UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

UNCTAD

WORLD INVESTMENT REPORT 2023

INVESTING IN SUSTAINABLE ENERGY FOR ALL

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PREFACE

Access to energy is essential to every aspect of people's lives. But hundreds of millions of people live without electricity – and that number rose last year for the first time in decades. It is beyond time to democratize access to safe, reliable, affordable energy sources for all people, everywhere.

However, we are at least a decade late in our efforts to combat global warming. Investment in renewable energy in developing countries is therefore essential and often the most economical way to bridge the energy gap. But while the transition to renewable energy is a global priority, investments in energy infrastructure and efficiency still fall far short of what is needed.

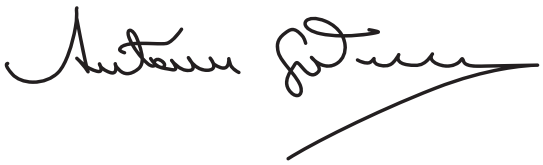
The *World Investment Report* therefore has an important role in the biggest battle of our lifetime: keeping temperature increases below the agreed limit of 1.5°C. By monitoring global, regional and national investment trends and developments, this report supports policymakers by showing where investment is on track, and where more is needed. The report's recommendations are an important guide to boosting climate finance and investment in developing countries – one of the most important factors in combating the climate crisis.

This year's edition highlights some areas of progress while identifying policy gaps and bottlenecks in cross-border investment flows. It shows that global flows of foreign direct investment fell by 12 per cent to $1.3 trillion in 2022. Vulnerable countries – those that are in greatest need of investment – were the most likely to be left behind.

Least developed countries rely on external sources for almost three quarters of their energy investment. But they may pay up to seven times more than developed countries to access international capital markets. This particularly impedes ramping up of investments in renewables.

I have therefore called for an Sustainable Development Goals stimulus, among other things, to increase long-term and affordable financing to developing countries to enable them to invest at scale in the transition to renewable energy and the Sustainable Development Goals. As part of that stimulus, multilateral development banks should transform their business models and their approach to risk-taking and better leverage their funds to attract greater volumes of private finance into developing countries. Public development banks should also help catalyse sustainable transformations by encouraging scalable private-public partnerships.

We cannot fulfil the world's energy needs and safeguard our planet and our future without massive private sector investment in renewables in developing countries. I commend this report and urge policymakers and those with decision-making power to implement its recommendations.



António Guterres
Secretary-General of the United Nations

FOREWORD

The prospects for international investment looked extremely gloomy last year, with a cascading crisis of health, climate change and economic shocks causing investor uncertainty around the world. Rising inflation, fears of a recession and turbulence in financial markets put many investment plans on hold at the beginning of the year. In the end, international investment flows did suffer, but proved more resilient than expected. While global FDI declined by 12 per cent last year to $1.3 trillion, the slowdown was limited, investment flows to developing countries increased marginally, and investors finished the year announcing new projects in both industry and infrastructure.

Business as usual, however, is still bad news. The major disparities in global investment patterns remained. The growth of investment in developing countries is concentrated in a small number of large emerging economies. Foreign direct investment flows to many smaller developing countries are stagnant, while flows to the least developed countries fell by 16 per cent from an already low base. Similarly, at the sectoral level, strong growth in some sectors – such as semiconductors in response to chip shortages – is accompanied by weak performance in other industries that are important for the build-up of productive capacity in developing countries. And while some SDG-investment sectors – notably renewable energy – attract significant international investment, others – such as water and sanitation, agrifood systems or health and education – do less well. FDI activity in agrifood systems, so important for future food security, is lower today than in 2015 when the SDGs were adopted.

A key concern last year was that rising prices of energy and a push in many countries for greater energy security would reverse the trend away from investment in fossil fuels and towards renewable energy. This has, so far, not happened to the extent feared. Investment numbers and values in extractive industries remained stable in 2022, and the number of new renewable energy projects reached a record high.

