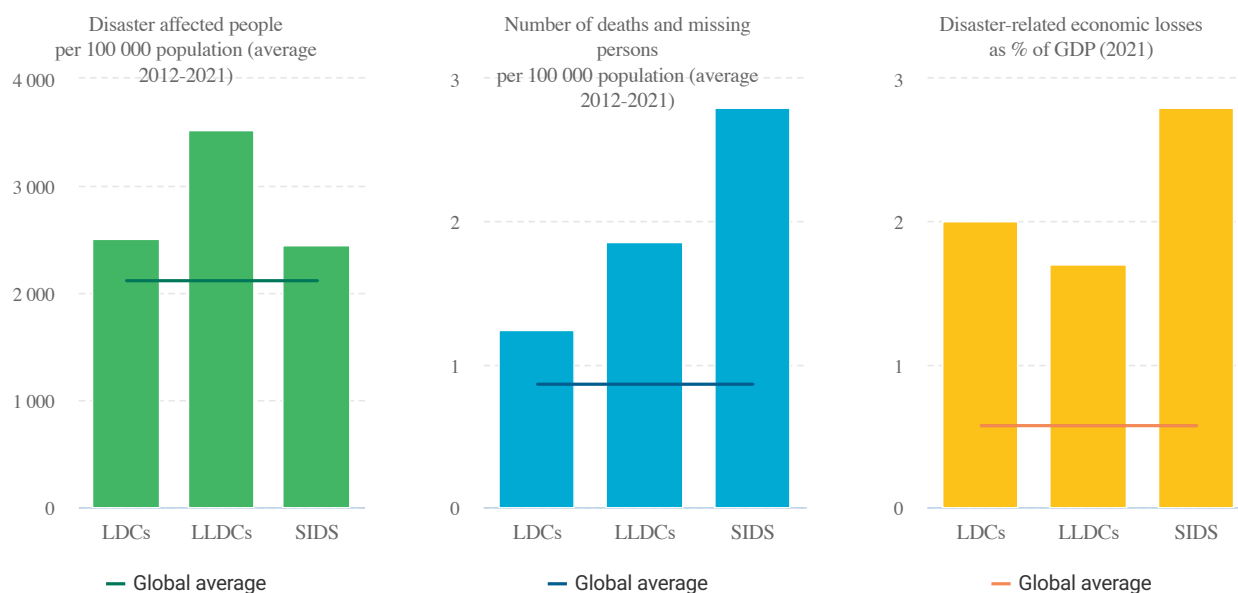




Figure 3. LDCs, LLDCs and SIDS experience the largest human and economic impacts of disasters.

(SDG 1.5.1 & SDG 1.5.2)



Source: UNCTAD calculations based on UNDRR (2023).

From 2015 to 2021, more than one million critical infrastructure units and facilities, including schools and hospitals, were partially or fully destroyed due to disasters globally (UNDRR, 2023). In the same period, among reporting LDCs, more than 300 000 critical infrastructure units were destroyed, in LLDCs 290 000, and in SIDS 3 600. Destruction of infrastructure, agricultural land, and productive assets results in loss of income and jobs. It is especially devastating for countries affected by remoteness, like SIDS and LLDCs. UNCTAD's Remoteness Index (2022a) shows that geographically remote countries rely on digital and physical infrastructure investment to ensure connectivity. Remoteness increases the costs of connecting to global value chains, and disasters make it even more challenging to maintain connectivity.

With rising temperatures and disrupted rainfall patterns, the number and duration of droughts has also increased by 29 per cent since 2000, as compared to the previous two decades (WMO, 2021b). An estimated 55 million people globally are affected by droughts every year, and risk displacing an estimated 700 million people globally by 2030. Droughts also exacerbate water scarcity, affecting 40 per cent of the world's population (WMO, 2023b). In 2022, 2.2 billion people lacked safely managed drinking water services (SDG 6.1.1) (United Nations, 2023). According to UNCTAD's Inclusive Growth Index (2022b), it is among the most serious inclusiveness challenges in Africa. Half of the population lacks access to safely managed water. Inclusive growth cannot be achieved without efforts to strengthen resilience and ensure sustainable and safe water systems.

Coastal flooding is also an increasing concern. According to some estimates, the total value of assets exposed to episodic coastal flooding could increase to 12–20 per cent of the global GDP by 2100, if no adaptation measures are taken (Kirezci et al., 2020); global flood damages due to sea-level rise (and related extreme events) might amount to up to US\$27 trillion per year – about 2.8 per cent of global GDP in 2100 (Jevrejeva et al., 2018). For a related discussion, see chapter [Transport resilience and sustainability](#).

Over the past three decades, economic losses from disasters more than doubled from an average of US\$70 billion per year in the 1990s to over US\$170 billion per year in 2010–2020 (UNDRR, 2022). Furthermore, since 2020, the consequences were compounded by the economic losses caused by the COVID-19 pandemic. In 2021, overall direct economic losses resulting from disasters equaled 0.57 per cent of GDP of all reporting countries. For LDCs, direct economic losses were estimated at 2 per cent of GDP (US\$4.5 billion), for LLDCs at 1.7 per cent (US\$3.7 billion), and SIDS the highest relative economic losses, 2.4 per cent of GDP (US\$133 million) (Figure 3). In 2022, the recorded 387 natural hazards and disasters worldwide resulted in the

The number and duration of droughts increased by 29% in one generation



loss of 30 704 lives and affected 185 million individuals. Economic losses totaled around US\$223.8 billion (CRED, 2022). Disaster impacts increased most in Africa, e.g., with 16.4 per cent of the share of deaths compared to 3.8 per cent in the previous two decades.

Increasing efforts to build resilience

Vulnerability is multidimensional – countries may be vulnerable due to climate change, natural disasters, environmental conditions, biodiversity loss, and social and economic risks. In 2022, the United Nations General Assembly launched efforts to develop an MVI to define what it means to be vulnerable and support an evidence-based approach to development policy and decision making, especially to improve access to external financing for the most vulnerable countries (UN-OHRLLS, 2023).

The world is not on track in reducing vulnerabilities and risks if we look at progress within the Sendai Framework for Disaster Risk Reduction (UNDRR, 2015). Insufficient disaster risk management and undervaluing of environmental costs and benefits in decision making may exacerbate vulnerabilities (UNU-EHS, 2022).

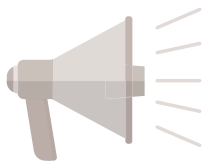
There is an urgent need to step up affordable climate adaptation finance, including in the form of grants (UNCTAD, 2022c). IPCC (2022) estimates that adaptation needs will reach US\$127 billion and US\$295 billion per year for developing countries by 2030 and 2050, respectively. The estimated adaptation costs in developing countries are five to ten times higher than current public adaptation finance flows, and the adaptation finance gap is widening (UNEP, 2022b). Countries are increasingly recognizing the importance of disaster preparedness and risk management: The number of countries with national disaster risk reduction strategies, following UNDRR (2019) guidance, has doubled from 51 in 2015 to 102 countries by the end of 2022. Countries are increasingly recognizing the importance of disaster preparedness and risk management: The number of countries with national disaster risk reduction strategies, following UNDRR (2019) guidance, has doubled from 51 in 2015 to 102 countries by the end of 2022.



The number of national disaster risk reduction strategies doubled to 102 in 2022 in 7 years

While the frequency of disasters has increased with rising economic costs, the number of deaths and missing persons related to disasters has declined from 1.64 per 100 000 people in 2005–2015 to 0.86 in 2012–2021 globally. This could relate to the severeness of disasters, but also to efforts taken to mitigate disaster risks. Early warning systems are particularly important in preventing loss of life as they provide timely and accurate information to enhance communication and monitoring and offer protocols for dissemination of warnings and evacuation orders.

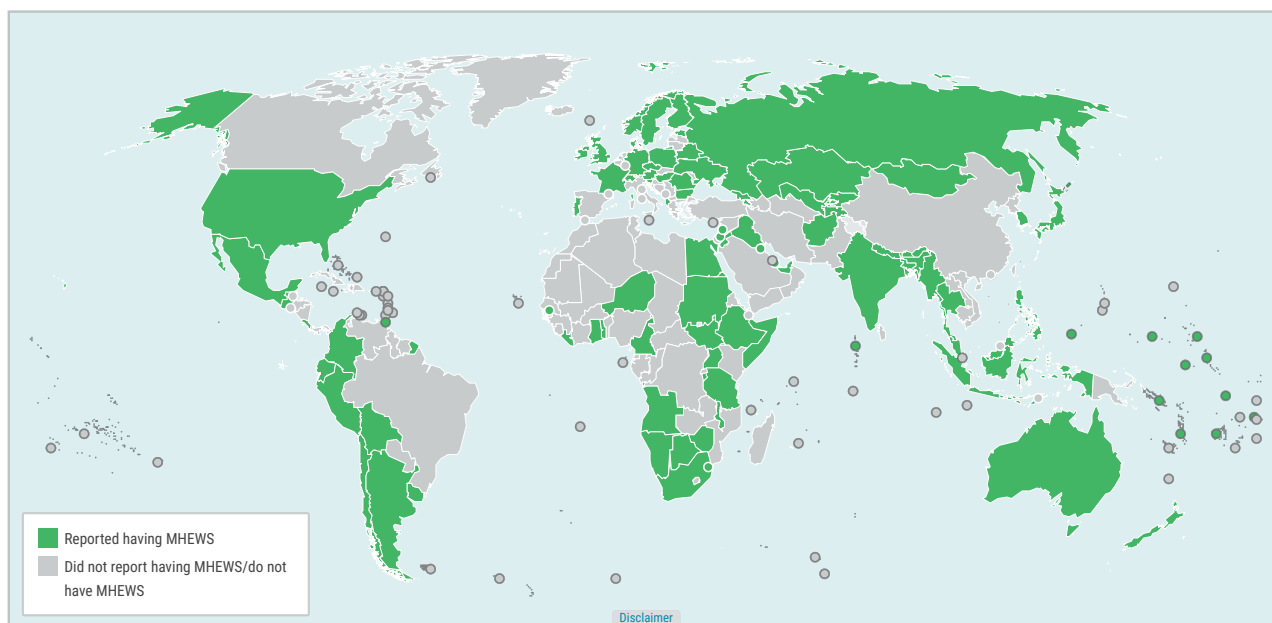
Only one third of SIDS and less than half of LDCs report having a Multi-Hazard Early Warning System



In March 2022, 95 countries reported having Multi-Hazard Early Warning Systems in place, and many have improved their systems over time. Coverage is lower in Africa, Americas, and the Middle East, while the highest number of countries, 26 countries, reporting early warning systems, is found in Asia and the Pacific. Over 60 per cent of countries in the region report having such a system. Europe and Central Asia are also well covered, with 29 countries and 50 per cent country coverage. But many countries with high vulnerability remain uncovered, especially SIDS. Currently, 21 LDCs (46 per cent) reported having an early warning system, and it is available in (at least) 19 LLDCs (59 per cent) and 12 SIDS (32 per cent) (UNDRR and WMO, 2022).



Map 2. The number of countries reporting having Multi Hazard Early Warning Systems is increasing, March 2022



Source: UNDRR (2023)

Note: The countries shown in grey on the map could have either i) reported a 0 score, indicating they do not have a MHEWS in place; or ii) they never reported, and may not have such a system in place; or iii) they never reported, but may actually have some sort of an early warning system in place.

Note

1. These numbers do not consider people affected by the COVID-19 pandemic.

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Can we turn the tide towards sustainable economy?

SDG indicators

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Target 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.

Indicator 9.4.1: CO₂ emission per unit of value added.

Goal 12: Ensure sustainable consumption and production patterns.

Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

Indicator 12.5.1: National recycling rate, tons of material recycled.

Target 12.6: Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

Indicator 12.6.1: Number of companies publishing sustainability reports.

Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Target 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.

Indicator 15.1.1: Forest area as a proportion of total land area.

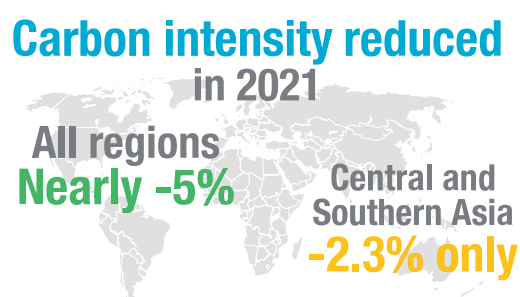
Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

Indicator 15.5.1: Red List Index.

Over the last decades, the world economy has grown with rising greenhouse gas emissions, the consequences of which hit the most vulnerable hardest, see [Resilience at risk](#). The Bridgetown Covenant (UNCTAD, 2021a, para 71) calls for greater emphasis on decoupling economic growth from environmental degradation and greenhouse gas emissions, promoting sustainable energy and access to environmentally sound technologies by developing countries, as important means for implementing the 2030 Agenda and achieving a sustainable economy.

Large regional differences in carbon intensity remain

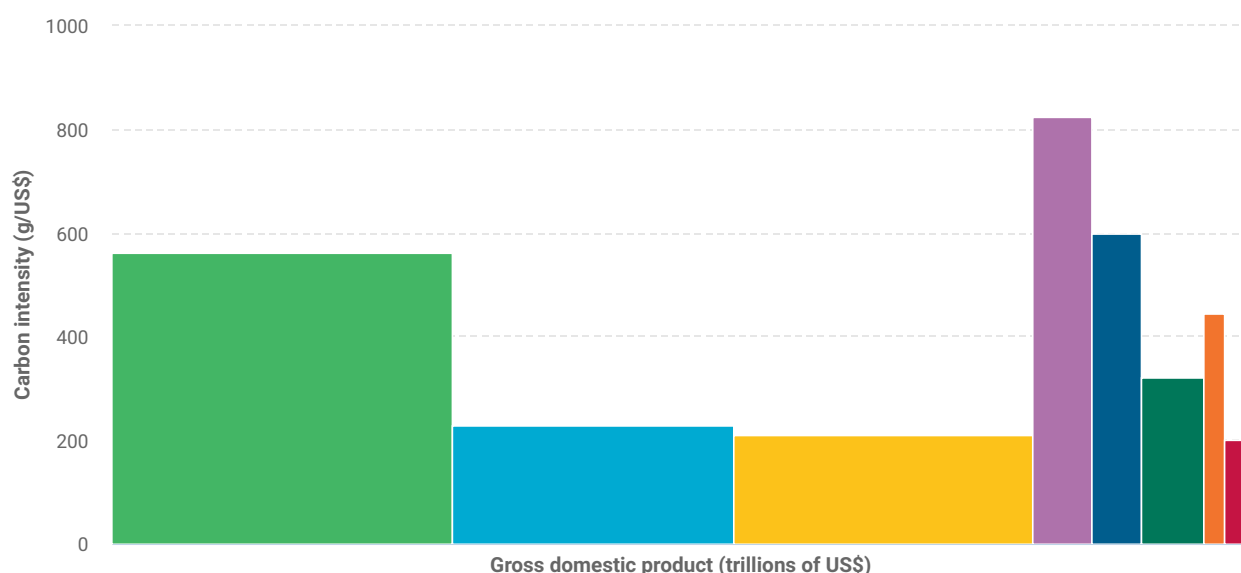
While emissions do continue to rise, reductions in carbon intensity are increasingly offsetting population growth and rising consumption. However, regional differences in carbon dioxide emissions intensity are huge with the most carbon intensive economies in Asia (Figure 1). In Eastern and South-Eastern Asia carbon intensity was 562 grams of CO₂ per US\$ of GDP in 2021. It amounted to 600 g/US\$ in Western Asia and Northern Africa, and over 825 g/US\$ in Southern and Central Asia, the most carbon intensive region. From 2020 to 2021, carbon intensity of



GDP reduced by four per cent globally. The reduction was more than five per cent in all regions, except in Central and Southern Asia where carbon intensity fell by only 2.3 per cent from the already highest regional level. While Eastern and Southern Asia saw a reduction of 7 per cent from 2020 to 2021, still three times more CO₂ was emitted in these regions than in Europe or Northern America.

Figure 1. Regional differences in carbon dioxide emission intensity are high, 2021

(GDP at current prices, trillions of US\$, carbon intensity g/US\$, SDG 9.4.1)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a) and EDGAR Community database version 7.0 (2022) for CO₂ emissions.

Notes: The area of bars measure carbon dioxide emissions. Regions are arranged in the order of the amount of emissions. CO₂ emissions from fossil fuel use (combustion, flaring), industrial processes (cement, steel, chemicals and urea) and product use are included. Emissions from fuels burned on ships and aircrafts in international transport are not included. Central and Southern Asia includes developing economies in Oceania.

Global carbon intensity reduced by 38 per cent from 1990 (631 g/US\$) to 2021 (392 g/US\$). That means that CO₂ emissions have grown at a slower pace than GDP. Decoupling of CO₂ emissions from GDP was most significant in Europe, where carbon intensity fell by over 60 per cent between 1990 and 2021, and in Northern America, where almost the same reduction was recorded. Europe was the only region where total annual fossil CO₂ emissions were lower in 2021 than in 1990, by 27 per cent (Crippa et al., 2022). Some previous top emitter countries were also below 1990 levels, including the United States of America and Japan, by 6.2 per cent and 7.4 per cent, respectively. Fossil CO₂ emissions of China and India remained well above the 1990 levels. They turned out 5.1 and 4.4 times higher in 2021 than in 1990, respectively.

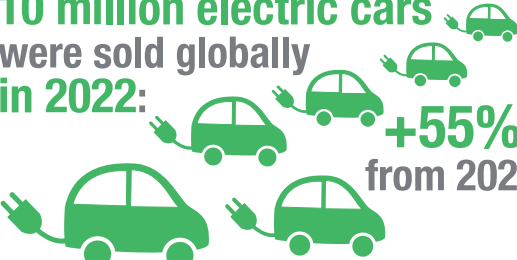
If all regions were able to reduce carbon intensity of GDP to levels around 200 g/US\$, global annual emissions would be cut by nearly a half. The regional concentration of high carbon intensity rates in some developing regions underlines the need to support developing countries in building sustainable infrastructure and skills and adopt lower-carbon technologies that enhance the energy efficiency of production and enable phasing out of polluting energy generation methods (UNCTAD, 2021a, para 71). It is worth recognizing that the higher carbon intensity of GDP in developing than developed regions is partly driven by other regions' demand for carbon-intensive final products. Demand-based CO₂ emissions of developed economies are generally higher than their production-based emissions. They were thus seen as implicit net importers of CO₂ emissions embodied in final products, while most developing economies were net exporters (Wiebe and Yamano, 2016). As the stringency of environmental policy varies by country, companies have an incentive to relocate carbon intensive production processes globally, a process described as "carbon leakage" (Lanzi et al., 2013; Borga et al., 2022). To avoid that effect, efforts to set global environmental standards will be critical.

Positive, but diverging trends in the clean energy transition

The clean energy economy is emerging faster than many thought possible. Global renewable power capacity grew by 10 per cent in 2022, 14 per cent faster than between 2014 and 2019 on average. Electric car sales increased by 55 per cent in 2022, to over 10 million (IRENA, 2023). In 2022, electric cars, including both battery electric vehicles and plug-in hybrids, accounted for 14 per cent of global new car sales, up from 4 per cent in 2020, and are forecast to increase to 18 per cent in 2023 (IEA, 2023).

10 million electric cars were sold globally in 2022:

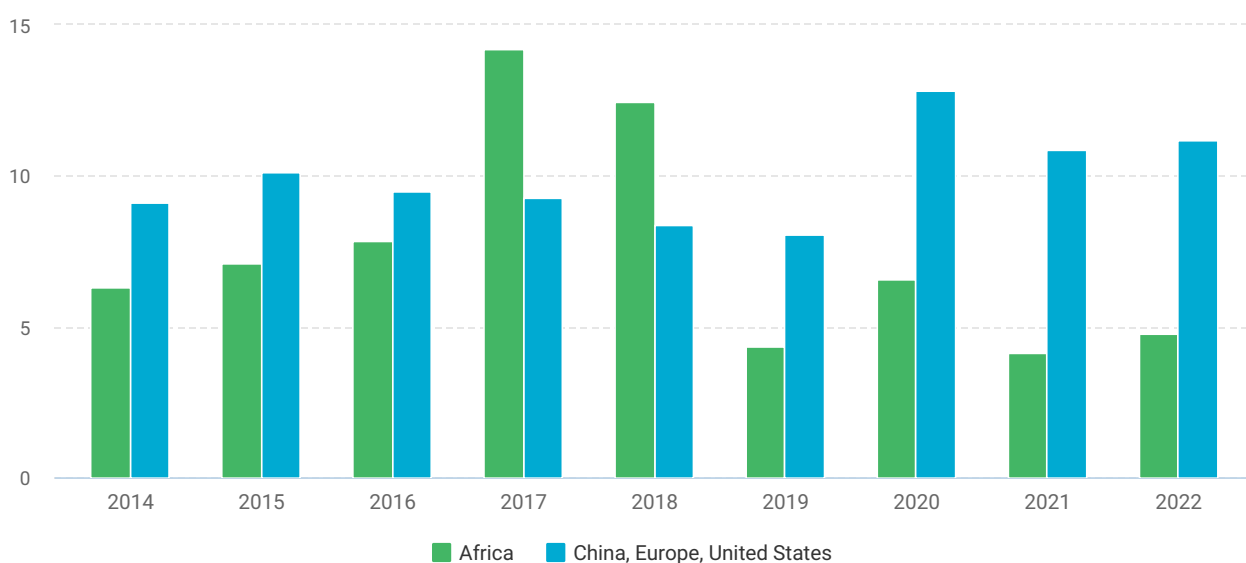
+55% from 2021



Despite positive developments in renewable energy investment, further efforts are needed. In 2022, investment in clean energy technologies reached a record high of US\$1.4 trillion (IEA, 2022). By 2030, this amount is forecast to grow to more than US\$2 trillion. However, to achieve the 1.5°C target, it is estimated that an annual investment amount of US\$4 trillion is required, leaving us with barely half of the required levels.

Renewable energy investments are highly unequally distributed across regions. Of the 295 GW of additional renewable capacity installed in 2022, only 2.7 GW was installed in Africa, less than one per cent of world total investment. Investments are strongly concentrated in China, Europe, and the United States of America (IRENA, 2023), accounting for two thirds of installed renewable capacity in 2022, a share which has grown every year since 2013. Annual growth in renewable energy capacity in the three markets has accelerated, averaging almost 12 per cent since 2020, compared to 9 per cent between 2014 and 2019. The situation is the reverse in Africa, where growth has decelerated since 2019, averaging only five per cent between 2019 and 2022 (Figure 2). This highlights challenges related to immature financial markets, high costs of capital, and lack of pricing benchmarks which impede investment in renewable energy and a just energy transition.

Figure 2. After a boost in 2017 and 2018, growth in renewable energy capacity in Africa has remained slower than in China, Europe and the United States of America
(MW percentage increase)



Source: UNCTAD calculations based on IRENA (2023).

While developing countries as a whole are making progress with renewable energy capacity, LDCs and LLDCs are lagging far behind. The capacity of developing countries to generate electricity from renewable sources has increased from 109.7W per capita in 2011 to 268W in 2021. From 2015 to 2020, the compound annual growth rate of renewable energy capacity in developing countries was 9.5 per cent, while it was 5.2 per cent and only 2.4 per cent in LDCs and LLDCs, respectively (United Nations, 2023a).

The share of renewable energy in total final energy consumption amounted to 19.1 per cent globally in 2020, 2.4 percentage points higher than in 2015 (United Nations, 2023b). Thanks to the high potential, new hydropower capacity was installed in some LLDCs, and the share of renewables in the total final energy consumption in LLDCs reached 44 per cent in 2020, up from 37 per cent in 2000. However, according to IRENA (2022), LLDCs are likely to take over 40 years to achieve the 2020 global share of renewables in energy consumption.

The trend of environmental degradation and biodiversity loss continues

Global warming, caused by increasing CO₂ and other greenhouse gas emissions, is modifying habitats and forcing species to migrate for survival, while human presence limits the availability of suitable habitats. Changes in precipitation and extreme weather events, like droughts, floods, and wildfires (UNDRR, 2021), have devastating effects on ecosystems and reduce biodiversity. Target 15.5 of the 2030 Agenda calls for “urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.” The related SDG indicator 15.5.1, the Red List Index, recorded a decrease by about 4 per cent from 2015 to 2023, indicating a growing extinction risk globally for mammals, birds, amphibians, corals, and cycads. Over the last three decades, since 1993, the Index has deteriorated by 10 per cent, at an increasing pace each decade. Around 40 000 species are estimated to be at risk of extinction in the coming decades (United Nations, 2023c).

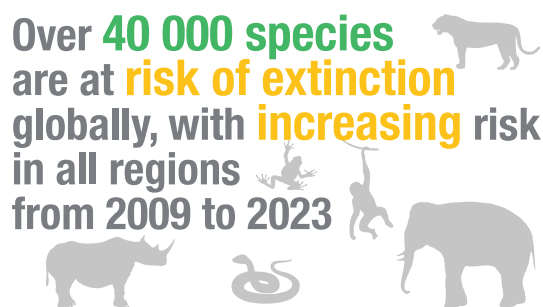
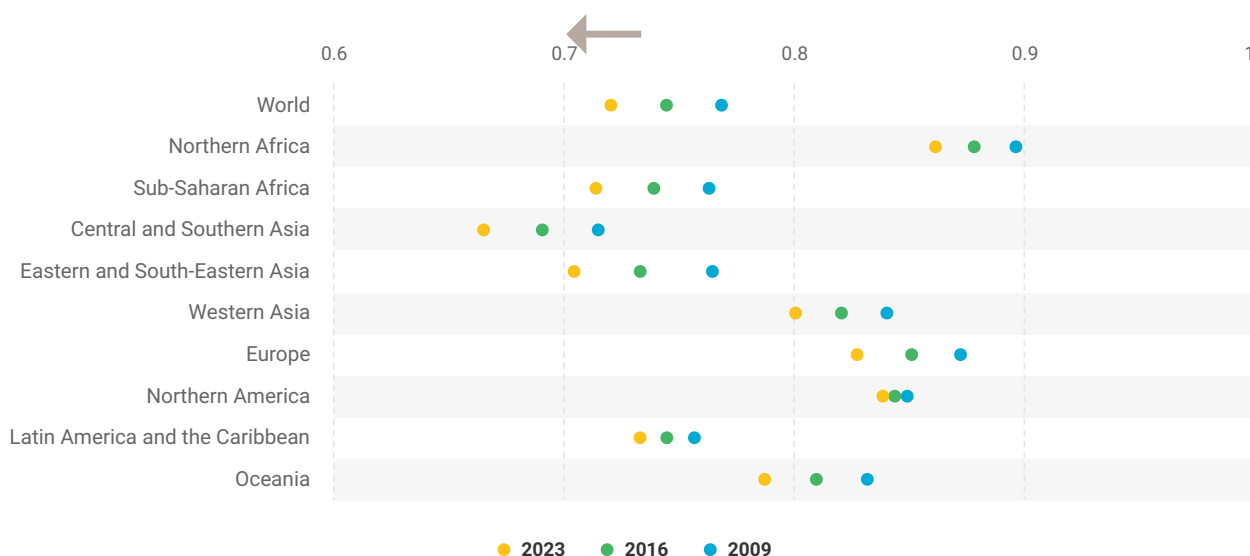


Figure 3. Risk of extinction increasing in all regions, with highest extinction risk in Asia
(IUCN Red List Index, SDG 15.5.1)



Source. UNCTAD calculations based on IUCN (2022) Red List Index, derived from the SDG Global Database (United Nations, 2023d).
Note: A value of 1 equates to all species qualifying as least concern, i.e., not expected to become extinct in the near future. A value of 0 equates to all species having gone extinct.

According to Figure 3, the Red List Index was lowest in Central and Southern Asia (0.66 in 2023). Eastern and South-Eastern Asia recorded the highest reduction of the index, indicating the largest increase of extinction risk between 2009 and 2023. Among SIDS, the highest risk is recorded in African SIDS (0.73), while for LDCs the highest risks are recorded in Asia and Oceania (0.8).

Unsustainable agriculture and the over-harvest of wild species are the main drivers of extinction. Almost 90 per cent of global deforestation is due to agricultural expansion (United Nations, 2022). The proportion of forests in total land area fell from 31.9 per cent in 2000 to 31.2 per cent in 2020 (SDG 15.1.1), representing a net loss of almost 100 million hectares. LDCs experienced major losses in forest coverage, from 29.7 per cent to 26.2 per cent, thus a reduction by 11.8 per cent. In Latin America and the Caribbean, the decline was over 8 per cent (from 50.8 to 46.7 per cent coverage) and in Africa over 10 per cent (from 23.7 to 21.3 per cent coverage). By contrast, in Asia, Europe, and Northern America the forest area increased by 1.3 per cent (from 45.3 to 46.0), thanks to afforestation, landscape restoration, and natural expansion of forests (FAO, 2023).

Enterprises more aware of and more transparent about sustainability impacts

The business sector is a significant player in the financing of sustainable development and development and application of sustainable practices (United Nations, 2015), and contributing to the attainment of all SDGs. Businesses are increasingly taking up the challenge, but there is a long way to go to increase transparency on their contribution. Sustainability reporting is key to allow investors and customers to recognise and reward firms that protect communities and the planet, while making businesses economically sustainable (UNCTAD, 2021a).

The number of enterprises with sustainability reports more than doubled in five years in a sample study



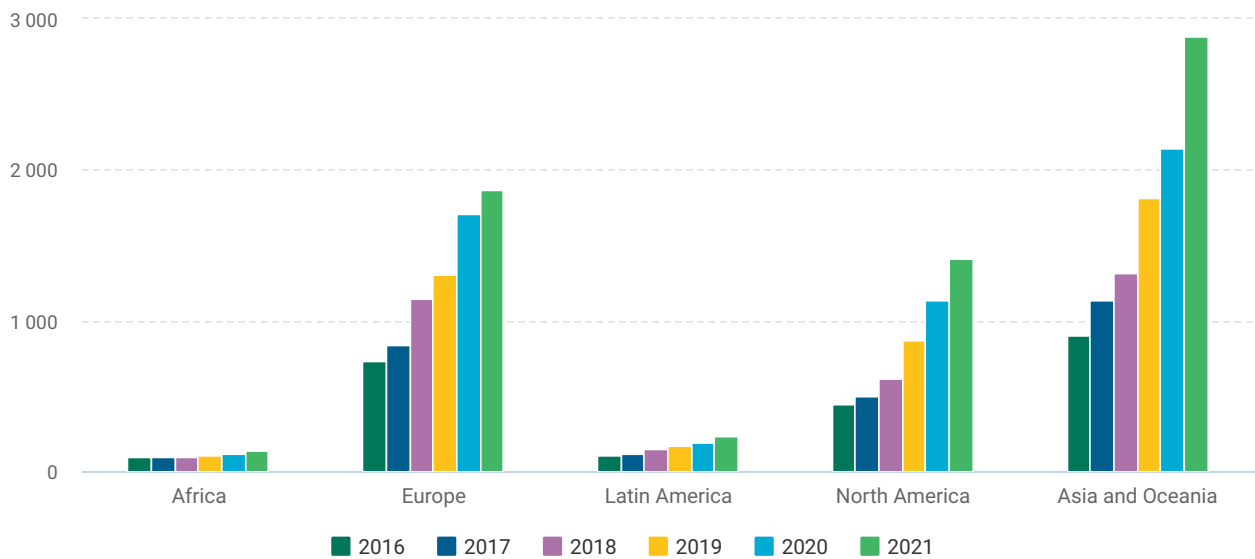
Comprehensive global official statistics are not yet available on enterprise uptake of SDG-aligned reporting as companies are still setting up the new mechanisms. Preliminary analysis of nearly 10 000 companies finds that 70 per cent of companies in the sample published a sustainability report in 2021 (Refinitiv, 2022). The number had more than doubled in five years. Especially large and listed companies were found to advance fast, driven by new stock exchange rules, national regulations, and other factors. According to a report by KPMG (2022), globally, 96 per

cent of the 250 largest businesses reported some sustainability-related information of their activities, and in a survey of 100 largest businesses in 58 countries (5 800 companies), this was the case for 71 per cent reported sustainability-related information. The latter share matches the preliminary findings of UNCTAD and UN Environment.¹



Figure 4. Enterprise sustainability reporting increasing in all regions

(Number of company reports, SDG 12.6.1)



Source: UNCTAD calculations based on Refinitiv (2022).

Note: Preliminary data from a sample of 9 654 companies included in the above-mentioned database.

While the preliminary results should be interpreted with caution, they indicate considerable regional differences (Figure 4). In North America, the number of reports almost tripled, and it doubled in Europe and Asia from 2017 to 2021. Smaller increases were recorded for Africa and Latin America. Companies in manufacturing and the financial and insurance sectors feature the highest number of sustainability reports in 2021. Almost all sectors have seen a twofold increase since 2016 in the number of sustainability reports. Two thirds of large companies included in the sample publish sustainability reports. Although the share was less than one third for medium-sized companies, it has also increased fast.

The majority of enterprises disclosed information on water and energy efficiency and on CO₂ emissions (KPMG, 2022). Less attention is paid to recycled water and ozone-depleting substances. In general, environmental risks are examined more frequently than social and governance issues. Regarding the social dimension, almost 90 per cent of the reports discuss diversity, health and safety, and human rights. Fewer include employee training hours. In the area of corporate governance, all reports deal with board diversity, while data on gender pay gap is rarely reported.

Standardization efforts are under way, as ISSB's new sustainability-related disclosure requirements (IFRS, 2022) will enter into force after January 2024. This will allow for a common denominator on corporate and investor sustainability reporting, starting with general and climate requirements, expanding into other SDGs. UNCTAD will support capacity building and adoption of the ISSB standard, including through the ISAR initiative and regional partnership on promoting sustainability reporting in Latin America, Africa and Asia, with key partners including the UN-supported Principles for Responsible Investment.

Governments are stepping up efforts to request transparency and sustainability information from companies as a basis of financing. UNCTAD (2023b) continues to engage with member States and the private sector on the development of accounting standards that integrate sustainability into business reporting, as a means to support the transformation towards a sustainable and resilient economy.

Innovation, recycling and circular economy to change the paradigm

The extraction and processing of materials, fuels and food contribute half of total global greenhouse gas emissions and over 90 per cent of biodiversity loss and water stress (UN Environment, 2019). There is, therefore, a need to find alternative economic models to use natural resources in innovative ways in production processes to reduce greenhouse gas emissions, pollution, and waste. The UNECE and OECD (2023) guidelines propose a definition for circular economy, one such different economic model. They also propose a set of core indicators, such as material consumption, waste generation, the circular material use rate, the recycling rate, greenhouse gas emissions from production activities, pollutant discharges and investment in waste management and research and development on circular economy.

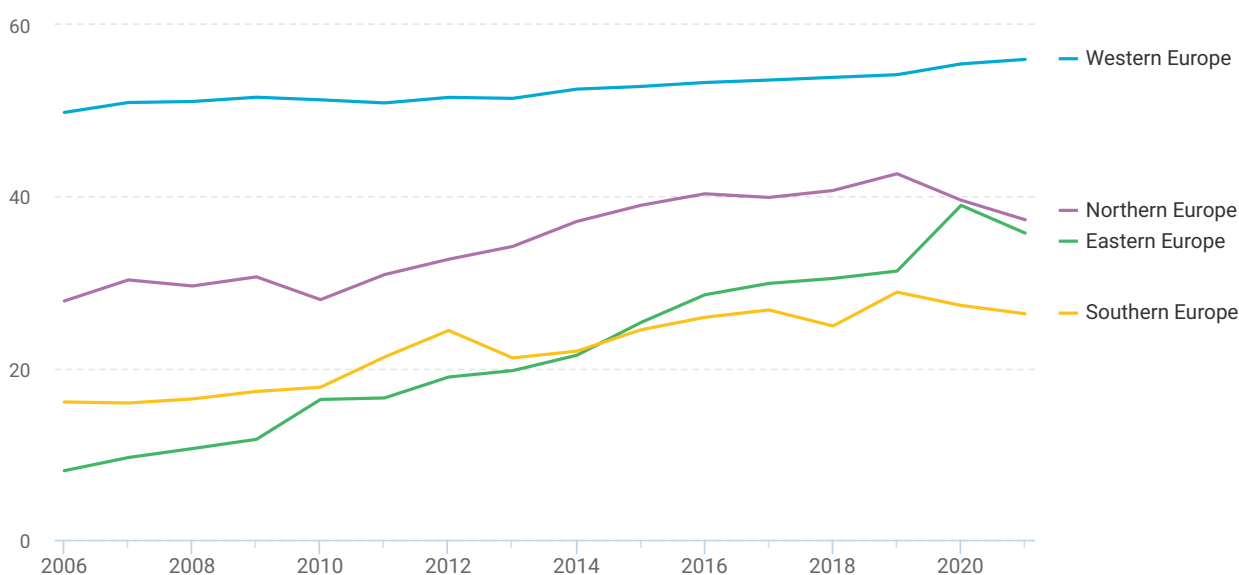
Recycling is a key strategy within the circular economy, as it implies recovering and reusing materials from products that have reached the end of their lifecycle. SDG indicator 12.5.1 on national recycling rate is a key measure in this regard, however, not yet available for all countries. The preliminary analysis of 43 reporting countries shows significant progress on municipal waste recycling rate over time (Figure 5). In almost 40 per cent of reporting countries, the recycling rate has more than doubled between 2006 and 2021. In Eastern European countries recycling rates were more than 4 times higher on average in 2021 compared to 2006, while in Southern European countries, the recycling rates grew by 64 per cent on average during the same period. In reporting countries of Western Europe, the increase has been slower, but the recycling rates reached an average of 56 per cent, while the average was 37.3 per cent for reporting Northern European countries. Outside Europe, national recycling rates were only reported by some economies, such as Algeria, Argentina, Ghana, Malaysia, Nepal, Peru, Thailand, Türkiye, and Uzbekistan.

Less than 50 countries globally report their national recycling rate, but show significant increases in 5 years



Figure 5. Recycling rates increasing in reporting European countries

(Percentage, SDG 12.5.1)



Source: UNCTAD calculations based on UNEP, UNSD and UNITAR data as published in the SDG Global Database (United Nations, 2023d).

Note: For some years the reported data are national estimates or provisional values, especially for 2020 and 2021.

The use of circular materials, namely of material recycled and fed back into the economy, is increasing, particularly among developed economies. For example, in the European Union, the circular material use rate increased from 8.3 per cent in 2004 to

11.7 per cent in 2021 (Eurostat, 2023). The Netherlands, Belgium, France and Italy recycle and reuse more than one sixth of all material in the economy, while one third of the EU countries remain at a rate below 5 per cent.

IMF (2021) has identified a list of 124 low carbon technology products. These are products that have been manufactured using a wide range of technologies causing low CO₂ emissions including renewable energy technologies, such as solar, wind, hydro and sustainable biofuel power generation systems, as well as the energy storage and transformation sub-systems. Top exporters of low carbon technology products include China, Denmark, the United States of America, Japan, and the United Kingdom. Among the most exported low carbon products, in value terms, are electric vehicles, optical and measurement devices, solar cells and panels, low carbon manufacturing machinery, lithium batteries, and electrical circuit boards. An UNCTAD report (forthcoming) finds on the one hand, relative barriers to trade of low carbon technology products, based on an analysis of tariff data, as well as opportunities to enhance that trade through tariff reduction and elimination, and through simplification and harmonization of non-tariff measures, on the other.

Notes

1. UNCTAD and UN Environment, as co-custodians of SDG indicator 12.6.1 on enterprise sustainability have developed reporting guidelines aligned with multiple current enterprise reporting frameworks (see IIRC, 2013; GRI, 2019; SASB, 2018; TCFD, 2017; European Commission, 2014; WEF, 2020; UNCTAD, 2018). In September 2019, the IAEG-SDGs approved the concepts and methods, and data collection for the indicator began. The framework does not add new reporting requirements, instead it suggests a way to reconcile the existing frameworks.

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New data on sustainable oceans, plastics and trade of biodiversity-based products offer a tool for global action

SDG indicators

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Target 14.4: By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.

Indicator 14.4.1: Proportion of fish stocks within biologically sustainable levels.

Target 14.7: By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

Indicator 14.7.1: Sustainable fisheries as a proportion of GDP in small island developing States, least developed countries and all countries.

The Bridgetown Covenant (UNCTAD, 2021a) recognises the importance of conservation and sustainable use of oceans, seas and marine resources, including addressing the discharge of plastic litter and other waste in oceans and significantly reducing marine pollution of all kinds and ensuring sustainable consumption and production patterns. It also calls for greater understanding of the ocean economy, as initially defined by UNCTAD (2019).

Ocean economy provides livelihoods for millions

The value of the ocean economy is estimated between US\$3 and 6 trillion and is expected to double by 2030 (UNCTAD, 2023e). It provides at least 150 million direct jobs, including in activities like fishing, aquaculture, shipping, tourism, offshore wind energy, oil and gas, mining and marine biotechnology (UNCTAD, 2023e). Unfortunately, the health of our oceans has reached a tipping point. The oceans are key to the wellbeing of people and the planet as they cover over 70 per cent of earth's surface and are home to 50-80 per cent of life on earth (NASA, 2019). We need a change of course in how we protect the ocean and marine resources from the threats of climate change, plastic and other pollution, and from overfishing. The ocean economy is central to global food security and the livelihoods of people across countries.

In 2021, exports of ocean goods and services totalled US\$1.6 trillion, each worth over US\$800 billion (Figure 1). Developed economies accounted for 58 per cent of ocean trade and developing economies for 42 per cent. The COVID-19 crisis showed the potential and resilience of some sectors and revealed the vulnerability of others. Services made up 60 per cent of global ocean exports before the pandemic. In 2021, despite over 27 per cent growth compared to 2020, the value of ocean service exports was still notably below the pre-pandemic level. However, exports of ocean-based goods showed remarkable resilience during the crisis, falling by just 3 per cent in 2020, and rising to a new high in 2021.