International investment in renewable energy has tripled since 2015. But, as this report shows, much more is needed. The growth of cross-border investment in the sector has been strongest in the economies that are least dependent on it. In developing regions, it has barely outpaced overall FDI and GDP growth. There are more than 30 developing countries that have not registered a single international investment in utility-sized renewable energy generation since the adoption of the Paris Agreement. Furthermore, while investor interest in renewables is strong, other types of investment needed for the energy transition receive much less attention. Investment needs in power grids, storage, and energy efficiency vastly exceed requirements in renewable energy generation.

In developing countries, and especially the least developed countries, the energy transition is one of many competing policy priorities. As demonstrated by the targets in the nationally determined contributions (NDCs) of most developing countries, ambitions are high. But so are the investment needs associated with the targets and the structural barriers to attracting that investment, covered in this report. To name just a few: The cost of capital for investors is a major disincentive, which calls for more international de-risking support at the country level. The capacity to translate NDC targets into energy transition investment plans and bankable projects is often low, which calls for technical assistance and support in project preparation. And international investment agreements can act as a barrier to climate policy action, which calls for reform to make treaties more conducive to promoting and facilitating investment in the energy sector.

The scale of the challenge is enormous, and so is the range of actions needed to boost investment in sustainable energy in developing countries. The growth of green finance in global capital markets, with sustainable bonds growing fivefold in five years, shows that the appetite among private investors to fund climate change mitigation is there. The task is now to channel those funds to where they are most needed to support the transition and to provide affordable access to electricity for all. This report points the way.

The recommendations of this report will be the subject of discussions at UNCTAD's World Investment Forum in October this year in Abu Dhabi. Taking place ahead of COP28, in the same location, the WIF2023 offers a platform for policymakers at the highest levels, and for the broadest possible constituency of investment-for-development stakeholders, to translate them into concrete action.

Armed with the data and insights this report offers, it is imperative that stakeholders approach investment with a strategic mindset. The complexities and disparities highlighted demand astute decision-making, as the road ahead is fraught with challenges. Together we must navigate this landscape with resolve and intelligence, shaping a more sustainable and equitable world for generations to come.

Rebeca Grynspan
Secretary-General of UNCTAD

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EXPLANATORY NOTES

The terms country and economy as used in this report also refer, as appropriate, to territories or areas. In addition, the designations of country groups are intended solely for statistical or analytical convenience and do not necessarily express a judgment about the stage of development reached by a particular country or area in the development process. The major country groupings used in this report follow the classification of the United Nations Statistical Office:

- Developed economies: the member countries of the OECD (other than Chile, Colombia, Costa Rica, Mexico and Türkiye), European Union member countries that are not OECD members (Bulgaria, Croatia, Cyprus, Malta and Romania) plus Albania, Andorra, Belarus, Bermuda, Bosnia and Herzegovina, Liechtenstein, Monaco, Montenegro, North Macedonia, the Republic of Moldova, the Russian Federation, San Marino, Serbia and Ukraine, plus the territories of Faroe Islands, Gibraltar, Greenland, Guernsey and Jersey.
- Developing economies: in general, all economies not specified above. For statistical purposes, the data for China do not include those for Hong Kong Special Administrative Region (Hong Kong SAR), Macao Special Administrative Region (Macao SAR) or Taiwan Province of China.

Throughout the report, data on investment trends and policies refer only to the Netherlands; information for Aruba and Curaçao is reported separately.

Methodological details on FDI and MNE statistics can be found on the report website (https://unctad.org/topic/investment/world-investment-report).

The following symbols have been used in the tables:

- Two dots (..) indicate that data are not available or are not separately reported. Rows in tables have been omitted in those cases where no data are available for any of the elements in the row.
- A dash (–) indicates that the item is equal to zero or its value is negligible.
- A blank in a table indicates that the item is not applicable, unless otherwise indicated.
- A slash (/) between dates representing years, e.g., 2020/21, indicates a financial year.
- Use of a dash (–) between dates representing years, e.g., 2020–2021, signifies the full period involved, including the beginning and end years.
- Reference to “dollars” ($) means United States dollars, unless otherwise indicated.

Annual rates of growth or change, unless otherwise stated, refer to annual compound rates.

Details and percentages in tables do not necessarily add to totals because of rounding.