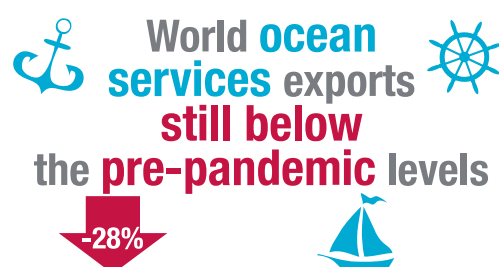
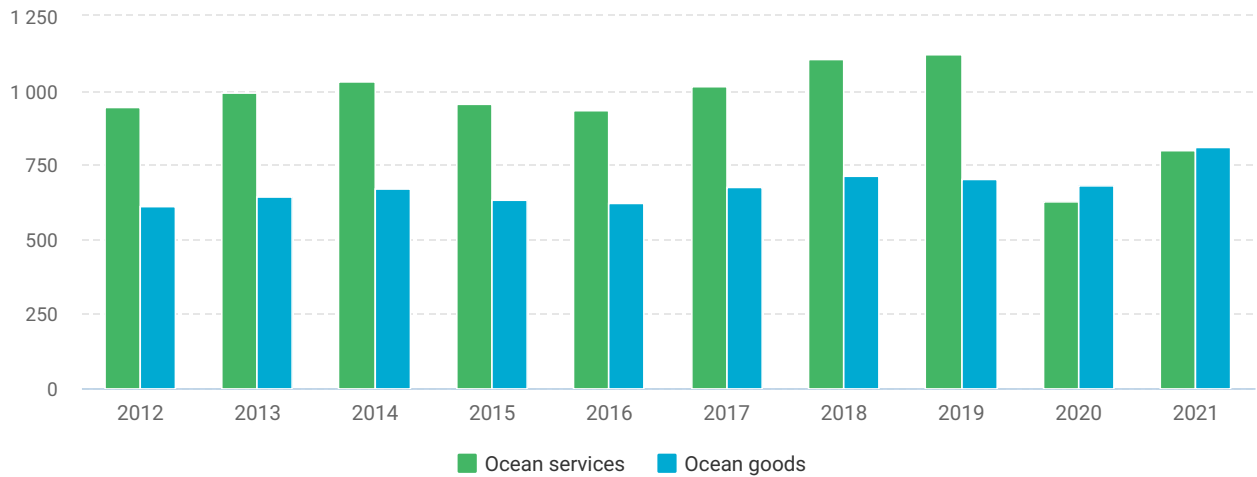




Figure 1. Exports of ocean services are yet to recover back to pre-pandemic levels

(Billions of US\$)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

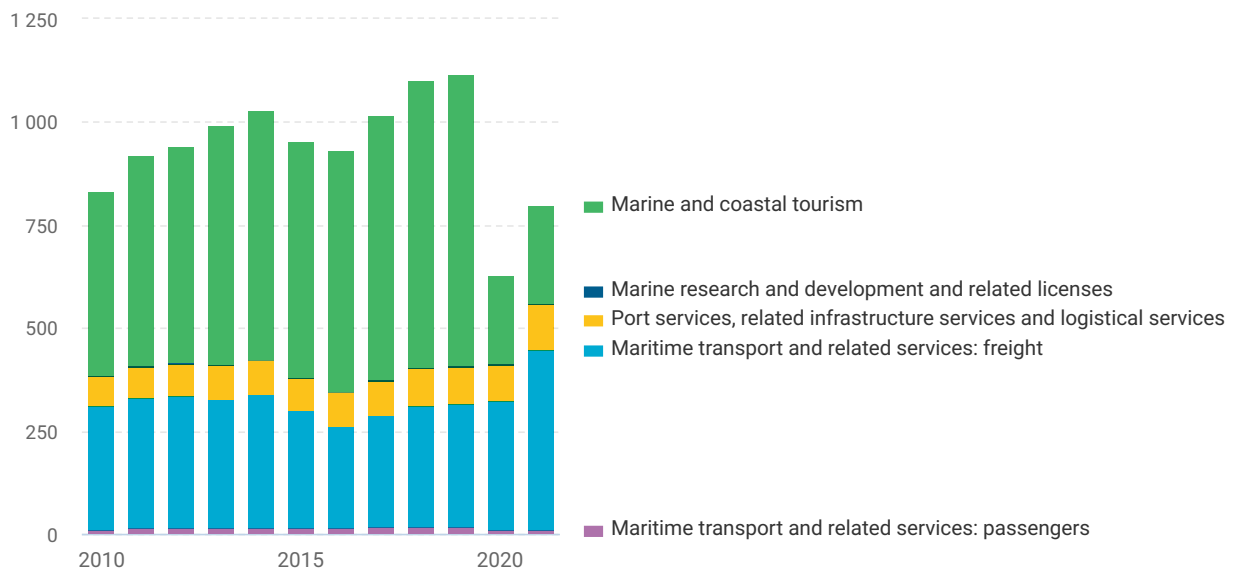
Note: Refers to ocean economy goods and services as classified by UNCTAD (2021c) based on HS codes.

The two largest components of the ocean services are maritime and coastal tourism, and freight transport. These make up 84 per cent of total ocean service exports. Freight reached a new high in 2021, while tourism was still drastically down on pre-pandemic times (Figure 2).



Figure 2. Marine and coastal tourism hit by the pandemic, while other ocean service exports continued strongly

(Billions of US\$)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

Note: Refers to ocean economy services as classified by UNCTAD (2021c) based on HS codes.

Ocean economies in LDCs and SIDS still recovering from the pandemic

Asia is the largest exporter of ocean goods and services with US\$706.6 billion in 2021, closely followed by Europe at US\$664.3 billion, and the Americas at US\$198.7 billion (Figure 3). Africa and Oceania were notably smaller exporters of ocean goods and services in 2021. Most regions saw high growth rates in 2021 as the ocean economy recovered from the pandemic, with over 20 per cent increases for the top three exporter regions. For Africa, exports only increased by 1 per cent in 2021, and decreased in Oceania by nearly 10 per cent. The COVID-19 pandemic hit hard the ocean exports of LDCs and SIDS. Especially ocean services exports, like tourism, which in 2021 remained significantly below pre-pandemic levels by nearly 60 per cent for LDCs and 14 per cent for SIDS.

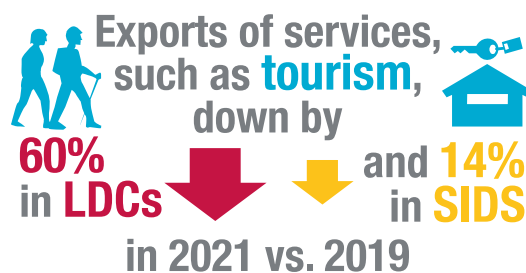
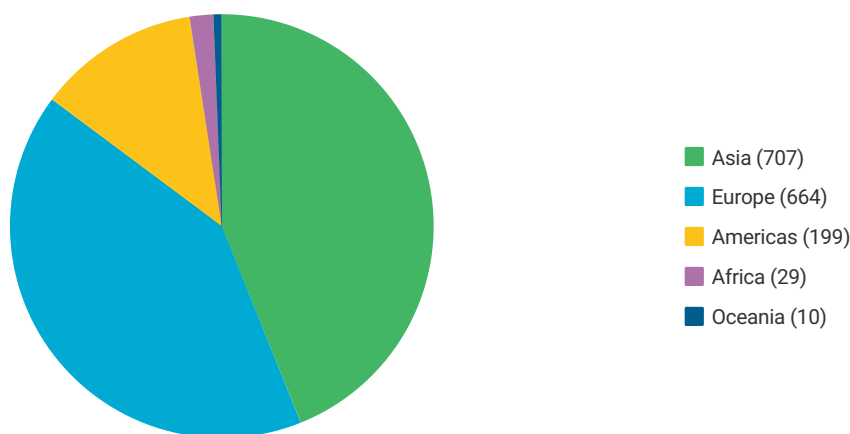


Figure 3. Ocean exports dominated by Asia and Europe with an 85 per cent market share, 2021
(Billions of US\$)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

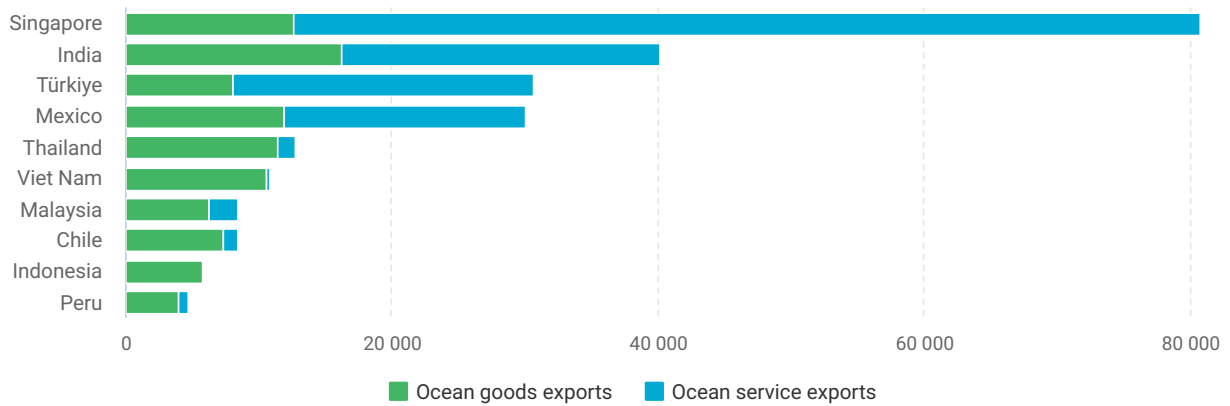
Note: Data refer to ocean economy goods and services as classified by UNCTAD (2021c) based on HS codes.

Among developing economies, China was the leading exporter in the ocean economy. The top five developing economy exporters included also Singapore with US\$80.8 billion, India with US\$40.1 billion, Türkiye US\$30.6 billion and Mexico US\$30.0 billion (Figure 4), all with a notably large share of ocean service exports.



Figure 4. Singapore, India, Türkiye and Mexico were the leading developing economy exporters of ocean goods and services, excluding China, 2021

(Millions of US\$)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

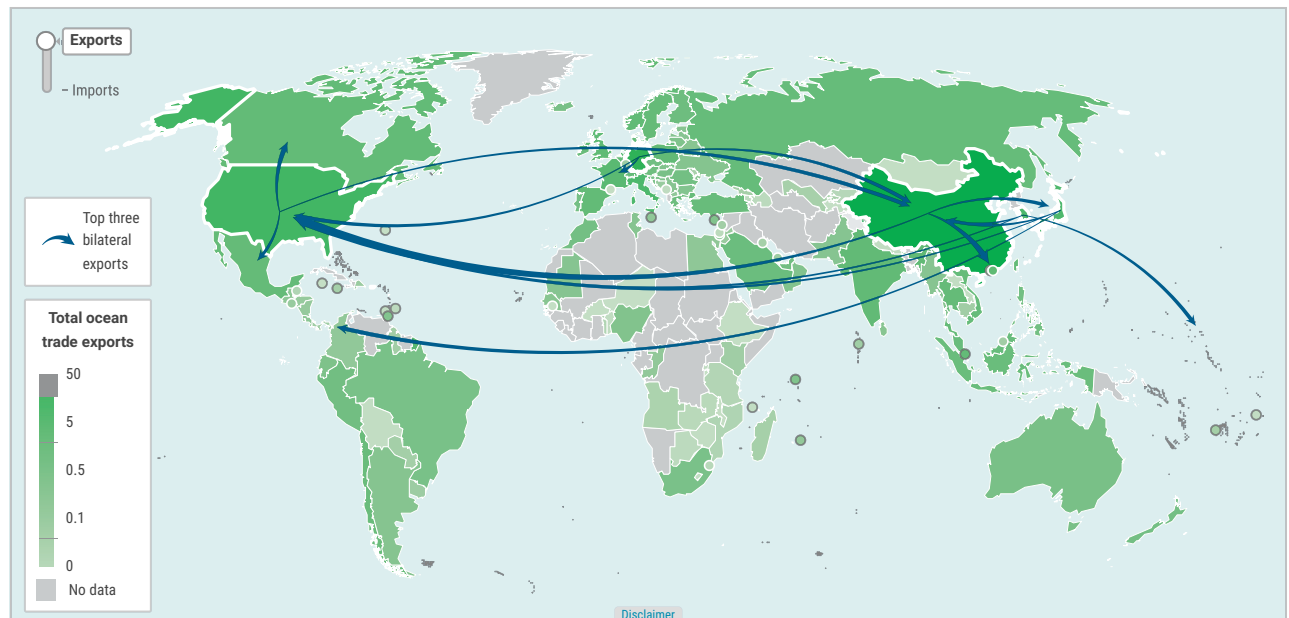
Note: In the lack of more recent data reporting, ocean service exports for Mexico are based on data reported for 2019, and for Viet Nam for 2020. Indonesia did not report data on oceans services. Data refer to ocean economy goods and services as classified by UNCTAD (2021c) based on HS codes.

China (US\$151 billion), Germany (US\$77 billion), Republic of Korea (US\$37 billion), United States of America (US\$53 billion) and Japan (US\$35 billion) are the leading exporters of ocean goods. Map 1 presents the bilateral import and export flows of ocean goods, and enables exploring of ocean trade flows between top three partners for the selected economies and flow.



Map 1. Bilateral trade flows of oceans goods, 2021

(Billions of US\$)

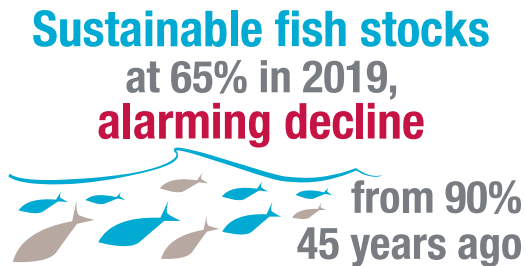


Source: UNCTADstat (UNCTAD, 2023a)

Note: Top 5 countries globally for imports and exports of ocean goods are shown in the default selection.

Need for an urgent shift towards sustainable use of marine resources

The increasing unsustainable use of marine resources for economic activities combined with climate change, biodiversity loss, and pollution continue to challenge the health of oceans, seas and coasts (UNCTAD, 2020b).



Fisheries are a critical source of food and livelihoods for millions of people worldwide, particularly in developing economies. Yet, the sustainability of fisheries and fish resources continues to decline, although at a slower pace over the past decade. In 2019, sustainable fisheries accounted for just under 0.1 per cent of global GDP¹, with SIDS (0.46 per cent) and LDCs (0.88) ranking significantly higher than Northern America (0.02) and Europe (0.03 per cent of GDP) (FAO, 2022).

The proportion of fish stocks within biologically sustainable levels has dropped drastically from 90 per cent in 1974 to 64.6 per cent in 2019, according to SDG indicator 14.4.1 (FAO, 2023a), with significant regional variations. The Southeast Pacific (66.7 per cent) surpassed the Mediterranean and the Black Sea (66.3 per cent) as the marine region with the highest percentage of stocks fished at unsustainable levels. However, efforts towards sustainable management of fisheries is growing back, with sustainably fished stocks providing the majority (82.5%) of total fish landings in 2019, a 3.8% increase since 2017 (FAO, 2023a).

FAO (2022) estimates that rebuilding overfished stocks to a sustainable level could increase fisheries' production by 16.5 million tons and support livelihoods, food security and nutrition of coastal communities. Many developing economies, in particular SIDS and LDCs, lack the capacity and regulations to manage the fishing industries which is a major constraint to ensuring sustainable fishery practices (UNCTAD, 2023e).

Furthermore, subsidies to industrial fishing affect the use of marine resources and harm vulnerable communities living along the coast, especially in developing economies. Moreover, the illegal, unreported, and unregulated fishing practices cause further damage worldwide. This type of fishing accounts for up to 26 million tons of fish catch annually, worth US\$10 to 22 billion of unlawful or undocumented revenue (FAO, 2023b).

Finding ways to replace unlawful and unsustainable use of marine resources with more sustainable activities is crucial. Seaweed, for instance, improving food security and primary-sector carbon emissions, offers increasing markets and potential for growth for developing economies (UNCTAD, 2023e). The Republic of Korea, Indonesia, Chile, China, and Ireland are the lead exporters of aquatic plants, seaweeds, and other algae (UNCTAD, 2023a). UNCTAD's data also show that in 2021, the value of global exports of these products amounted to US\$942.8 million, up by 13 per cent from 2020 and by one third from 2012.

The year 2022 marked significant developments in global action towards SDG 14, including the UN Environment's (2022) mandate to develop an international treaty to end plastic pollution, the WTO (2022) agreement against harmful fishery subsidies, the UNFCCC (2022) agreement for a loss and damage fund, the CBD (2022) post-2020 global biodiversity framework to conserve 30 per cent of land and the oceans by 2030. On the 19 of June 2023, a [United Nations Treaty on Biodiversity on Areas Beyond National Jurisdiction](#) was adopted in order to respond to the triply planetary crises as reflected on the ocean and seas. To support these and other crucial efforts, UNCTAD (2023e) calls for a "Blue Deal" on trade and finance to accelerate the implementation of SDG 14, identified as the least funded goal of the 2030 Agenda. The "Blue Deal" would address transparency and a reform of non-tariff measures and fishery subsidies, social sustainability of aquaculture value chains, sustainable and resilient maritime transport, and reduced marine litter and plastic pollution.

Plastics trade at all-time high in 2021

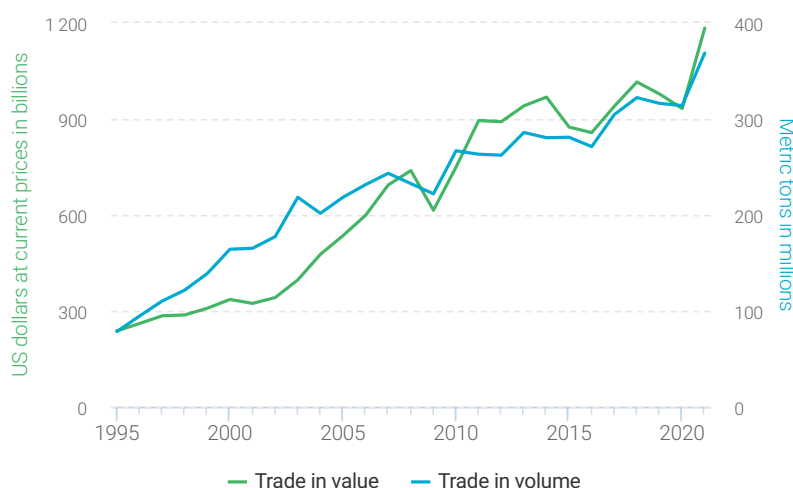


Plastic is everywhere in our environment, including land, ocean, Arctic ice, and in almost everything we eat and inhale: the air, water, and food². According to research by Reddy and Lau (2020), an estimated 11 Mt of plastic enter the oceans every year, and plastics contribute significantly to greenhouse gas emissions and environmental and health challenges. Existing technologies could cut annual flows of plastic into the oceans by about 80 per cent in the next 20 years.

According to UNCTAD's (2023a) data, global exports of plastics, or goods made from plastic³, have more than doubled in value since 2005, reaching nearly US\$1.2 trillion in 2021 (Figure 5). This amount is slightly lower than the value of total merchandise exports of China, the United States of America, or Germany, and for instance three times the GDP of Egypt, the host country of the COP27 climate summit in

2022. The growth in volume has been slightly slower but followed a similar path, from 218 Mt in 2005 to 369 Mt in 2021. For illustration, it would take 18.4 million trucks, each carrying 20 tons, to deliver the 2021 global plastics exports to their destination, if carried on road. The queue of trucks would wrap around the globe over 13 times.

Figure 5. Global plastics trade continues to thrive



Plastic exports surpassed US\$1.2 trillion in 2021; 2X their value in 2005

Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

Note: Data refer to plastic products and products containing plastics as identified by UNCTAD (2023b) jointly with the [Forum on Trade, Environment & the SDGs \(TESS\)](#) at the [Geneva Graduate Institute](#), based on HS codes.

Plastics trade highly concentrated regionally

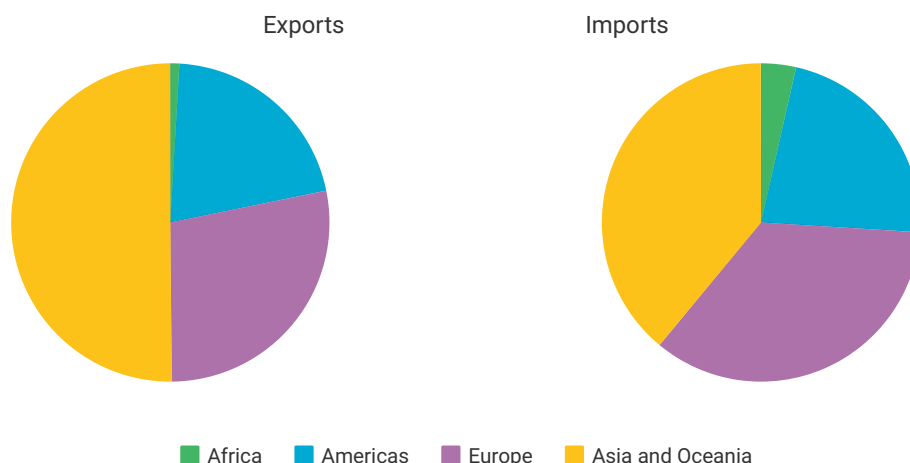
While a few key countries dominate trade across the plastics value chain, a variety of countries are active as both importers and exporters of plastic products, using plastic as a means to participate in global value chains and to add value to exports (Barrowclough et al., 2021). Asia and Oceania account for half of global plastics exports equalling 185 Mt, while 28 per cent originate in Europe and 21 per cent in the Americas. African economies only account for less than 1 per cent of global plastics

Half of global plastics exports concentrated in Asia and Oceania

185 million Mt

exports (Figure 6). Plastics imports are slightly less concentrated than exports, with Asia and Oceania receiving 39 per cent (123 Mt), Europe around 35 per cent, and the Americas 22 per cent of global plastics imports. Africa, a net importer of plastics, has a share of 3.5 per cent in global plastics imports.

Figure 6. Asia and Oceania account for half of global plastics exports, 2021
(Mt)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

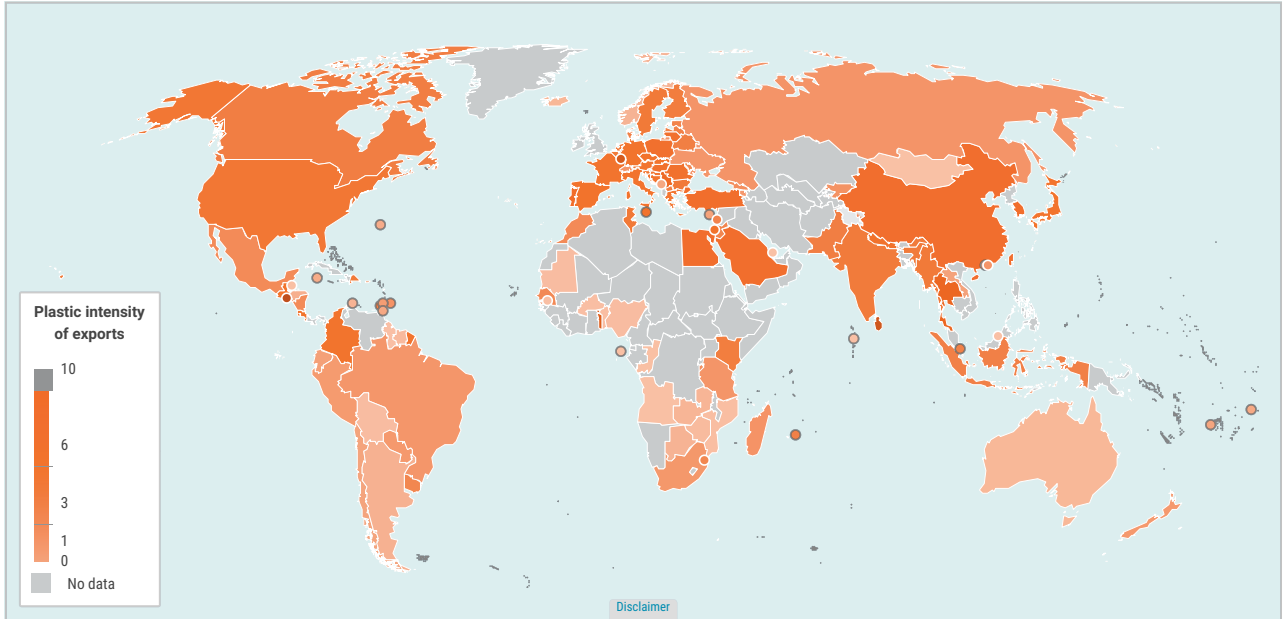
Note: Data refer to plastic products and products containing plastics, as identified by UNCTAD (2023b) jointly with the [Forum on Trade, Environment & the SDGs \(TESS\)](#) at the [Geneva Graduate Institute](#), based on HS.

Plastics trade makes a significant share of global trade in goods, over 5 per cent in 2021. The largest exporters of plastics in volume terms were China (70.1 Mt), Taiwan Province of China (13.2 Mt), Thailand (12.5 Mt), Saudi Arabia (12.0 Mt) and Singapore (7.0 Mt). Malaysia, India, the United Arab Emirates, Türkiye and Viet Nam are also within the global top ten. In 2021, total goods trade was most reliant on plastics in El Salvador, Sri Lanka, Luxembourg, Lesotho (based on 2020 data), Togo, Bahamas (based on 2020 data), Thailand and Serbia. In these economies, the plastics share exceeded 10 per cent (Map 2). Together they accounted for 3.4 per cent of global plastics exports.



Map 2. Plastics intensity of exports by country

(Percentage of plastics exports in total exports)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

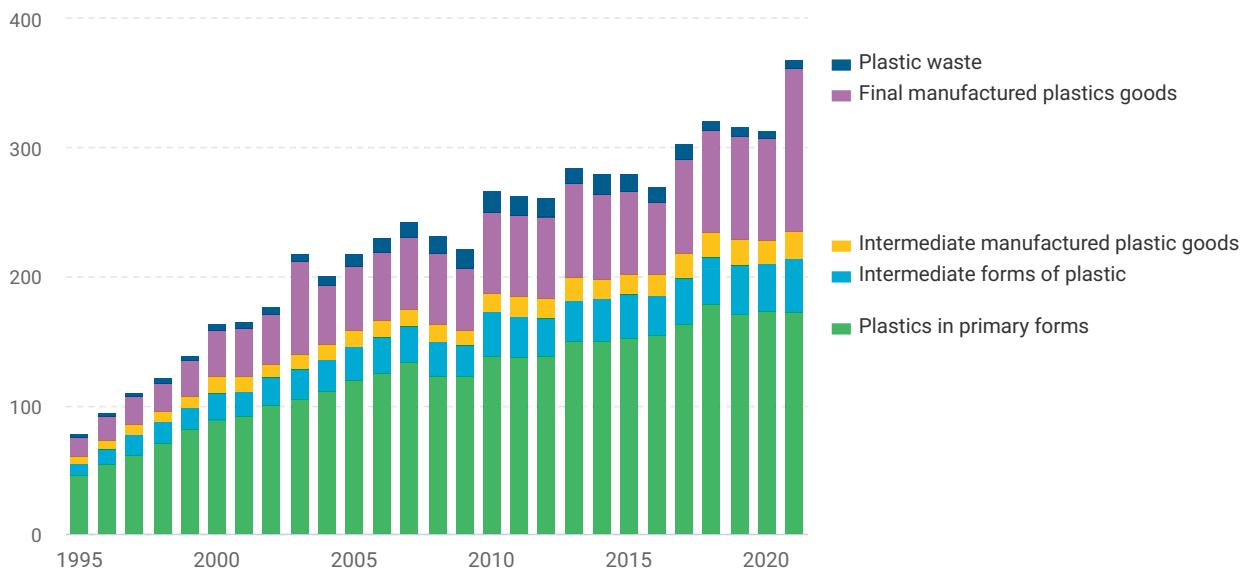
Note: Data refer to plastic products and products containing plastics, as identified by UNCTAD (2021c) jointly with the [Forum on Trade, Environment & the SDGs \(TESS\)](#) at the [Geneva Graduate Institute](#), based on HS. Data on the map refer to 2020 for the following economies: Albania, Bahamas, Bahrain, Cambodia, Lesotho, Malaysia, Oman, Panama, Philippines, State of Palestine, United Arab Emirates, Uzbekistan and Viet Nam.

Through the COVID-19 pandemic, plastics exports remained relatively resilient, dropping by 0.7 per cent only, followed by a 17 per cent growth in 2021 (Figure 7). This 2021 growth was driven by the nearly 60 per cent increase in manufactured plastics products in only one year. In 2021, 47 per cent of global plastics exports, 173 Mt, consisted of primary forms of plastic. In 2019, prior to the COVID-19 pandemic, and the surge in final manufactured plastic goods, this figure had been 55 per cent.



Figure 7. Half of global exports of plastics consist of primary forms, but manufactured plastics is booming

(Mt)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

Note: Data refer to plastic products and products containing plastics as identified by UNCTAD (2023b) jointly with the [Forum on Trade, Environment & the SDGs \(TESS\)](#) at the [Geneva Graduate Institute](#), based on HS codes.

Analyses of different plastics product types, as above, increase transparency and help to set baselines for policy commitments. Plastics data provide important insights regarding the future binding global agreement, mandated by the United Nations Environment Assembly (2022) to end plastic pollution. UNCTAD's data (2023a) enable detailed analysis of international trade over the life cycle of plastics – from the raw materials to the trade of final products and plastic waste – by product type, destination and source. These data contributed to the WTO (2021) Informal Dialogue on Plastic Pollution and Environmentally Sustainable Plastics trade, in addition to data on 129 related measures reported by member states to WTO by March 2021.

Plastic waste trade data reveal global imbalances

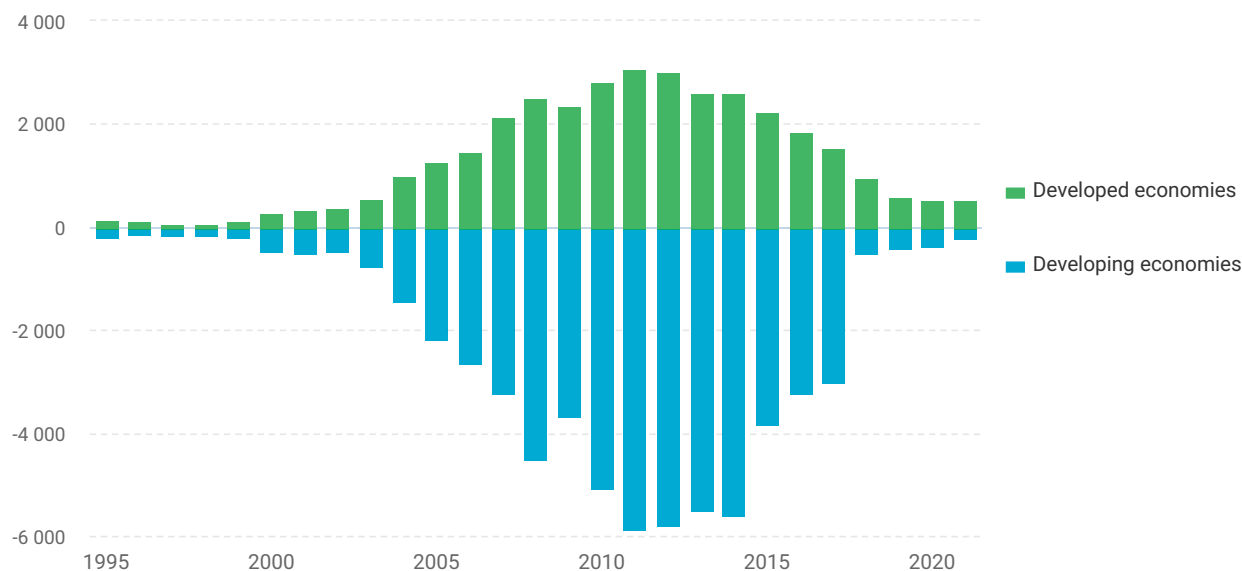
About 75 per cent of all the plastic ever produced has become waste (UNCTAD, 2021d), a trend that may continue unless binding global rules are established. The surge of international plastics trade could signal a mounting tide of plastic in our ocean. Despite efforts to reduce international trade on plastic waste, developed economies continued to be net exporters of plastic waste (Figure 8) accounting for nearly 80 per cent of the global plastic waste exports in 2021, and nearly 70 per cent of global plastic waste imports (UNCTAD, 2023a). However, the volume of exports of plastic waste has dropped in a decade from 15.1 Mt in 2011 to 5.5 in 2021, representing a 63 per cent decrease. This development has been significantly supported by the decision of China to ban imports of most plastic waste to the country in 2017 (National Geographic, 2018). China had been the main importer of plastic waste, in addition to being the largest producer.



Developing economies
suffer
highest impact
of plastic waste,
in absence of proper
waste management systems

Figure 8. Developed economies still net exporters of plastic waste globally

(Millions of US\$)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

Note: Data refer to plastic products and products containing plastics as identified by UNCTAD (2023b) jointly with the [Forum on Trade, Environment & the SDGs \(TESS\)](#) at the [Geneva Graduate Institute](#), based on HS codes.

Plastics disproportionately affect vulnerable communities. Exporting plastic waste to developing economies with insufficient infrastructure to manage the waste in an environmentally sound manner may increase burning of plastics which releases greenhouse gases, and the spreading of microplastics which harms ecosystems.

By embracing reusable, biodegradable and compostable plastic substitutes – such as natural fibres, agricultural waste, glass and aluminium – industries, businesses and consumers can help stem the tide of plastics crossing borders. UNCTAD has initially identified a total of 282 HS subheadings (6-digit level) for materials and products which can perform similar functions to plastics, and thus can be considered as substitutes. Preliminary estimates value the trade of plastic substitutes in 2020 at US\$388 billion (UNCTAD, 2023d).

Trade of biodiversity-based products is increasing with large regional discrepancies

All people depend on biodiversity in their physical environment for their livelihood including nutrition, wellbeing, and health. This dependency is especially salient in rural areas where 79 per cent of the world's poor and vulnerable live (United Nations, 2023). The biodiversity today is the result of 4.5 billion years of evolution, over time increasingly affected by human activity (UNEP, 2020). Biodiversity is declining faster currently than at any time in human history (UNEP, 2019b).

In the past 50 years, global GDP has doubled, and the use of natural resources more than tripled (UNEP, 2019a). The extraction and processing of materials, fuels and food for our consumption contribute to over 90 per cent to biodiversity loss globally. Consumption has grown, and is largely unequally distributed throughout the world, with wide variations in lifestyles and access to resources across and within regions (IPBES, 2019). Unsustainable use of earth's resources is affected by many social and economic drivers, including global trade. Trade can be a driver of unsustainable use of resources but can also be harnessed for the conservation and sustainable use of biodiversity, and for a fairer and more equitable sharing of the benefits from trade (UNCTAD, 2023c).

Global export of biodiversity-based goods value at US\$3.7 trillion in 2021, led mostly by developed economies

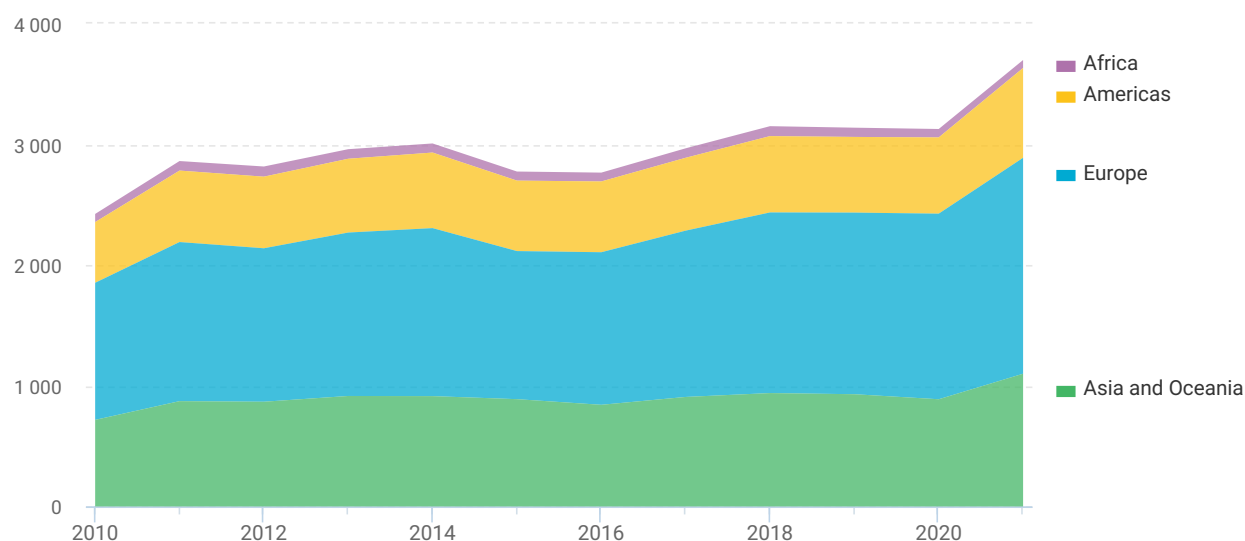
According to UNCTAD's data, the global value of exports of biodiversity-based goods reached US\$3.7 trillion in 2021 (Figure 9). The conservation of biodiversity and the sustainable use and trade of these goods can provide countries with valuable opportunities for economic development and improvement of livelihoods. This trade remained relatively resilient throughout the COVID-19 pandemic across regions and grew by a staggering 18 per cent from 2020 to 2021. Regions, however, are highly unequally involved in the trade of

biodiversity-based products. Europe was the largest exporter of such products, with exports amounting to US\$1.8 trillion, which accounted for nearly a half of global of biodiversity-based products exports in 2021. Among regions, the share of Asia and Oceania in global of biodiversity-based products exports increased most, with an annual growth of 23.8 per cent in 2021, exceeding US\$1 trillion for the first time. The Americas followed suit, with US\$744 billion. In Africa, the value of such exports represented US\$65.8 billion, less than 2 per cent of global exports.



Figure 9. Over time, Europe has been the largest biodiversity-based products exporter globally

(Billions of US\$)



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

Note: Data refer to biotrade goods as identified by UNCTAD (2022), based on HS codes.

The three largest exporters account for 25 per cent of global exports of biodiversity-based products: China's exports are valued at US\$319.6 billion. Those of the United States of America amounted to US\$301.4 billion and those of Germany to US\$273.9 billion. Most of the top ten exporters are European, including the Kingdom of the Netherlands, with a share of 5.1 per cent of global exports, France (4.4 per cent), Italy (4.2 per cent), Spain (3.1 per cent) and Switzerland-Liechtenstein (3.0 per cent). Brazil (3.3 per cent) ranked sixth in 2021, and Canada eighth (3.1 per cent). India also finds its way to the global top ten with a share of 2.9 per cent of global biodiversity-based trade.

Trade of biodiversity-based products delivers essential goods across the world

Data on the trade of biodiversity-based goods consists of 1 814 different types of products derived from biodiversity resources (UNCTAD, 2022). The most traded products reflect the crucial nature of this trade to provide nutrition, medication and housing.

Food and beverages formed the largest item of global exports of biodiversity-based products with a 36.7 per cent share in 2021, valued at US\$1 358.3 billion (Table 1). Pharmaceuticals took up 15 per cent of such trade at US\$563.3 billion and wood and derived products stood at 13 per cent, reaching a global value of US\$486.8 billion. These exports were dominated by Europe with a share of 75 per cent of the global market. Switzerland-Liechtenstein and Germany covered 15.9 per cent each. Among other products, natural fibers, natural ingredients and cosmetics were also significantly traded.



Table 1. Essential goods – food and beverages, medication and wood – at the core of exports of biodiversity-based products, 2021

	US\$ millions	% of total trade of biodiversity-based products	Change from 2010
Food and beverage	1 358 261.6	36.7	2.5
Pharmaceuticals	563 271.3	15.2	2.7
Wood and derived products	486 842.7	13.2	-1.0
Natural fibres and articles thereof	394 077.3	10.7	-3.7
Natural ingredients	326 017.7	8.8	1.4
Perfumery, cosmetic, personal care and room care preparations	143 864.3	3.9	0.9
Miscellaneous	125 086.8	3.4	-0.9
Agricultural inputs	93 175.2	2.5	0.0
Hides, skins, leather, furskins and products thereof	68 096.0	1.8	-0.9
Other products of plant origin	60 389.3	1.6	-0.9
Live animals and plants	52 299.1	1.4	-0.1
Other products of animal origin	18 722.4	0.5	0.0
Vegetable plaiting materials and articles thereof	7 931.0	0.2	0.0

Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

Note: Data refer to biotrade goods as identified by UNCTAD (2022), based on HS codes.

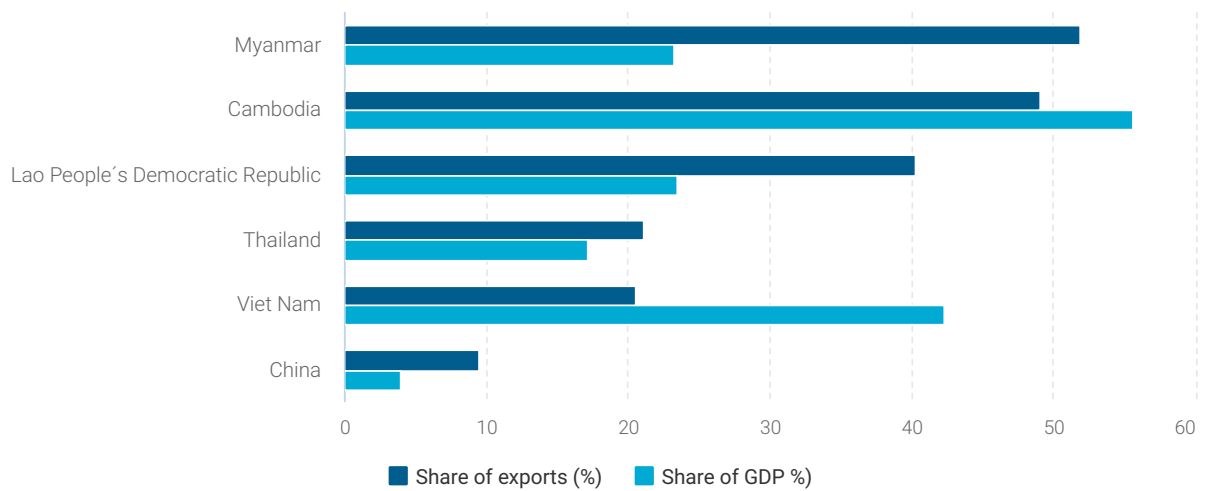
UNCTAD provides interactive maps and charts to help users explore trends of bilateral trade of biodiversity-based products and detailed product data over time [here](#).