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ABBREVIATIONS

AfCFTA	African Continental Free Trade Area
ASEAN	Association of Southeast Asian Nations
BIT	bilateral investment treaty
BRI	Belt and Road Initiative
CCM	compliance carbon market
CDP	Carbon Disclosure Project
COP	Conference of the Parties
COVID-19	coronavirus disease (of 2019)
CSR	corporate social responsibility
CSRD	Corporate Sustainability Reporting Directive
ECT	Energy Charter Treaty
EIA	economic impact assessment
ESG	environmental, social and governance
ESRS	European Sustainability Reporting Standards
ETS	Emission Trading System
FDI	foreign direct investment
FET	fair and equitable treatment
FIT	feed-in tariff
FTA	free trade agreement
GDP	gross domestic product
GRI	Global Reporting Initiative
GSFO	Global Sustainable Finance Observatory
GVC	global value chain
GW	gigawatt
GWh	gigawatt-hour
ICT	information and communication technology
ICSID	International Centre for Settlement of Investment Disputes
IEA	International Energy Agency
IFC	International Finance Corporation
IFI	international financial institution
IFRS	International Financial Reporting Standards
IIA	international investment agreement
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
IPA	investment promotion agency
IPCC	Intergovernmental Panel on Climate Change
IPFSD	Investment Policy Framework for Sustainable Development
IRENA	International Renewable Energy Agency
IsDB	Islamic Development Bank
ISDS	investor–State dispute settlement
ISSB	International Sustainability Standards Board
LCOE	levelized cost of electricity
LDC	least developed country
LLDC	landlocked developing country
M&A	merger and acquisition
MDB	multilateral development bank
MERCOSUR	Common Market of the South
MNE	multinational enterprise
MW	megawatt
MWh	megawatt-hour
NAFTA	North American Free Trade Agreement
NDC	nationally determined contribution
OECD	Organisation for Economic Co-operation and Development
PPF	public pension fund
PPP	public-private partnership
PRI	Principles for Responsible Investment
R&D	research and development
SASB	Sustainability Accounting Standards Board
SEZ	special economic zone
SFDR	Sustainable Finance Disclosure Regulation
SIDS	small island developing States
SMEs	small and medium-sized enterprises
SSE	Sustainable Stock Exchanges
SWF	sovereign wealth fund
TCFD	Task Force on Climate-Related Financial Disclosures
tCO_2e	tons of carbon dioxide equivalent
TIP	treaty with investment provision
TNI	Transnationality Index
TRIPS	Trade-Related Aspects of Intellectual Property Rights (Agreement)
UNCITRAL	United Nations Commission on International Trade Law
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VCM	voluntary carbon market
WASH	water, sanitation and hygiene
WFE	World Federation of Exchanges
WIR	World Investment Report
WTO	World Trade Organization

KEY MESSAGES

GLOBAL FDI RETREATS, BUT NEW PROJECT ANNOUNCEMENTS SHOW BRIGHT SPOTS

Global foreign direct investment (FDI) declined by 12 per cent in 2022, to $1.3 trillion. The decline was mainly a result of lower volumes of financial flows and transactions in developed countries. Real investment trends were more positive, with growth in new investment project announcements in most regions and sectors. FDI in developing countries increased marginally, although growth was concentrated in a few large emerging economies. Inflows in many smaller developing countries were stagnant, and FDI to the least developed countries (LDCs) declined.

Industry trends showed increasing project numbers in infrastructure and industries that face supply chain restructuring pressures, including the electronics, automotive and machinery industries. Three of the five largest investment projects were announced in semiconductors, in response to global chip shortages. Investment in digital economy sectors slowed after the boom in 2020 and 2021.

Investment project numbers in energy remained stable, allaying, for now, fears of a reversal of the downward trend in fossil fuel investment due to the energy crisis. Oil majors are gradually selling fossil fuel assets to private equity firms and smaller operators with lower disclosure requirements, which calls for new dealmaking models to ensure responsible asset management.

THE SDG INVESTMENT GAP WIDENS DESPITE THE GROWTH OF SUSTAINABLE FINANCE

International investment in sectors relevant for the Sustainable Development Goals (SDGs) in developing countries increased in 2022. Infrastructure, energy, water and sanitation, agrifood systems, health and education all saw increased project numbers. However, compared to 2015 when the SDGs were adopted, progress is modest.