UNCTAD’s BioTrade Initiative

UNCTAD’s BioTrade Initiative (2023c) with its Principles and Criteria (2020a) reconciles the need for economic development with poverty alleviation as well as the conservation and sustainable use of biodiversity, through trade in biodiversity-based products and services. These Principles and Criteria are guidelines being implemented and fostered by government organizations, and numerous stakeholders, as demonstrated below in the Mekong and Southern African subregions.

The economy and trade of many countries draw on the trade of products from biological origin. The share of trade of biodiversity-based products in total exports and GDP is relatively high in the Mekong Region (Figure 10). A regional BioTrade project, implemented by Helvetas Swiss Intercooperation (2023) is promoting sustainable production of biodiversity-based products in Lao People’s Democratic Republic, Myanmar and Viet Nam. The project has generated new or additional income for 22 860 people, of which 63 per cent are women, offered new jobs or improved working conditions to 23 450 people and supported 48 companies to export BioTrade products. This generated over US\$63 million of export turnover in 2021-2022. In Viet Nam, the sustainable harvesting and sale of benzoin gum is conserving ecosystems by avoiding logging, improving natural habitat across 31 provinces, and increasing revenues by US\$300-450 per season for local communities.

 **Figure 10. Biotrade intensity was high in the Mekong Region in 2021**



Source: UNCTAD calculations based on UNCTADstat (UNCTAD, 2023a).

Note: Data refer to biotrade goods as identified by UNCTAD (2022), based on HS codes.

To date, the BioTrade initiative has been adopted and is used by practitioners in close to 100 countries with the support of partners such as the ABSI that supports the establishment of ABS compliant biotrade value chains in South Africa. This intervention (ABSI, 2021) created over 3700 permanent and seasonal jobs, increased the turnover of its beneficiary companies by 51 per cent in local sales and 178 per cent in export sales and contributed to 6237 hectares managed sustainably that resulted in 13 species either being sustainably wild harvested and/or cultivated.

Notes

1. Based on SDG Indicator 14.7.1 (FAO, 2022).
2. Referring to different size classes of plastic pollution: macroplastics, microplastics and nanoplastics (Mitrano et al., 2021).
3. This upsurge of plastics in global trade includes products made from plastic, like many children's toys, products with plastic components, such as electronic gadgets and products wrapped in plastic – everything from office furniture to DVDs to snacks. It also includes the raw materials used to make plastics, mainly fossil fuels, and the waste shipped overseas that contain plastics, such as discarded smartphones.

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UNCTAD IN ACTION

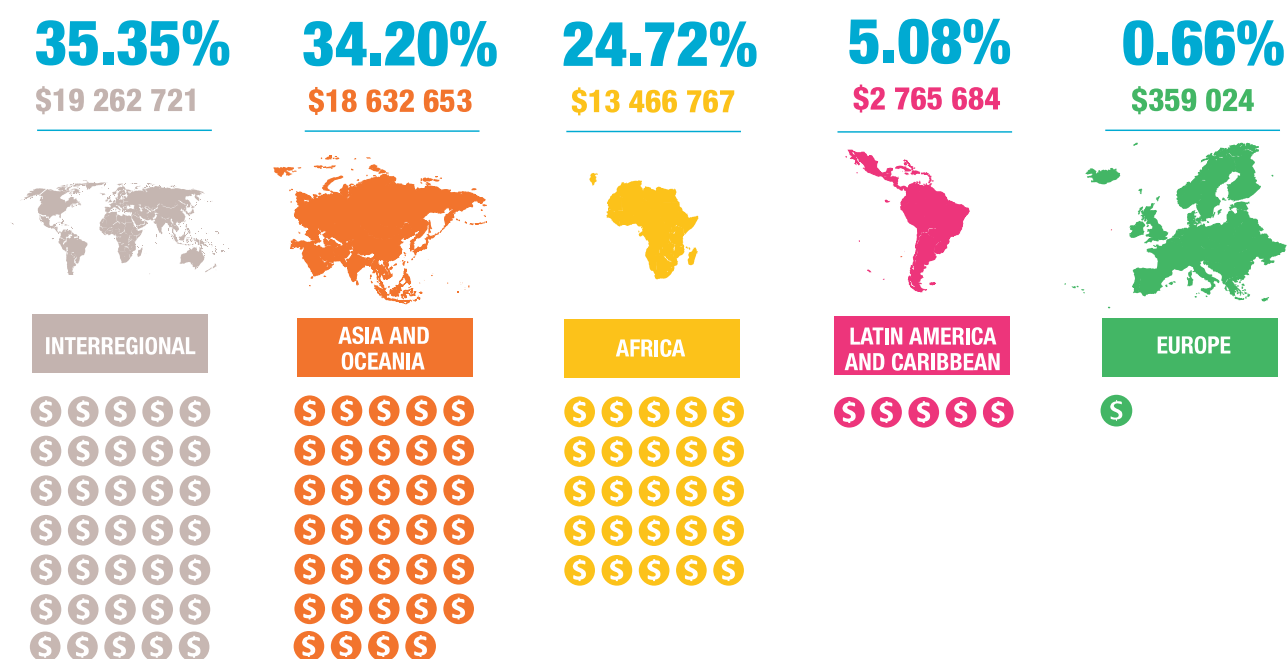
UNCTAD technical cooperation in support of SDGs



UNCTAD technical cooperation in support of SDGs

UNCTAD gears its technical cooperation towards contributing to the achievement of the 2030 Agenda and continues its assistance to developing countries by adapting to the new opportunities and challenges in the fields of trade and development and interrelated issues (UNCTAD, 2021a). The UNCTAD Toolbox (UNCTAD, 2020) has been developed to better align technical cooperation with the SDGs. Total technical cooperation expenditure of UNCTAD surpassed US\$53 million in 2022, delivered through 225 projects in 73 countries (UNCTAD, 2023). UNCTAD's technical cooperation projects are delivered at the interregional, regional and country levels (Figure 1).

 **Figure 1. Most project expenditures in 2022 were interregional, followed closely by projects in Asia and Oceania, and Africa**



Source: UNCTAD (forthcoming)

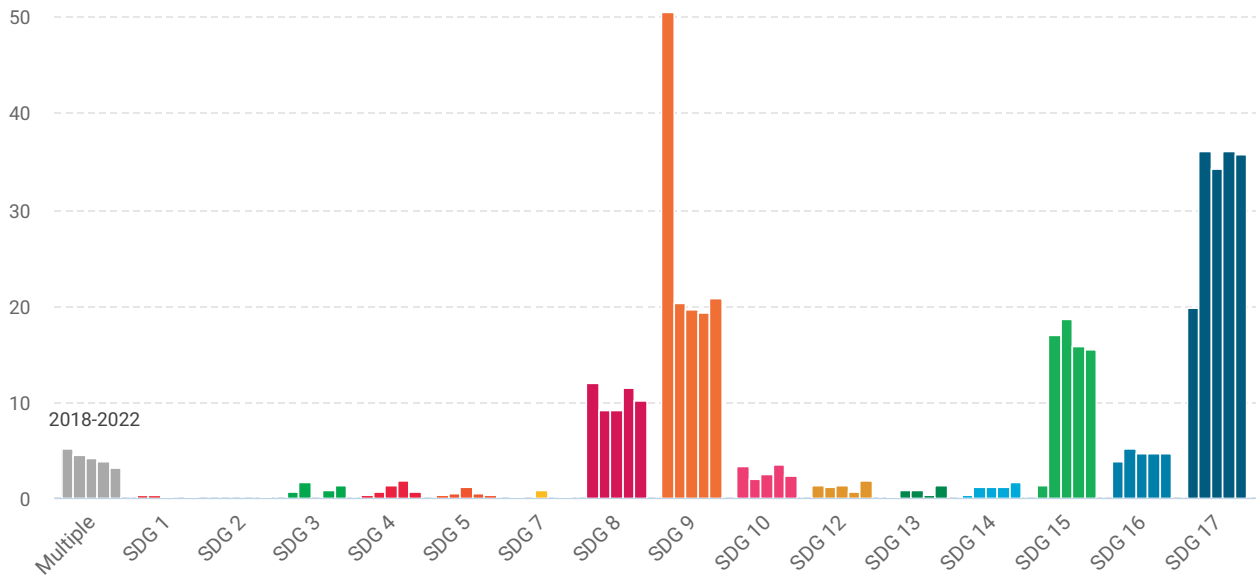
Note: Values in this figure may differ from UNCTAD Annual report (UNCTAD, 2023) as this is based on preliminary figures, while the values represented here utilize final finance figures.

Project expenditure by SDG has not experienced a major shift in the last several years, as it has after 2018, when relative expenditures on SDG 9 (industry, innovation and infrastructure) more than halved, offset by significant increases after 2018 in expenditures to support SDG 16 (peace, justice and strong institutions) and SDG 17 (partnership for the goals). This trend continued in 2022 (Figure 2). SDG 17, 9, 15 (life on land), and 8 (decent work and economic growth) dominate project expenditures. The amount of expenditures not directed to a specific SDG (marked as 'multiple' in figure 2) has slowly diminished in 2018-2022; also, continuing the 2021 occurrence for the first time of project expenditure (albeit very small) directed to support SDG 2 (zero hunger), 2022 values remain small (0.1 per cent) yet reflecting an increase by 0.04 percentage points from 2021.



Figure 2. SDGs 15 and 17 remain stable at the top of project expenditures

(Percentage of total expenditure)



Source: UNCTAD (forthcoming)

UNCTAD is in action on various floors

With nearly 700 people in UNCTAD team, UNCTAD delivers high-quality technical support to many areas benefiting countries and national stakeholders, as well as the international community, building partnerships to jointly address the challenges of today. To that end, UNCTAD uses its convening power to bring together governments, businesses, civil society, academia and other international organizations to advance sustainable development and inclusive trade and economy for all.

UNCTAD contributes to enhancing member States' capacities to reach the 2030 Agenda in several areas, including:

The Convening Power of UNCTAD

UNCTAD uses its convening power to bring together governments, businesses, civil society, academia and other international organizations to advance sustainable development and inclusive trade and economy for all. Since 2016, over 75 000 participants attended nearly 700 official and registered meetings; share of female participants has been 38 per cent. [Learn more...](#)

More than 75 000 participants at UNCTAD meetings in 7 years



UNCTAD Empretec – inspiring entrepreneurship

UNCTAD Empretec promotes entrepreneurship and enhances the productive capacity and international competitiveness of SMEs in developing countries.

The training is delivered through a global network of 42 national business development centres. Since its inception in 1988, Empretec has trained more than 500 000 people, helping them to found or expand businesses and create jobs in the process. [Learn more...](#)

**Empretec has benefitted
half a million
entrepreneurs
over the past 35 years**



TrainForTrade

TrainForTrade provides technical assistance to developing countries focusing on three areas: (1) port management; (2) international e-commerce; and (3) international trade statistics. The aim of the programme is to empower countries to participate in, and reap the benefits of, international trade in an equitable and sustainable manner. The programme has enhanced capacities of nearly **15 000 participants** from **218** different **countries** from 2018 to 2022. **43 per cent** of all participants were **female**. [Learn more...](#)



**TrainForTrade
has a global impact:
nearly 15 000 trained
from over 200 countries**

Framework to measure South-South Cooperation

For the first time a tool, the voluntary Framework to Measure South-South Cooperation, exists that can be applied to quantify mutual support flows among Southern countries. As a custodian agency, UNCTAD provides support to enhance countries' capacity to collect data and measure SSC. UNCTAD survey shows that most of the countries involved in SSC, 64 per cent of respondents, engage as both providers and recipients of support in the context of SSC. The statistical capacity (85 per cent of the responses) and collaboration between agencies (75 per cent) were identified as the key areas for improvement to enable data collection on development support and SCC. [Learn more...](#)

UNCTAD survey:
statistical capacity 85%
collaboration between agencies 75%
**identified as the key areas
for technical support**

Debt management and debt data transparency: DMFAS Programme

The UNCTAD DMFAS programme advises developing economies in debt management and helps them to record and report reliable debt statistics for policymaking. The programme offers countries a set of practical solutions for the management of public liabilities and the production of debt statistics, supported by the DMFAS debt management and financial analysis software, capacity development and advisory services.

DMFAS has trained nearly **7 000 experts**, **nearly half women** in debt management. [Learn more...](#)

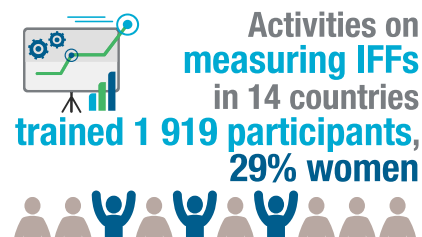
**DMFAS has trained
nearly 7 000 experts,
48% women
in debt management**



Measuring illicit financial flows

UNCTAD supports member States to strengthen their statistical capacity to define, measure and disseminate statistics on IFFs as a custodian of SDG indicator 16.4.1 on IFFs with UNODC.

Between 2017 and 2023, UNCTAD and UNODC held 21 expert meetings; moreover, between 2021 and June 2023, UNCTAD and its regional partners, ECA and ESCAP, held 39 national workshops in Africa and Asia to enhance national capacity to measure IFFs in **twelve pioneering countries in Africa** and **two in Asia**. In total, 1 919 participants were trained, of whom 29 per cent women. [Learn more...](#)



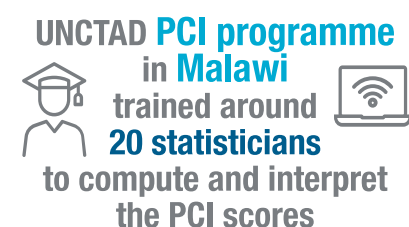
UNCTAD takes an active role in promoting ICT as a tool for development

UNCTAD's "eTrade for all" has established a global partnership of 35 organizations working together to support an enabling environment for sustainable development through e-commerce. Within eTrade Readiness Assessments in LDCs and other developing countries, UNCTAD found that 41 countries have successfully implemented UNCTAD eT Readies, E-Commerce Strategies, or Action Plans. [Learn more...](#)



UNCTAD Programme on Fostering Productive Capacities and Structural Economic Transformation: completed

UNCTAD has developed a comprehensive programme on fostering productive capacities and structural economic transformation in support of developing countries. The project is structured around four main activities, co-led by UNCTAD and relevant ministries in the country: (1) Strengthen countries' statistical capacity; (2) Develop National Productive Capacities Gap Assessments; (3) Formulate Holistic Productive Capacities Development Programmes; and (4) Train policymakers, national technical experts and other stakeholders. [Learn more...](#)



Promoting sustainable production of biodiversity based products

UNCTAD's BioTrade Initiative with its Principles and Criteria reconciles the need for economic development with poverty alleviation and the conservation and sustainable use of biodiversity, through trade in biodiversity-based products and services.

A regional BioTrade project in Lao People's Democratic Republic, Myanmar and Viet Nam generated new or additional income for 22 860 people, of which 63 per cent women, offered new jobs or improved working conditions to 23 450 people and supported 48 companies to export biotrade products. [Learn more...](#)



Only a handful of activities are selected here to showcase hard numbers speaking for UNCTAD's work in support of member States in the pursuit of the 2030 Agenda. Inspiring entrepreneurship as one of the key driving forces of development, UNCTAD Empretec promotes entrepreneurship and enhances the productive capacity and international competitiveness of SMEs in developing countries.


The convening power of UNCTAD

SDG targets 17.16 “Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries” and 17.17 “Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships” call for inclusiveness and collaboration among all stakeholders. UNCTAD (2021a) supports the “collaboration with agencies within and outside the United Nations system” using its convening power to bring together governments, businesses, civil society, academia, and other international organizations.

“Alone we can do so little; together we can do so much.”

— Helen Keller, American author

Meetings include ministerial and other high-level meetings, intergovernmental meetings, such as the Trade and Development Board and its subsidiary bodies, the Working Party on strategic framework and programme budget, and fora, such as the Global Commodities Forum, Illicit Trade Forum, and e-Commerce Week. They also include study visits, seminars, short courses for diplomats and bilateral government visits. Since 2016 and up until 2022, UNCTAD held 698 events with 75 212 participants (Table 1).

 **Table 1. Numbers of organized events and participants at UNCTAD headquarters recovering after the COVID-19 pandemic**

Year	Number of events	Number of total participants
2016	38	8 717
2017	107	7 173
2018	136	16 689
2019	165	9 398
2020	72	5 820
2021	68	14 540
2022	112	12 986
Total	698	75 323

Source: UNCTAD calculations based on data from UNOG Indico (2023)

Note: These statistics only cover meetings and events organised by UNCTAD at its headquarters in Geneva and registered in the ‘Indico’ conference management system. Many other meetings organised by UNCTAD at the regional or national level, and outside Geneva, are not counted.

On average, women’s participation in meetings from 2016 to 2022 has been at 38 per cent. Representatives from national governments are the single largest group attending UNCTAD meetings, accounting for 44 per cent of all registered participants. The private sector, academia, and non-governmental organizations together account for 34 per cent. Regional representation shows Africa and Western Europe making up about 30 per cent of participants, followed by Asia and the Pacific at 19 per cent. Latin America and the Caribbean form 11 per cent of all registered participants, and Eastern Europe 7 per cent. Regional representation is not specified for all participants, for instance for people representing international organizations.

UNCTAD Empretec promotes entrepreneurship

To be inclusive, economic transformation and diversification must incorporate microenterprises and small and medium-sized enterprises, businesses owned or managed by women and youth, start-ups, and both formal and informal enterprises. All these enterprises play a significant role as they employ people in developing countries. Supporting MSMEs’ development and fostering an entrepreneurial mindset for more vibrant and diversified economies can contribute to the full achievement of SDGs 4, 5, 8 and to the principle of leaving no one behind.



Empretec is an integrated capacity-building programme for MSMEs to build their entrepreneurial skills, promote their scaling up and expand their networks. Its core product, the Entrepreneurship Training Workshop, promotes behavioural changes that help entrepreneurs put their ideas into action and fledgling businesses to grow. Training is delivered by more than 500 local, certified trainers and by a pool of 40 international, master trainers. All trainers are themselves entrepreneurs.

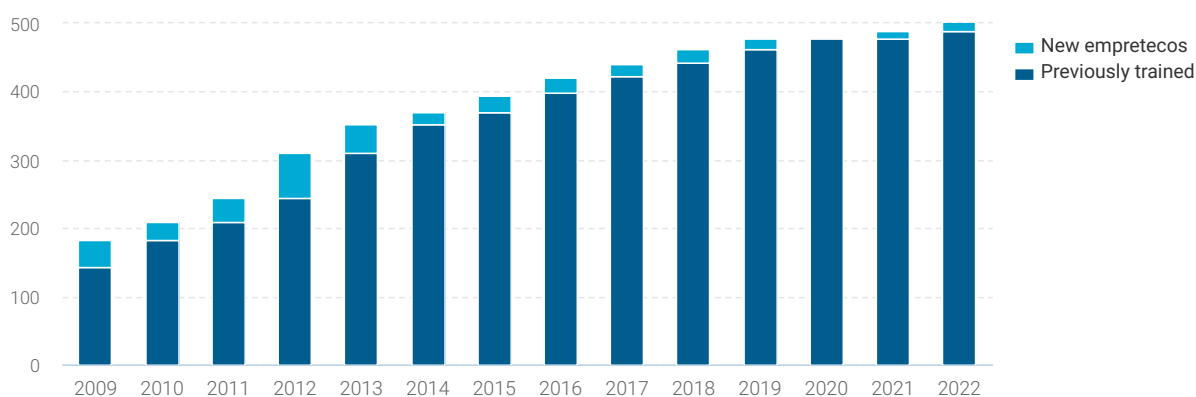
“
Empretec plays a major role in equipping entrepreneurs with required skills and knowledge with its unique methodology to establish a sustainable business. It’s considered one of the major programs to support scaling up of current businesses towards innovation, digitalization and increasing competitiveness which leads to employment generations and investment opportunities.
 — Mr. Nayef Z. Stetieh, former Minister of Labour, Jordan, and Director of the Empretec programme in Jordan
 ”

For instance, Empretec held workshops in six African countries, namely Benin, Cameroon, Gambia, Ghana, Nigeria and Zimbabwe, between 2020 and 2022. After those, a study was conducted among 200 entrepreneurs, and it showed that the training had a positive impact on their businesses.