A review of investment needs at the midpoint of the 2030 Agenda for Sustainable Development shows that the investment gap across all SDG sectors has increased from $2.5 trillion in 2015 to more than $4 trillion per year today. The largest gaps are in energy, water and transport infrastructure. The increase is the result of both underinvestment and additional needs.

The growing SDG investment gap in developing countries contrasts with positive sustainability trends in global capital markets. The value of the sustainable finance market reached $5.8 trillion in 2022. Sustainable funds had positive net inflows while traditional funds experienced net outflows. Sustainable bond issuance also continues; it has grown five-fold over the past five years. Key priorities for the market are increasing exposure to developing countries and addressing greenwashing concerns.

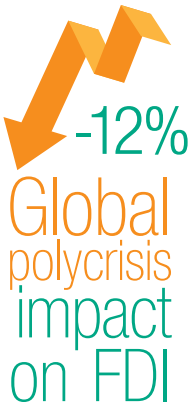
DEVELOPING COUNTRIES NEED VASTLY MORE SUPPORT TO ATTRACT ENERGY INVESTMENT

International investment in renewable energy has nearly tripled since the adoption of the Paris Agreement in 2015. However, much of this growth has been concentrated in developed countries. More than 30 developing countries have not yet registered a single utility-sized international investment project in renewables. The cost of capital is a key barrier for energy investment in developing countries. Bringing in international investors in partnership with the public sector and multilateral financial institutions significantly reduces the cost of capital.

Most developing countries have set targets for the energy transition in nationally determined contributions. Only about one third of them have translated those targets into investment requirements, and few have developed the asset specifications that are needed to design targeted promotion mechanisms and to market bankable projects. As a result, many developing countries use generic fiscal and financial incentive mechanisms that are less effective for the promotion of energy transition investment.

De-risking support to lower the cost of capital for energy transition investment in developing countries must be vastly expanded. More technical assistance should be available for investment planning and project preparation. International investment agreements need accelerated reform to expand policy space for climate action and to strengthen investment promotion and facilitation provisions. In this report, UNCTAD puts forward a Global Action Compac for Investment in Sustainable Energy for All with recommendations for national and international investment policies, global and regional partnerships, financing mechanisms and capital market involvement.

EXECUTIVE SUMMARY



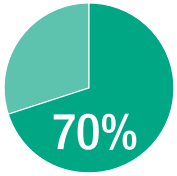
INTERNATIONAL INVESTMENT TRENDS

After a steep drop in 2020 and a strong rebound in 2021, global foreign direct investment (FDI) declined by 12 per cent in 2022, to $1.3 trillion. The slowdown was driven by the global polycrisis: the war in Ukraine, high food and energy prices, and debt pressures. International project finance and cross-border mergers and acquisitions (M&As) were especially affected by tighter financing conditions, rising interest rates and uncertainty in capital markets.

The global environment for international business and cross-border investment remains challenging in 2023. Although the economic headwinds shaping investment trends in 2022 have somewhat subsided, they have not disappeared. Geopolitical tensions are still high. Recent financial sector turmoil has added to investor uncertainty. UNCTAD expects downward pressure on global FDI to continue in 2023. Early indicators for Q1 2023 show weak trends in international project finance and M&As.

Greenfield investment trends provide a positive counterweight. The number of project announcements was up 15 per cent in 2022, and Q1 2023 data also show resilience. Trends in international investment in real productive assets are therefore more positive than the headline FDI data suggest.

The 2022 decline in FDI flows was driven mostly by financial transactions of multinational enterprises (MNEs) in developed economies, where FDI fell by 37 per cent to $378 billion. The number of actual greenfield and project finance announcements increased by 5 per cent.



In developing countries, FDI increased by 4 per cent to $916 billion, or more than 70 per cent of global flows, a record share. The number of greenfield investment projects announced in developing countries increased by 37 per cent, and international project finance deals by 5 per cent. This is a positive sign for investment prospects in industry and in infrastructure.

The FDI increase in developing countries was unevenly shared. Much of the growth was concentrated in a few large emerging economies.