The training is delivered through a global network of 42 national business development centres. Since its inception in 1988, Empretec has trained more than 500 000 people (Figure 1), helping them to found or expand businesses and create jobs in the process.

Figure 3. Number of entrepreneurs trained by Empretec rising, though plateauing

(cumulative number, thousands of persons)



Source: UNCTAD Empretec.

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IN FOCUS: PATHS TO SDGS

Unlocking transition pathways: A global perspective to SDG costing with synergistic approaches

Unlocking transition pathways: A global perspective to SDG costing with synergistic approaches

The Bridgetown Covenant underlines the importance of “boosting resources, private and public, and domestic and international” and their “effective employment” in delivering on the 2030 Agenda (UNCTAD, 2021a). In the SDG progress report (United Nations, 2023a), the UN Secretary-General urged world leaders to come together at the SDG Summit in September 2023 to deliver a Rescue Plan for People and Planet centred around three major breakthroughs: equipping governance and institutions for sustainable and inclusive transformation; prioritizing policies and investments that have multiplier effects across the goals; and securing a surge in SDG financing and an enabling global environment for developing economies. This SDG Pulse In Focus offers analytical, data-driven input to these efforts based on experimental costing of SDG indicators using official statistics.

The 2030 Agenda can be seen as a universal agenda for investment in sustainable development. But progress towards the SDGs is off track and slipping increasingly out of reach. Effective action is hampered by the lack of overall understanding of the financing needs required to achieve the SDGs. It is difficult to align the national budgets, investment and financing flows, or debt relief with the needs for achieving the SDGs when there is no data to guide decisions.

In recent years, approximately 50 countries have estimated the costs of achieving selected SDGs reflecting national priorities based on guidance developed by the Inter-agency Task Force on Financing for Development (INFF Facility, 2023). These efforts have shown that better data and understanding of the costs can strengthen financing for national sustainable development priorities and feed effectively into national planning. These estimates are, however, tailored for specific national purposes and the global picture of the need for SDG financing remains weak and incomplete.

The 2023 SDG Pulse In Focus discusses experimental cost estimates calculated for 60 countries, including 21 developing economies¹, initially covering 20 SDG indicators including their breakdowns, and spanning across the transition pathways. The study covers more than 45 per cent of the global population. This analysis, however, focuses on developing economies covering over 35 per cent of their total population. The SDG transition pathways on energy, education, jobs and social protection, digitalization, food systems and climate, as communicated by the UN Deputy Secretary-General (United Nations, 2023b), are the focus of the analysis. UNCTAD has developed an SDG costing methodology that considers synergies and trade-offs, i.e., the impact of spending on one SDG across the other goals (see [Annex I](#)). This method can be used to identify strategies and best practices to maximize the effect of spending on the achievement of the SDGs. When effectively implemented, systematic financing through the pathways can serve as catalysts for change to focus on sustainable solutions and put human rights and equality at the centre.

The work is inspired by the UN Secretary-General’s SDG Stimulus which calls for a massive increase in financing for development, including humanitarian support and climate action, and is part of the related UN-wide efforts, led by UNCTAD with UN DESA and UNDP to pool expertise across the UN and provide effective tools and methods to cost the achievement of SDGs across the transition pathways (Figure 1). That effort is carried out in collaboration with UN Women to ensure gender focus and with IFAD, IEA, ILO, ITU, ESCWA, UNEP, UNESCO, UN-Habitat, UNICEF and other interested partners.

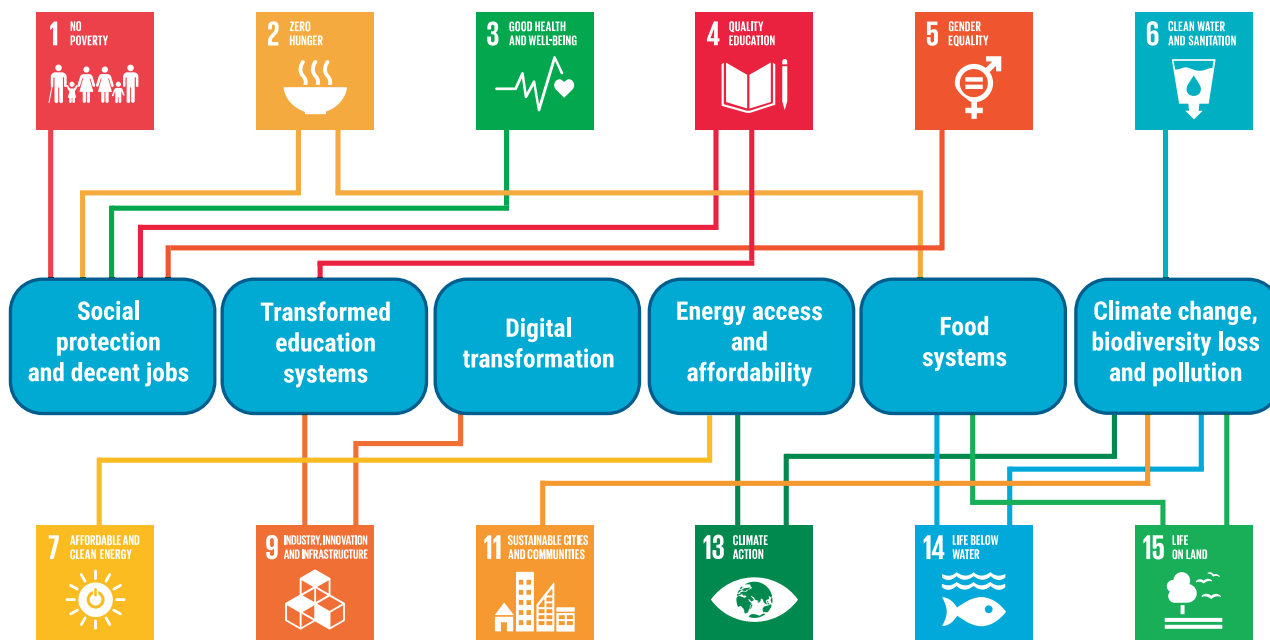
The method used in this study is based on countries’ official statistics on government expenditure by sector² compared to development outcomes measured using countries’ SDG indicator data. Indicators of government effectiveness, political stability and absence of violence and terrorism, as well as FDI (net inflows) were used as control variables. While the input data consist of official statistics, the analysis is based on SFM and as such the results are estimates that include uncertainty (see Annex I). However, we hope that even provisional estimates regarding optimal spending have the potential to inform policies on how to accelerate progress towards SDGs.

While this study focuses on the total costs of achieving SDG transition pathways for the covered SDG indicators, UNCTAD World Investment Report has previously estimated the SDG investment gap to finance capital expenditure (UNCTAD, 2014). This effort focused on private, cross-border investment and linked SDGs to investment sectors, such as energy, infrastructure or food and agriculture to facilitate SDG-aligned investment. The 2023 World Investment Report (UNCTAD, 2023a) will provide an update of the estimate of the SDG investment gap, at the midpoint of the 2030 Agenda.³ This work responds to a request by the General Assembly (United Nations, 2022b) for the World Investment Report “to focus on promoting investments for sustainable development as well as concrete recommendations, including on strategic sectors to invest for the implementation of the 2030 Agenda”.

The work presented in this study stems from a UN-wide collaboration (United Nations, 2023c) to develop SDG costing methods and tools, and the role of UNCTAD “as the focal point of the United Nations for the integrated treatment of trade and development and interrelated issues in the areas of finance, investment, technology and sustainable development” (UNCTAD, 2021a). The study provides the first preliminary estimates using a new methodology based on SDG indicators and official statistics and offers a starting point for further work to expand these estimates and enhance the methodology. In a world without data gaps, this analysis could be done for all SDG targets and countries. Thus, the resulting analysis of critical data gaps is also a key value-added highlighting this exercise for much needed investment in key statistics.

The United Nations has identified the below six transition pathways (Figure 1) to maximize efforts towards achieving the 2030 agenda and to enable translating global commitments to support for country-level implementation.

 **Figure 1. Six transition pathways to sustainable development include 12 SDGs**



Source: UNCTAD mapping based on United Nations (2023b).

The costing exercise covers 20 SDG indicators to date

The aim of this experimental study is to cover SDG indicators included within the six transition pathways with sufficient country coverage and in a way that can be costed. The SDG indicator framework includes 231 unique SDG indicators, of which 163 are classified as tier I (United Nations, 2023d).

Out of 163 tier I SDG indicators, 109 fall within the transition pathways and 91 of these could in principle be costed at a country level. Indicators that are global in scope, like ‘the number of countries...’, cannot be costed for national achievement, and some are not relevant to all countries globally. Furthermore, even for some tier I indicators country coverage is low, especially for developing economies. Therefore, this first analysis estimates the costs of meeting the target values of the 20 SDG indicators and their breakdowns within the pathways (Table 1).

This study analysed a time series spanning from 2005 to 2021. The indicators spread across nine SDGs among the twelve included in the transition pathways. This analysis could potentially be extended to other SDG indicators and countries following further data collection efforts.



Table 1. 20 SDG indicators including their breakdowns are considered in the SDG costing exercise by transition pathway

Transition pathway	SDG indicators included	SDG indicator target values to reach 2030 Agenda
Climate change, biodiversity loss and pollution	15.1.2 F Proportion of important sites for freshwater biodiversity that are covered by protected areas	90%
	15.1.2 T Proportion of important sites for terrestrial biodiversity that are covered by protected areas	83%
	15.4.1 Coverage by protected areas of important sites for mountain biodiversity	83%
Energy access and affordability	7.1.1 Proportion of population with access to electricity	100%
	7.2.1 Renewable energy share in the total final energy consumption	25,6% developing, 32% developed
	7.3.1 Energy intensity measured in terms of primary energy and GDP	2
Food systems	2.a.1 The agriculture orientation index for government expenditures	1
	15.1.2 F Proportion of important sites for freshwater biodiversity that are covered by protected areas	90%
	15.1.2 T Proportion of important sites for terrestrial biodiversity that are covered by protected areas	83%
	15.4.1 Coverage by protected areas of important sites for mountain biodiversity	83%
Transformed education systems	4.1.1 Proportion of children and young people achieving a minimum proficiency level in reading and mathematics	90%
	4.1.2 P Completion rate (primary education)	97% developing, 100% developed
	4.1.2 L Completion rate (lower secondary education)	97% developing, 100% developed
	4.1.2 U Completion rate (upper secondary education)	97% developing, 100% developed
	9.2.1 Manufacturing value added as a proportion of GDP and per capita	20%
	9.c.1 Proportion of population covered by a mobile network, by technology	100%

Transition pathway	SDG indicators included	SDG indicator target values to reach 2030 Agenda
Social protection and decent job	1.4.1 Proportion of population living in households with access to basic services	100%
	2.a.1 The agriculture orientation index for government expenditures	1
	3.2.1 Under-5 mortality rate	25/1 000
	3.2.2 Neonatal mortality rate	12/1 000
	3.3.2 Tuberculosis incidence per 100,000 population	0/100 000
	3.b.1 Proportion of the target population covered by all vaccines included in their national programme	100%
	4.1.1 Proportion of children and young people achieving a minimum proficiency level in reading and mathematics	90%
	4.1.2 P Completion rate (primary education)	97% developing, 100% developed
	4.1.2 L Completion rate (lower secondary education)	97% developing, 100% developed
	4.1.2 U Completion rate (upper secondary education)	97% developing, 100% developed
	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location	< 1.03
	5.5.1 Proportion of seats held by women in national parliaments (% of total number of seats)	50%
Digital transformation	9.2.1 Manufacturing value added as a proportion of GDP	20%
	9.c.1 Proportion of population covered by at least a 3G mobile network	100%

Source: UNCTAD deliberations and review of literature.

Note: For the majority of the countries covered in this study, the indicator 1.4.1 reflects the percentage of the population that has access to basic drinking water services across various geographical areas. Energy intensity (7.3.1) is expressed in megajoules per unit of purchasing power parity GDP in constant 2017 US\$ figures. 15.1.2 is distinctly presented as two indicators: 15.1.2 F (Proportion of important sites for freshwater biodiversity that are covered by protected areas) and 15.1.2 T (Proportion of important sites for terrestrial biodiversity that are covered by protected areas) following Global SDG database (United Nations, 2023e) are provided separately. In a similar fashion, some indicators are analysed by their breakdowns, e.g., 4.1.2 forms three indicators by levels of education.

This study applies an SFM method which is valuable for analysing the structure and interactions of producer performance, its determinants and synergies. It is interesting when applied to SDG achievement since countries' performance is subject to strong influence by government decisions, priorities and expenditures. The public sector plays a central role in steering the pursuit of the 2030 Agenda and seeking financing to that end, especially in health and social sectors, but arguably also in environmental protection. This study incorporates both recurrent and capital expenditures. However, due to the focus on government expenditures, the role of private investment is not fully captured, and it is significant for specific SDGs, like investment in digital technology, and varies by country, e.g., as some countries may have a notable share of privately provided health or education services. This is mitigated by control variables on government effectiveness, political stability and absence of violence and terrorism, and FDI net inflows. Furthermore, the selection of categories included is based on the statistical significance between government expenditure and the related policy measures. The 2023 World Investment Report will complement the picture with its focus on the private investment perspective.

Major increases needed to support social protection and decent jobs

Critical to the advancement of SDGs 1, 2, 3, 4, and 5, this pathway is about pursuing wellbeing, access to essential services, equality and human rights. This exercise considers the costs of achieving the targets for access to basic services (target 1.4), investment in rural infrastructure and agriculture (SDG indicator 2.a.1), education completion and proficiency in reading and mathematics (target 4.1), and reducing child mortality (target 3.2), fighting tuberculosis (SDG indicator 3.3.2) and ensuring access to vaccines (3.b.1). The study also considers the requirements of achieving gender equality in the parliaments and local government (5.5.1) and in time use on unpaid domestic and care work (5.4.1).

**US\$1 194 per capita
needed each year
to achieve
social
protection**



From 2023 to 2030, achieving these indicators is estimated to require an average annual per capita cost of US\$1 194 (or 13.7 per cent of GDP) in the 21 developing economies covered.⁴ This value illustrates the total financing required to achieve the SDG indicators covered for the social protection and decent jobs pathway and could be funded from various sources of financing (See [Development Finance](#) and [Investment flows](#)).

Achieving the indicators costed⁵ presents unique challenges and opportunities for countries. Afghanistan grapples with elevated neonatal mortality rates for neonatal (SDG indicator 3.2.2) and under-five year-olds (3.2.1), coupled with restricted access to vaccines (3.b.1) and low education results (4.1.1 and 4.1.2). Addressing these challenges in Afghanistan would demand significant yearly spending, approximately 22 per cent of GDP or around US\$3.3 billion per year. Some countries, like Armenia, have made commendable progress with near-universal access to basic services (1.4.1) and an impressive vaccination rate (3.b.1) but challenges remain with the high mortality of under-five year-olds (SDG indicator 3.2.1) and the low gender parity in national parliaments (5.5.1). In Azerbaijan, prioritizing education has resulted in high completion rates (SDG indicator 4.1.2), but further improvements are needed in health (3.2.1, 3.2.2, 3.3.2 and 3.b.1) and women's political participation (5.5.1).

Bolivia, along with other countries, faces challenges in health and education results, marked by high under-five year-olds' mortality (3.2.1) and prevalent tuberculosis (3.3.2). Other countries, such as China and Thailand, have made substantial progress while focused efforts are still needed. China stands out with its robust agriculture orientation of government spending (SDG indicator 2.a.1). Additionally, 94 per cent of China's vast population has access to basic services (1.4.1). Kazakhstan has excelled in education results (4.1.1 and 4.1.2) and vaccination rates (3.b.1). The Maldives, for instance, have achieved complete access to basic services (1.4.1). Thailand, despite challenges, is making promising strides toward eradicating tuberculosis (3.3.2).

It is essential to note that improvements in unpaid care and domestic work participation (SDG indicator 5.4.1) present a long-term challenge for the countries surveyed. For instance, Bolivia's score stands at 1.69,⁶ indicating a significant imbalance in unpaid care responsibilities. Afghanistan, with a score of 8.57, shows a stronger need for considerable efforts in achieving gender equality in unpaid domestic and care work. This goal, crucial for gender equality and economic productivity, may not be attained until after 2030, underscoring the need for persistent focus and strategic actions.

Digitalization is a key driver of progress across the 2030 Agenda

This pathway promotes tech-driven economies, enhancing innovation, job creation, and economic outcomes contributing to SDG 9. Digitalization influences structural change through its impacts on productivity, employment, sectoral linkages and trade (Matthess and Kunkel, 2020), and has therefore important effects across the 2030 Agenda. Digital divides and related skills bias may also hamper progress in structural transformation towards higher value-added activities.

On the digital transition pathway, the two first indicators costed include the manufacturing share of value added in GDP (SDG indicator 9.2.1), and the universal coverage of mobile networks (9.c.1). Their achievement from 2023 to 2030 is estimated to cost US\$325 per capita annually (3.4 per cent of GDP) for the 21 developing economies covered.

There are large country differences in progress within this pathway, and in the role of the government therein. For instance, Afghanistan, despite its needs, shows promise with a manufacturing share of value added at 27 per cent of GDP (SDG indicator 9.2.1) and a 57 per cent mobile network coverage (9.c.1). China and Türkiye show strong progress within the digital transition pathway with high manufacturing value added share and near-universal mobile network coverage. Smaller economies like Armenia and Mongolia impress with 100 per cent mobile network coverage and have in practice bridged the digital divide for mobile access.

However, achieving universal mobile network coverage and increasing manufacturing share to over 20 per cent of GDP presents challenges for many countries. Sustained efforts, including bolstering digital literacy, digital infrastructure investment, and creating a favourable environment for innovation and entrepreneurship, are vital for harnessing digital transformation's potential for growth. UNCTAD's efforts to support entrepreneurs in this regard are discussed in [UNCTAD In Action](#).

Education to unlock innovation for sustainability

The education transition pathway underlines the significance of quality education (SDG 4), empowering individuals with the knowledge and skills essential for sustainable development and related research and development (SDG 9). The study considers the costs of achieving 90 per cent proficiency in reading and mathematics (SDG indicator 4.1.1), 97 per cent education completion rate (4.1.2), higher manufacturing value added share (9.2.1) and universal mobile network coverage (9.c.1) (the latter two are also included in the previous section).

Achieving these SDG indicators as part of the education transition pathway is estimated to cost US\$422 per capita annually for the developing economies studied (corresponding to 4.8 per cent of their GDP). Armenia, and Kazakhstan show high achievement levels, with near-universal education completion rates (SDG indicator 4.1.2) and impressive digital inclusion metrics for mobile network coverage (9.c.1). Conversely, countries like Somalia, and Mauritius lag significantly behind on both indicators. According to UNESCO (2023), it was estimated that the cost of achieving the key SDG 4 targets, including universal pre-primary, primary, and secondary education in low- and lower-middle-income countries by 2030, would amount to US\$461 billion on average between 2023 and 2030. These figures highlight the significant financial resources required to meet the targets and emphasize the importance of adequate funding to support the implementation of education initiatives in these countries.

The later discussion on synergies, underlines the important effect on education spending across the 2030 Agenda, including through enhanced human capital, socio-economic development, reduced inequality, higher innovation, and sustainable industrialization.

Food system transition remains challenging for many developing economies

Overall, the food system transition pathway aligns with the zero-hunger goal (SDG 2) and underscores the essential role of [agriculture for food security](#), to improve rural livelihoods, and to bolster resilience. This study considers the cost of developing rural infrastructure and agriculture (SDG indicator 2.a.1), and protecting important sites for terrestrial, freshwater and mountain biodiversity (15.1.2 and 15.4.1). This costing exercise, however, does not consider the achievement of the zero-hunger target and could be extended in the future.

The estimated average annual per capita cost for developing economies to achieve indicators covered for this pathway is US\$225. These contribute to enhanced food security, sustainable agricultural practices, mitigating climate change impacts, and conserving biodiversity.

While some countries have made significant strides in agricultural expenditure orientation (SDG indicator 2.a.1) and protected area coverage for biodiversity (15.1.2 and 15.4.1), others are far from the targets. The agriculture orientation index for government expenditures indicates efforts in supporting the agricultural sector (2.a.1). Some countries, like El Salvador and Thailand, have high scores, demonstrating their prioritization of agricultural development. However, there is room for improvement in many countries where the index remains low.

While some countries, like Thailand, have made notable progress in biodiversity conservation (SDG indicators 15.1.2 and 15.4.1), others struggle to reach higher levels of protected area coverage. The food system pathway presents an opportunity for countries to address the complex interplay between food production, climate change, and biodiversity conservation, and is an important area for further efforts to fill data gaps and enable an extended analysis of indicators and countries.

Energy transition has the potential to boost sustainability across sectors

The energy transition pathway aims to enable access to electricity, renewable energy and reduce energy intensity towards SDG 7 and taking urgent action on climate change towards SDG 13. This study considers the cost of achieving universal access to electricity (SDG indicator 7.1.1), increasing the share of renewables (7.2.1) and reducing energy intensity (7.3.1). The cost of taking action to address climate change merits an extended study and has not been considered yet.

Achieving these indicators requires yearly spending of US\$586 per capita (6.7 per cent of GDP) in the 21 developing economies considered. Earlier the Sustainable Energy for All consortium (ESMAP et. al., 2015) estimated that the requirements are in the range of US\$1.0–1.2 trillion annually from 2012 to 2030 to achieve universal access to modern energy services, double the global rate of improvement in energy efficiency, and double the share of renewable energy in the global energy mix. This would have required tripling the level of investments in 2010. But as years have gone by, and as we have also seen some setbacks, the annual spending needs have increased. The report estimated that the bulk of the resources would be needed for energy efficiency and renewable energy interventions.


The IEA (2023) estimates that the world must rapidly increase annual clean energy investment to reach US\$4.5 trillion globally by 2030 in order to achieve universal access and decarbonise the global energy sector consistent with a trajectory to limit global temperature rise to 1.5 degrees by the end of the century. While investments in clean energy are rising rapidly in developed economies and China, the levels have remained flat in developing economies. This would need to climb 7-fold to reach between US\$1.4-1.9 trillion by the early 2030s to align with the outcomes of the Paris agreement, according to the IEA and IFC. Concessional financing will be essential to attract the needed private investment to clean energy in these regions, with the required concessional finance estimated to be between 80 and 100 billion in the years around 2030.

Among developing economies studied, ten have achieved universal access to electricity (SDG indicator 7.1.1), while additional efforts are needed in Myanmar (70 per cent) and Somalia (80 per cent) to get closer to 100 per cent (United Nations, 2023f). Renewable energy share (7.2.1), on the other hand, is highest in Somalia, Guatemala, Myanmar and Kyrgyzstan, ranging between 30 and 95 per cent. Yet, Uzbekistan, Iran, Kazakhstan, Maldives, and Azerbaijan remain at below 2 per cent share of renewable energy in total final energy consumption. Almost all developing economies studied are far from reaching the energy intensity target. Among the countries assessed, only Mauritius, Afghanistan, and Türkiye have either met or come close to achieving the target. Additional focus on energy efficiency, especially in the transport sector, is crucial, and energy efficiency has synergetic links to other resource systems, like water and food.

US\$1 839 per capita needed each year

The overall cost estimate for reaching the selected SDG indicators is US\$1 839 per capita for the 21 developing economies. This does not consider the available financing sources or the potential remaining financing gaps, but rather the overall spending needs per year.

**Funding needs
to achieve the 2030 Agenda
vary**

from US\$250  **to over US\$1 839**

per capita annually

The sum of costs for pursuing the selected SDG targets across the pathways, discussed above, and if pursued individually, would be US\$2 751 per capita. Considering synergies across goals and pathways, the actual overall cost, US\$1 839 per capita, is only two thirds of the separate costs. This speaks to the systemic nature of the 2030 Agenda. While some SDG indicators are overlapping between pathways, even removing them would leave higher costs for individual pathways. This underscores the importance of leveraging synergies between the SDGs

and the transition pathways. This chapter will also discuss those synergies in maximizing positive spill over effects and minimizing trade-offs across the 2030 Agenda.

A comparison of several SDG costing studies reveals a large variation in the estimates of the funding needs to achieve the 2030 Agenda. Estimates from different studies range from about US\$250 to over US\$1 839 per capita annually (see [Annex II](#)). The variation does not seem to be driven only by country or SDG coverage, but also by the choices made related to methodology, sector, and data sources. It should also be noted that the financing needs depend on the time left to pursue the SDGs and the current distance from them. The closer we get to 2030, the higher the annual cost to bridge the gap.



Dollars spent with a gender focus yield better results

Financing for SDGs should consider gender perspectives specifically, because if it does not, it risks reinforcing existing gender biases, or leading to otherwise unexpected outcomes. Gender equality and the empowerment of women and girls is recognized under the 2030 Agenda not only as a standalone goal but also as a prerequisite for addressing the world's most pressing concerns, including poverty, inequality and climate change, and for greater peace and prosperity. Empirical evidence shows a robust connection between greater gender equality and improvements across key economic outcomes, including growth, productivity, and competitiveness (Kazandjian et al., 2016). Vital for upholding the rights and dignity of all women and girls, gender equality is also a multiplier and accelerator of human progress, economic growth and development (Seguino, 2000; Braunstein et al., 2020).

Gender equality, however, is still a distant goal that the world has yet to achieve. More women and girls live in extreme poverty today than men and boys, and hunger and food insecurity are a routine part of the lived reality of millions of women and girls. By the end of 2022, around 383 million women and girls lived in extreme poverty compared to 368 million men and boys (UN WOMEN and UN DESA, 2022). In 2021, one in three women experienced moderate or severe food insecurity globally, and more than one in ten women and girls aged 15–49 have been subject to sexual and/or physical violence by an intimate partner in the previous year (UN WOMEN and UN DESA, 2022). Halfway through

None of the 18 indicators are met 

 **Only one is close to target, in 2022, at global level**

the 2030 Agenda, the latest evidence reveals that the world is not on track to achieve SDG 5 by 2030. At the global level, none of the 18 indicators of SDG 5 are met or almost met and only one is close to target. (UN WOMEN and UN DESA, forthcoming).

With a comprehensive gender-focused investment strategy, over 100 million women and girls could be lifted out of extreme poverty



Targeting financing across the SDGs with a gender focus, including for social protection and decent jobs, is crucial to get the world back on track. UN Women et al. (2020) estimates that over 100 million women and girls could be lifted out of poverty if governments were to employ a comprehensive strategy aimed at improving access to education and family planning, fair and equal wages, and expanding social transfers. Moreover, the analysis presented in the SDG Pulse In Focus shows a synergistic relationship between government spending on key sectors

such as agriculture, transportation, energy and housing to accelerate progress towards gender equality.

According to this study, equal representation of women and men in parliaments and local governments and in unpaid domestic and care work would be attainable by 2034 for 50 per cent of the developing economies included in this study and, with a few exceptions for the 39 developed economies, with the right spending and policy mix. In agriculture, for example, support for women’s access to and control over resources can boost progress on SDG 2 to eradicate hunger in addition to SDG 5 on gender equality. Similarly, public transportation and housing are essential for improving lives and the wellbeing of those left furthest behind, especially the estimated 560 million women and girls living in slum settings around the world (UN Women and UN-Habitat, 2020).

Efforts to develop sustainable agriculture and clean energy technologies⁷, including modern cooking stoves, can reduce women’s unpaid domestic work burden (Anenberg et al., 2013). Among developed economies, the model points to many different ways to optimize government spending to boost progress towards target 5.4 on the value of unpaid work and target 4.2 on pre-primary education, including the synergies of spending on housing and health.⁸ Spending on social protection, including maternity benefits, parental leave and childcare subsidies are key drivers of accelerated progress on target 5.5 to ensure women’s full and effective participation and equal opportunities in political, economic and public life among developed economies in the sample.⁹ Interestingly, the synergistic relationship of spending on agriculture and housing appeared more effective to advance female political empowerment in developing economies.¹⁰



In 2021, only one in every four countries tracked resource flows in support of gender equality

While having a gender lens in designing stimulus packages is important, so is a commitment to stable and consistent spending on gender equality over time. More efforts are needed to track resource flows in support of gender equality and women’s empowerment in countries. In 2021, only one in every four countries had such monitoring in place. However, translating resource flows into systems change is crucial for sustainable outcomes (Chakraborty, 2016). These findings reaffirm the importance of developing gender-sensitive tools to support decision-makers in

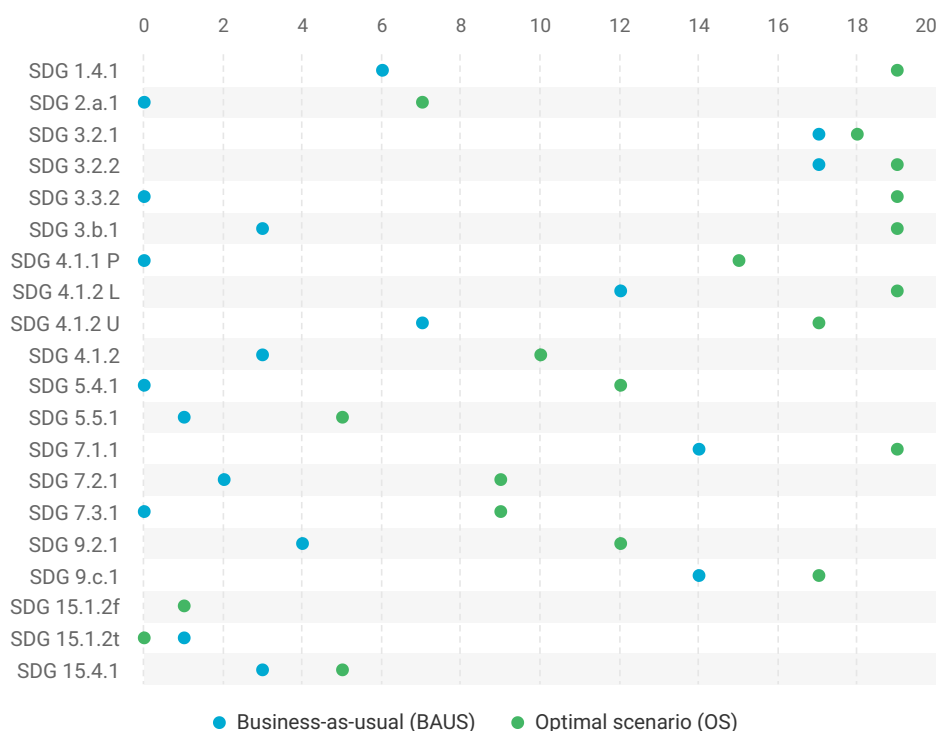
identifying priorities for accelerated and inclusive progress towards the 2030 Agenda.

Optimizing spending - more with less and sooner?

The above cost estimates are based on an analysis of two scenarios for spending on SDGs. Business-as-usual, BAUS, assumes that the current spending trajectory continues. We arrive at the costs of achieving the targets without any reorientation. This means the costs may be high, and fewer goals are achieved with the same cost. In the optimal scenario, OS, we consider the best practice identified by the SFM. This methodology is useful in analysing producer performance and investigating its determinants (e.g., Kumbhakar and Lovell, 2000), and can provide useful insights on best practices to increase efficiency and achieve SDGs with less costs. It helps to determine optimal growth rates for sectoral spending. The cost estimates discussed above in this chapter are based on the OS scenario.

With a strategic reallocation of sectoral spending, more countries can achieve SDGs sooner with less costs. Figure 2 shows the number of countries achieving the selected SDG indicators by 2030, and how their number increases from the BAUS to the OS. Certain SDG indicators are likelier to be achieved than others, namely those located on the right of the figure. For example, 17 of the 21 developing economies analysed are likely to achieve the targets for under-five and neo-natal mortality rates (SDG indicators 3.2.1 and 3.2.2) in the BAUS option, and up to two countries more in the OS scenario. Universal access to basic services (1.4.1) is challenging as only six countries will achieve it by 2030 unless OS solutions are found which would enable 19 countries to reach the target. Strategic allocation of investment is particularly important for achieving universal vaccination coverage (3.b.1), higher education completion rates (4.1.2), and to reach higher manufacturing value added (9.2.1) and renewable energy share (7.2.1.), as well as universal access to electricity (7.1.1). Here the difference of BAUS and systematic OS strategies that consider synergies are the largest.

 **Figure 2. With optimal investment more countries will achieve SDGs by 2030**



Source: UNCTAD calculations based on United Nations (2023f).

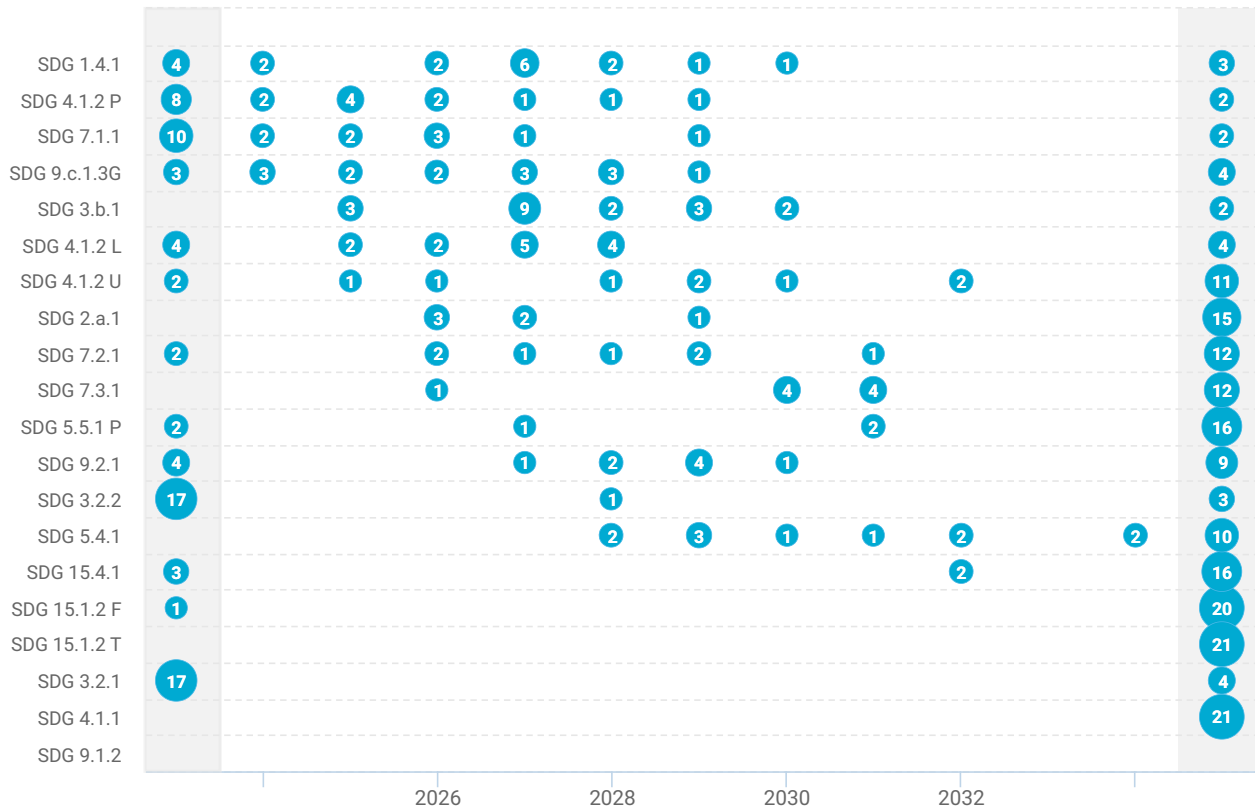
Note: None of the countries included in this study are projected to achieve the SDG 15.1.2 T indicator within the specified study period for both BAUS and OS.

Deep cultural transformation to boost SDG achievement

Effective investment combinations can drive the achievement of some SDG indicators very close. In 2024, Egypt and El Salvador are on the brink of achieving universal access to basic services (SDG indicator 1.4.1), with over 80 per cent already achieved in 2021. Azerbaijan and Thailand show promise in excelling at education completion (4.1.2). Kyrgyzstan and Uzbekistan have made significant strides in ensuring universal access to electricity (7.1.1). China, Egypt, and South Africa have demonstrated progress in mobile network coverage (9.c.1). Challenges remain for universal coverage of populations with vaccinations planned in the national programme (SDG indicator 3.b.1). (Figure 3)



Figure 3. SDGs expected to be achieved with optimal scenario, by indicator, country and year, developing economies



Source: UNCTAD calculation.

Note: In this figure, each bubble represents multiple countries, enabling the representation of large number of countries within a single bubble. The figure also show the number of economies already achieving the indicator (left) and economies not expected to achieve the goal in the time period (right).

Even if not immediate, several SDG indicators are on track for achievement before 2030 assuming efficient allocation of spending. This could happen for Egypt, Thailand, and China with universal access to vaccines (SDG indicator 3.b.1), Bolivia, Maldives, and Myanmar in education completion (4.1.2), and Guatemala, Indonesia, and Uzbekistan in access to electricity (7.1.1). El Salvador, Indonesia, and Kazakhstan have the potential to achieve broad mobile network coverage (9.c.1). However, challenges lie ahead for other developing economies in achieving targets measured by these indicators.¹¹ Regardless of optimal spending scenarios, some indicators on the far right and out of sight remain challenging to reach. Optimal scenarios need to be supported with other policy measures to address many cultural and other barriers to progress.

High public spending helps but is no guarantee

Higher government spending is generally associated with better outcomes in achieving SDGs. To assess this, we compared government spending with the SDG Index (2023) scores (Figure 4). However, this relationship is not consistent across all countries, as highlighted by Afghanistan's high government spending (48 per cent relative to GDP) but low SDGs Index score (49). Finland, with high government spending, equalling 56 per cent of GDP, emerges as the top performer also in terms of the SDG Index score of 88. Notably, Ireland stands out as interesting case, where government spending is relatively modest (25 per cent) compared to GDP, but the country achieves a comparatively high SDGs Index score (80). This highlights the importance to consider factors beyond spending, such as governance and policy implementation. Adequate funding combined with strategic planning and stakeholder collaboration are necessary for achieving the SDGs.



Figure 4. Current government spending is not always indicative of support to achieving the SDGs

(Percentage of GDP, SDGs Index score)



Source: UNCTADstat Data Centre (UNCTAD, 2023b) and SDG Index (2023).

Understanding synergies is key to SDG achievement

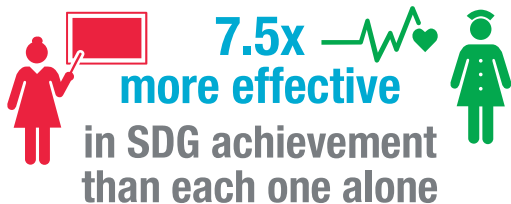
The analysis shows strong interconnections between government spending across sectors and SDGs. This underscores the critical need for an integrated, holistic approach to financing the SDGs. Spending on education is particularly effective in fostering achievement of outcomes across all SDGs. Similarly, spending on 'information and telecommunications' and 'health' can substantially enhance 'education' outcomes, creating mutual benefits.



The highest synergy coefficient of 7.5 is found for 'health' and 'education' spending. A synergy coefficient of 7.5 implies that a unit increase in combined spending on 'health' and 'education' is associated with a 7.5-fold improvement in achieving the SDGs. This suggests that the combined output of the education and health sectors has a significantly stronger impact on the

SDGs compared to the sum of their individual outputs. Working on these two sectors together can lead to enhanced performance in achieving the SDGs, surpassing what could be achieved by focusing on them independently. Similarly, combined spending on 'agriculture' and 'education', or on 'housing' and 'education' yield notable synergy coefficients of 6.8 and 6.0, respectively. Synergies are also found in combined spending on 'health' and 'social' sectors, and on 'transport' and 'social' sectors, with coefficients of 2.5 and 1.7, respectively.

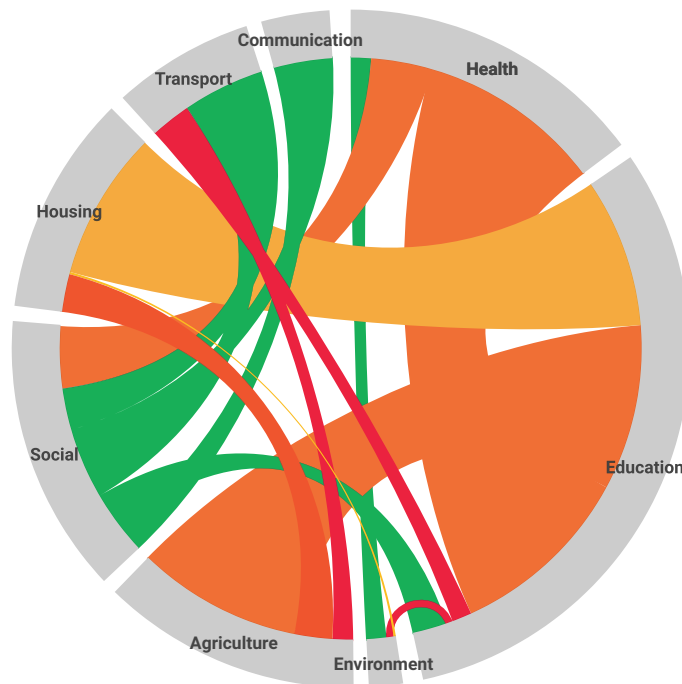
Combined spending on health and education



Systematic strategies that consider spillover effects and trade-offs can multiply effectiveness. The following figure illustrates the synergies of sectoral spending.



Figure 5. Impact of synergistic spendings on the SDGs



Source: UNCTAD based on the provisional results discussed in this study.