- FDI in *Africa* fell back to the 2019 level of $45 billion after anomalously high levels in 2021 caused by a single financial transaction. Greenfield project announcements increased by 39 per cent, and international project finance deals by 15 per cent. The energy sector, both extractives and energy generation, saw the biggest increase.
- FDI inflows in *developing Asia* were flat at $662 billion but still accounted for more than half of global FDI. India and Association of Southeast Asian Nations were the most buoyant recipients, with increases of 10 and 5 per cent, respectively, and strong growth in project announcements. China, the second largest FDI host country in the world, saw a 5 per cent increase. FDI in Persian Gulf States declined, but the number of project announcements increased by two thirds.
- Flows to *Latin America and the Caribbean* increased by 51 per cent, reaching $208 billion, the highest level ever recorded. High commodity prices pushed up reinvested earnings of foreign affiliates in extractive industries. Project growth across the region was more modest, with 14 per cent more greenfield announcements and a decline in international project finance deals.

- FDI flows to *structurally weak and vulnerable economies* declined. Despite the increase in developing countries overall, FDI in the 46 least developed countries (LDCs) fell by 16 per cent to $22 billion – less than 2 per cent of global FDI. Greenfield project announcements to LDCs recovered some ground after the 2020–2021 decline, but they remained well below their 10-year average. Landlocked developing countries (LLDCs) and small island developing States (SIDS) saw small increases in FDI.

Industry trends showed increasing project numbers in infrastructure and global value chain (GVC)-intensive industries, stable numbers in energy and a slowdown in digital economy sectors. GVC-intensive industries that face supply-chain restructuring pressures, including the electronics, automotive and machinery industries, saw project numbers and values grow. Three of the five largest announced investment projects were in semiconductors, in response to global chip shortages.

The degree of internationalization – the ratio of foreign over total assets, sales and employment – of the largest MNEs remained stable overall. The trend documented in successive *WIRs* of overseas sales growing at a faster pace than assets and employment continued in 2022. Whereas in previous years this was driven by asset-light MNEs in the digital economy, in 2022, it was caused by high energy prices, which boosted revenues of companies in oil and gas, commodity trading and utilities. Overseas sales of the top 100 MNEs increased by more than 10 per cent, while the value of their overseas assets declined marginally.

International investment in sectors relevant for the Sustainable Development Goals in developing countries increased in 2022. Infrastructure, energy, water and sanitation, agrifood systems, health and education all saw higher project numbers. Yet the increase since 2015, when the SDGs were adopted, is relatively modest, due to weak growth in the early years and the sharp decline in investment during the COVID-19 pandemic. Investment activity in agrifood systems is even below the 2015 level.

A review of investment needs at the midpoint of the 2030 Agenda for Sustainable Development shows that the investment gap across all SDG sectors has increased from $2.5 trillion – estimated in *WIR2014*, on the eve of the adoption of the SDGs – to more than $4 trillion per year today. The largest gaps are in energy, water and transport infrastructure. The increase is the result of both underinvestment and additional needs.

The growth of investment in renewable energy slowed down in 2022. Greenfield investment announcements doubled but international project finance deals, which are usually larger, declined. Although total international investment in renewables has nearly tripled since 2015, in developing countries the growth rate has exceeded growth in gross domestic product (GDP) only marginally. In LDCs, the growth of renewables investment has lagged substantially behind GDP growth.

International investment in the renewable energy supply chain is growing. The number of new projects announced in critical minerals in 2021 and 2022 was more than double the average level of the last decade. Investment projects in solar and wind component manufacturing are also increasing, although from a low level. In 2022, the value of announced projects in battery manufacturing tripled, to more than $100 billion. Most projects are in the United States of America and in European manufacturing hubs, but a few developing countries attracted sizeable investments.

Energy companies in the ranking of the top 100 MNEs are divesting fossil fuel assets at a rate of about $15 billion per year. Buyers include mostly private equity funds, smaller operators within the sector and commodity traders. A key concern is that such private (non-listed) buyers often have lower or no emission-reduction goals and weaker climate reporting standards. This calls for a new model of climate-aligned dealmaking.

INVESTMENT POLICY DEVELOPMENTS

Investment policymaking activity surged in 2022, as many countries adopted measures to counter an expected economic downturn. The number of measures favourable to investment reached 102, nearly doubling from the previous year and regaining their pre-pandemic share of total measures.