Note: This diagram illustrates the synergies between different sectors of government spending as classified by COFOG, and their positive impacts on achieving the SDGs. Each node represents a sector. The chords indicate the synergistic impacts between sectors, showing how their combined efforts contribute to SDG indicators. It is worth noting that achieving a specific SDG goal can also have a reciprocal impact on the sectors involved. For instance, accomplishing a particular goal may have a positive influence on sectors such as Education or Health. The model employed takes into account these interdependencies and provides valuable insights into the relationships between sectors and the achievement of SDGs. Understanding and leveraging these synergies are crucial for effective resource allocation and the implementation of integrated approaches to drive sustainable development. For negative synergies, please refer to the accompanying text as they are not explicitly shown in this diagram.

The analysis finds positive synergies between spending on ‘environment’ with that on ‘agriculture’, ‘housing’ and ‘transportation’, illustrating the cross-cutting synergies of an environmental focus for the achievement of many SDGs. Yet, a trade-off is observed for spending on ‘fuels and mining’ and ‘environment’, primarily due to the environmental degradation caused by fossil fuels.

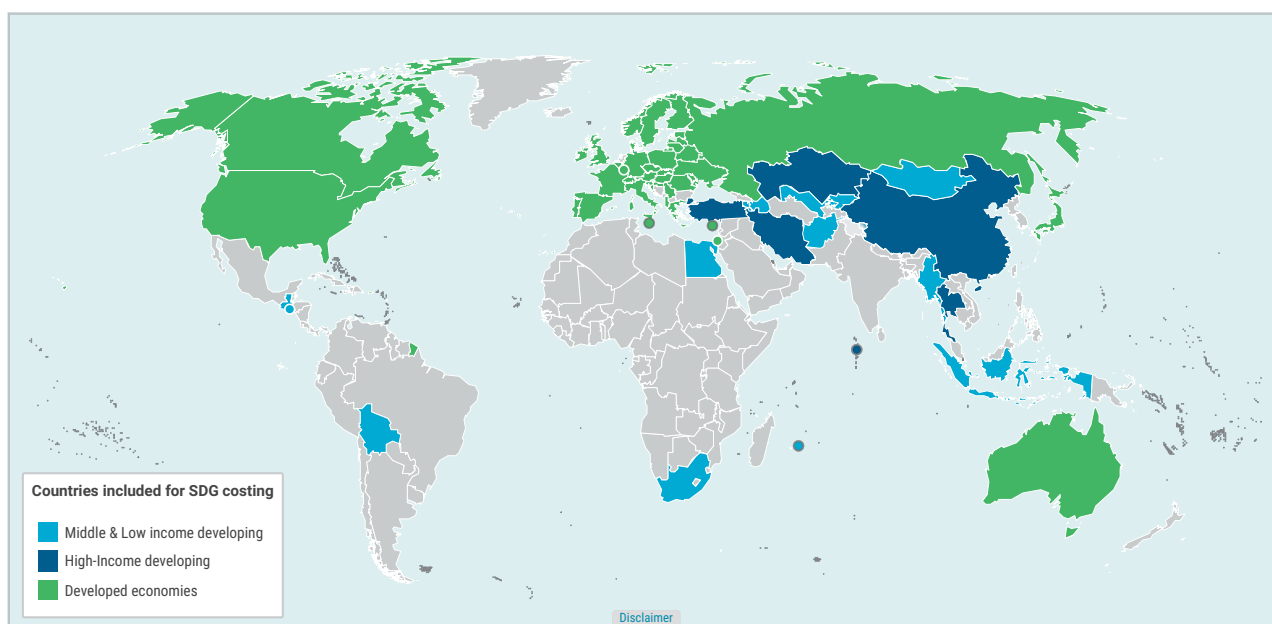
Understanding these synergies is essential for strategic public spending decisions, to optimize positive impacts and minimize trade-offs.

Investing in data can help target scarce resources

Halfway through the 2030 Agenda, many data gaps, specifically in developing economies hamper the analysis. This study is thus limited to 60 countries, 21 of which developing, where data for selected SDG indicators are available (Map 1). Albeit providing for 45 per cent of world population and accounting for 80 per cent of world GDP in 2021, when developing economies are considered, these values drop to 35 and 58 per cent, respectively. Currently, the coverage of countries in Africa and Latin America is critically low and remains to be extended where complementary national data sources can be found.



Map 1. 60 countries included for SDG costing, including 21 developing economies



Source: UNCTAD.

Costing the key targets of the SDGs is even more urgent in the present context, as multiple policy priorities, be they short, medium- or long-term priorities, imply greater trade-offs in the allocation of scarce resources. The forecast of financial costs for time-bound and target-based development goals is at the core of the methodology underpinning the SDGs.

Figure 6 shows that data for 28 SDG indicators had to be dropped because they did not have the required time series from 2005 to 2021 and covered less than half of the countries. This was 34 per cent of the 91 SDG indicators that otherwise were included within the pathways and could be costed at the country level. In total, 45 unique SDG indicators (yellow in Figure 4), or nearly 50 per cent, were dropped since for countries where these indicators were available, other input data, like government expenditure statistics were not available, and country coverage dropped too low for the inclusion of the SDG indicator. To date, it was only possible to estimate costs for the achievement of 26 per cent of SDG indicators.

This preliminary work is being extended by trying to find complementary national sources especially for government expenditure statistics. The findings also point to the critical need to invest in data and statistics to fill gaps and produce more comprehensive analysis of SDG financing needs.

**Lack of data limits
country coverage
and the
scope of analysis
to 26%
of SDG indicators**



Figure 6. Data availability is poor for some SDG indicators and the lack of government expenditure statistics limits analysis further



Source: UNCTAD calculations based on UNCTADStat Data Center (2023b), United Nations (2023e) and IMF (2023a).

Note: * Refers to a tier II indicator provided directly by the UN Women and included specifically to provide gender perspective in the analysis. SDG 15.1.2 is presented with its breakdowns for 15.1.2 F measuring freshwater biodiversity and 15.1.2 T for terrestrial biodiversity (United Nations, 2023e).

* Some indicators are listed under more than one transitional pathway

Further work to inform efforts to accelerate progress towards the 2030 Agenda

The findings of this study provide early insights into pursuing more systematic and planned financing for sustainable development and gives indications of the financing needs for the countries and the SDG transition pathways for SDG indicators covered in this study. While the full analysis of the costs by SDG and optimal spending allocations are still pending, this study serves as a foundation for further research and extension. The complex nature of the work, involving numerous countries and indicators, necessitates more time for a comprehensive assessment of costs and synergies.

Credible cost estimates can only be compiled with methodologies that rely on reliable data and statistics. This bottom-up estimation starting at country levels and based on analysis of progress using SDG indicators and official statistics on government

expenditure by sector enables a detailed analysis of financing needs by SDGs and their indicators or by pathway. The results are far from comprehensive due to the lack of statistics on government spending and owing to the remaining gaps in SDG indicator reporting. Further efforts to examine complementary national data sources will be taken. However, eventually the robustness and comprehensiveness of cost estimates depends on countries' capacity to compile these key statistics.

This study serves as a starting point by providing the first experimental cost estimates covering selected SDG indicators across the SDG transition pathways. This analysis can be further refined and extended in a UN-wide collaboration and jointly with partner organizations. This could mean extension of country or SDG indicator coverage where data can be identified, focused regional or thematic analysis by different UN entities and others, and a more detailed analysis of gender equality considerations in financing SDGs.

To further improve the methodology, it would be beneficial to explore methodological refinements that incorporate determinants of efficiency related to tax revenue, FDI, debts, and ODA. By examining these factors, this costing exercise can gain a better understanding of their impact on SDG financing and identify opportunities to optimize resource allocation and improve efficiency in achieving the goals. For future analysis, it would be useful to select the most relevant SDG indicators for each SDG transition pathways thus avoiding overlap across pathways as far as possible.

This study informs the formulation of financing strategies by highlighting the importance of joining forces, finding synergies, and fostering collaboration among stakeholders. It emphasizes the need for policymakers to try to understand how different sectors and targets interact with each other. Attempts to identify areas for spill over effects and avoid trade-offs will pay off by accelerating progress towards the SDGs.

Such strategies will consider the central role of education as a trigger for progress, factor in the synergies across health, environment, and other sectors, avoid trade-offs that hamper progress in environmental sustainability and pursue the multiple benefits of gender considerations to accelerate progress by involving everyone.

Annex I. SDG costing methodology

Methodology description

The methodology of this report, based on the conclusions of Schmidt-Traub (2015), emphasizes the importance of harnessing synergies within and across sectors to reduce overall financing needs and maximize the impact of spending. These sectors are interconnected through a dynamic system of feedback loops, leading to jointly significant effects on key indicators. For example, spending on transportation can enhance the effectiveness of education spending, while improved education outcomes can reinforce the impacts of the health sector and enhance livelihoods.

In the context of assessing the achievement of SDGs by countries, this study adopts a standardized frontier technology that is applicable to all countries. It employs the same specification function to transform the sectoral government spending of each country into the attainment of specific SDG indicators. The relationship between inputs and outputs in the SFM is captured through a translog cost function.

To quantify the costs required to achieve the targets of the 2030 Agenda, this study adopts a cross-sectoral approach. This approach allows for the inclusion of multiple fiscal indicators, such as sector-specific expenditures as a percentage of GDP, and it considers the interaction terms between these indicators.

This approach offers several advantages. Firstly, it mitigates the issue of overestimated costs that arise from neglecting policy synergies, ensuring a more accurate estimation of the actual costs involved. Additionally, it addresses the limitations of underestimating costs by accounting for nonlinear relationships, particularly the diminishing marginal returns.

To capture these cross-sectional synergies and nonlinear relationships between multiple policy inputs and outcomes of various SDGs, the model employs a joint production estimation. This allows for a comprehensive assessment of the interdependencies and interactions among different policies and SDG targets.

In line with the work of UNICEF (2019), the cost requirements for achieving SDGs are estimated by using a stochastic frontier model based on a translog production function specification taking the following form:

$$\ln Y_{jt} = \beta_0 + \sum_{i=1}^{11} \beta_i \ln X_{ijt} + \sum_{i \leq j} \beta_{ik} \ln X_{ijt} \ln X_{kjt} + \sum \beta_{zj} \ln Z_{jt} + v_{jt} - u_{jt}$$

where:

$\ln Y_{jt}$ = Selected SDG targets for country j (in log form) – for example, Primary Net Enrolment Rates

$\ln X_{ijt}$ = Spending per GDP on sector i for country j (in log form)

$\ln Z_{jt}$ = control variable of country j (in log form)

u_{jt} = random errors, it assumed to be independently and identically distributed, $u_i \sim N(0, \sigma_u^2)$

v_{jt} = inefficiency term, it assumed to be positively defined with an asymmetric distribution independent of those of the u_i

The β_i ($i=1, \dots, 11$) are the coefficients which illustrate the estimated elasticity of a key indicator with respect to its own-sector spending. These coefficients capture the direct effect of an increase in per GDP sectoral expenditure on the return of a key indicator.

Furthermore, the translog models include quadratic terms for each sector, represented by β_{kk} with $i=k$. These terms are included to reflect the fact that increased cost in the same sector often results in diminishing marginal returns.

The last set of coefficients β_{ik} with $i < k$, represent the synergy effects of spending in multiple sectors simultaneously, meaning the extent to which one sector's spending impacts the effectiveness of another sector's spending.

In order to evaluate whether a cross-sectoral impact is significant, F-test for an incremental contribution is applied.

Calculating business as usual and optimal spending scenarios

Beyond the complicated mathematical theoretical foundations of transcendental logarithmic models, the econometric translog models of panel data of BAUS study the asymptotic properties of a vector of significant parameters based on the underlying stochastic representation of growth of each individual. In this same space, the evolution of each SDG is studied as an endogenous variable explained by the forecast of several exogenous macroeconomic variables. So, we deduct the corresponding costs.

For the OS models which focus more on the properties of the best practices using the statistical convergence of stochastic frontiers of each country class (developed and developing). In general, econometricians choose an optimal scenario by penalizing the quality of adjustment of a model by its complexity, ex-post, during the validation or choice phase. This can sometimes result in actions that reduce the efficiency of the system being measured. Whereas in this study, the optimal scenarios are based on the objective function of a country which is considered as best practice. Then the idea is to take optimal combination of scores of an individual reference in space of expenditures as a measure reference for each country.

This approach consists of:

1. Running the Model: The Translog model specification is run under panel data, considering the efficiency term as an error term along with the random term. This allows establishing a frontier and identify the best practice. The results of this model reveal the key determinants of sectoral spending, including direct impacts of sectors, squared terms, and sector interactions - Since the model is non-linear, it provides valuable insights into the relationships between variables.
2. Forecasting the Indicator: To forecast the indicator using the retained model, the input variables need to be incorporated in the model, specifically sectoral spending. There are two alternative approaches:
 1. Assumption 1 (BAUS): In this approach, we assume that sectoral spending (the selected sectors determined by the model) will continue to grow at the same pace. This forecast data is used to calculate the indicator over time and identify the total spending required to achieve the SDG target.
 2. Assumption 2 (OS): In this approach, we consider the best practice identified by the model, using the SFM method. We use the growth rate of spending in this country to forecast the selected sectoral spending and, consequently, the indicator's evolution. This allows calculating the necessary resources needed to achieve the target.

Data sources

The dependent variables, as in the key indicators, were obtained from various databases, including the Global SDG Database (United Nations, 2023f), UNESCO database (2023), World Bank Open Data (2023a) and the WEO database (IMF, 2023b). On the other hand, the main inputs data, government spending by COFOG classification used in the SFM model were collected by UNCTAD based on data sourced from the International Financial Statistics (IMF, 2023a) and from other international and national sources. Other inputs data, namely, government effectiveness, political stability and absence of violence and terrorism and FDI (net inflows) which were used as variables of control are sourced from and World Bank Governance Indicators (2023b) and UNCTADstat Data Centre (UNCTAD, 2023b) respectively.

Estimating the precise requirement for achieving the SDGs is a challenging endeavour. Consequently, both recurrent and capital expenditures have been considered in the costing analysis. The analysis incorporates fiscal inputs in the form of government

expenditures as a percentage of GDP across various service categories. The selection of these categories was based on data availability and the statistical significance of the connections between fiscal inputs and different policy measures. The inputs encompass a wide range of sectors, including agriculture; fishing, forestry and hunting; fuel and energy; mining, manufacturing and construction; transport; communication; environment protection; housing and community amenities; health; education; social protection; and other sectors. These have been identified using the COFOG.

Annex II. SDGs costing studies



Table 2. SDGs costing studies

	UNCTAD SDG Pulse 2023	UNCTAD (2021b)	SDSN (2019)	Bookings (Kharas and McArthur, 2019)	ODI (Manuel et al., 2018)	IMF (Gaspar et al., 2019)
Methodology	<ul style="list-style-type: none"> • Cross-sectorial approach based on a stochastic frontier model using translog function 	<ul style="list-style-type: none"> • Forecasting based on elasticities • Backcasting for social and environmental areas 	<ul style="list-style-type: none"> • Backcasting** 	<ul style="list-style-type: none"> • Backcasting** 	<ul style="list-style-type: none"> • Backcasting** • Focus on ending extreme poverty 	<ul style="list-style-type: none"> • Input-Outcome Approach
Sectors	The six transition pathways: <ul style="list-style-type: none"> • Climate change, biodiversity loss and pollution • Energy access and affordability • Food systems • Transformed education systems • Social protection and decent job • Digital transformation 	<ul style="list-style-type: none"> • Manufacture • Poverty • health • Education • Social protection • Biodiversity 	<ul style="list-style-type: none"> • Health • Education • Infrastructure • Biodiversity • Agriculture • Social protection • Justice • Humanitarian • Data 	<ul style="list-style-type: none"> • Conservation • Agriculture • Justice • Education • Infrastructure • Health • Social Spending 	<ul style="list-style-type: none"> • Education • Health • Nutrition • Social protection transfers 	<ul style="list-style-type: none"> • Health • Education • Power • Roads • Water and sanitation
Coverage	60 countries. Developing countries (21 countries) and developed countries (39 countries)	46 Least Developed Countries	• 59 low- and lower-middle-income countries	Estimate public spending for 190 countries, and minimum SDG public spending needs for 134 developing countries	140 countries, including 47 LDCs	155 countries. Focus on low-income developing countries (49 countries) and emerging market economies (72 countries)
Data	<ul style="list-style-type: none"> • Government spending by function (COFOG) • SDGs indicators • GDP, population • Control variables: government effectiveness, political stability and absence of violence/Terrorism, FDI (net inflows) 	<ul style="list-style-type: none"> • Elasticities estimated • Unit costs from the literature 	<ul style="list-style-type: none"> • Unit costs from the literature 	<ul style="list-style-type: none"> • Unit costs from the literature • Sector-specific public expenditures data 	<ul style="list-style-type: none"> • Unit costs calculated by ODI • Renueue capacity 	<ul style="list-style-type: none"> • SDG index • Inputs (e.g., number of health care workers) • Unit cost (e.g., health care workers wage) • Other factors (e.g., demographics, GDP)

	UNCTAD SDG Pulse 2023	UNCTAD (2021b)	SDSN (2019)	Bookings (Kharas and McArthur, 2019)	ODI (Manuel et al., 2018)	IMF (Gaspar et al., 2019)
Main results	<ul style="list-style-type: none"> Estimated per capita spending needs US\$1839 for included developing countries. 	<ul style="list-style-type: none"> Estimated per capita spending needs US\$1332 for LDCs. 	<ul style="list-style-type: none"> Estimated per capita spending needs US\$247 for low- and lower-middle-income countries. 	<ul style="list-style-type: none"> Estimated per capita spending needs US\$1842 for developing countries. 	<ul style="list-style-type: none"> Estimated per capita spending needs US\$368 for developing countries. 	<ul style="list-style-type: none"> Estimated per capita spending needs US\$336 for low-income developing countries and US\$409 for the emerging market countries.

Source: UNCTAD based on SDSN (2019), UNCTAD (2021b), McArthur and Kharas (2019) and IMF (2019)

Note: This list is not exhaustive and may be extended in further work. The studies listed provided valuable insights and inspiration in developing the SDG costing model, significantly contributing to shaping the approach and methodology.

** Backcasting refers to the process of estimating the financial resources required to achieve a specific goal or target in the future. It involves working backwards from the desired outcome and determining the costs associated with implementing the necessary interventions, programs, or policies to reach that outcome.

Notes

1. The developing economies covered are Afghanistan, Armenia, Azerbaijan, Bolivia, China, Egypt, El Salvador, Guatemala, Indonesia, Iran, Kazakhstan, Kyrgyzstan, Maldives, Mauritius, Mongolia, Myanmar, Somalia, South Africa, Thailand, Türkiye, and Uzbekistan.
2. Sectorial spending refers to the government expenditures classified according to the COFOG classification. For the purpose of this study, 11 sectors (or functions based on COFOG) have been defined as follows: Agriculture, forestry, fishing, and hunting; Fuel and energy; Mining, manufacturing, and construction; Transport; Communication; Environment protection; Housing and community amenities; Health; Education; Social protection; and Special others. These sectors (also referred to as functions) were selected to represent specific areas of government spending and to analyze their potential impacts on achieving the SDGs. It is important to note that the terms 'sector' and 'function' are used interchangeably in this study. The terms sector and pathway, as used in this study, should not be confused. The sectors represent the specific areas of government spending that were used as inputs in the model, while the transition pathways refer to the interconnected thematic pathways towards achieving the SDGs. The pathways provide a framework for understanding the holistic progress towards sustainable development, while the sectors highlight the specific components of government spending considered in the analysis.
3. The estimates derived in this study are based on selected countries' SDG indicators and official statistics on government expenditures, while the WIR figures are derived by SDG-sector from the most recent studies published by specialized agencies, institutions and research entities in their respective areas. This study focuses on selected 21 developing economies while WIR covers all developing economies. Furthermore, we quantify the overall financing requirement to achieve the SDGs, while WIR estimates the investment gap. i.e., the additional investment needed to achieve the SDGs. This study does not consider available financing.
4. The model endeavors to optimize the attainment of the goals by 2030; however, it recognizes that the desired optimization has not been fully achieved within the specified timeframe. Particularly regarding SDG indicators 5.5.1 and 5.4.1, it is anticipated that many countries will not reach these objectives before 2030, despite the allocated investments.
5. This study estimates the costs of achieving selected SDG indicators of the pathway, as listed in Table 1.
6. The ratio is derived by rescaling indicator SDG 5.4.1, proportion of time spent on unpaid domestic and care work by sex, for 2001-2021, to a female-to-male time use ratio, where the target is set at 1.03 for equal time use. Scores exceeding 1.03 refer to a higher female share of unpaid domestic and care work.
7. The synergy coefficient between agriculture and clean energy for developing economies is 0.013 and statistically significant at the 10 per cent level.
8. The synergy coefficient for developed economies is 4.4 for spending in education and is statistically significant at the 10 per cent level; the synergy coefficient for the combined spending in health and education is 1.7 and is statistically significant at the 5 per cent level.

9. The synergy coefficient for developed economies is 2.6 for spending on social protection and is statistically significant at the 10 per cent level.
10. The synergy coefficient for the combined spending on agriculture and housing is 1.5 and is statistically significant at the 10 per cent level.
11. This analysis reflects an optimal scenario based on efficient allocation of government spending, highlighting the positive outcomes of optimized spending. See note on BAUS and OS.

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