The trend towards increased screening of FDI continued. The number of countries conducting investment screening on national security grounds increased to 37. The introduction or tightening of national security regulations affecting FDI represented almost half of the policy measures less favourable to investment. Most of these measures were introduced by developed countries. In total, countries with FDI screening regimes accounted for 68 per cent of FDI stock in 2022. The number of M&A deals withdrawn because of regulatory or political concerns increased by one third.

Investment facilitation measures featured prominently in both developed and developing countries. Most measures adopted by developing countries focused on facilitation and the opening of new sectors or activities to FDI. For the first time since the pandemic, the number of measures favourable to investment also increased significantly in developed countries. Measures included investment facilitation initiatives and the introduction of incentives to promote renewable energy and other climate-related investments.

Countries at different levels of development adopt different policy measures to promote renewable energy investment. Developing countries, including LDCs, often use tax incentives that do not require initial expenditures of scarce public funds, whereas developed economies favour financial incentives as well as more sophisticated instruments such as feed-in tariffs. The use of auctions and tenders for renewable energy projects as common instruments to attract renewable energy investment has gained momentum across all country groups.

Fossil fuel subsidies around the world amounted to $1 trillion in 2022 – a record level, and eight times the value of subsidies provided to renewable energy. Fossil fuel subsidies represent a disincentive to investment in the energy transition because they make it more challenging for renewable energy to compete, especially when it does not receive the same level of support. Although phasing them out is complex, particularly for developing countries, doing so would help encourage investment in renewable energy.

The reform of the international investment agreement (IIA) regime continued in 2022. Developments included the emergence of new types of investment-related agreements, the termination of bilateral investment treaties (BITs) and ongoing multilateral discussions on the reform of investor–State dispute settlement (ISDS) mechanisms. Negotiations were concluded on several international investment governance instruments with proactive investment facilitation features and an increased focus on sustainable investment.

For the third consecutive year, the number of treaty terminations exceeded that of new IIAs. In 2022, countries concluded 15 new IIAs and effectively terminated 58 IIAs. This brought the IIA universe to 3,265 treaties, of which 2,584 are in force. The network of IIAs is dominated by old-generation IIAs. They are characterized by overlapping commitments and inconsistencies with the global sustainability imperative. These entail risks for climate action and the energy transition and add to the urgency of IIA reform.

About 80 per cent of investor–State dispute cases in 2022 were brought under IIAs signed in the 1990s or earlier. In 2022 claimants filed 46 new ISDS cases under IIAs, including 10 cases under the Energy Charter Treaty (ECT). To date, 132 countries and one economic grouping are known to have been respondents to one or more ISDS claims. The total count of known ISDS cases reached 1,257 in 2022.

CAPITAL MARKETS AND SUSTAINABLE FINANCE

Sustainability-themed investments remain resilient amid volatile capital markets. The value of the overall sustainable finance market (bonds, funds and voluntary carbon markets) reached $5.8 trillion in 2022, despite the turbulent economic environment, including high inflation, rising interest rates, poor market returns and the looming risk of a recession, which all affected financial markets.

Sustainable funds continued to be more attractive to investors than traditional funds. Despite a decline in the market value of the global sustainable fund market from its high of $2.7 trillion in 2021 to $2.5 trillion in 2022, net inflows to the market were positive, in contrast to traditional funds, which experienced net outflows.

Sustainable funds make a significant contribution to the SDGs. As of the end of 2022, more than half a trillion dollars, or 30 per cent of the holdings of UNCTAD-monitored funds, were committed to eight SDG-relevant sectors, up from 26 per cent in 2021. Health, renewable energy, agrifood systems, and water and sanitation remain the largest recipients of funding, accounting for 95 per cent of the assets committed to SDG sectors.

Sustainable funds outperform their conventional peers on environmental, social and governance (ESG) criteria, but greenwashing persists. The average ESG rating of more than 2,800 sustainable funds monitored by UNCTAD is significantly better than that of the benchmark MSCI global equity index. Nevertheless, at least a quarter of funds fail to live up to their sustainability credentials.

The sustainable bond market continues to grow, although the issuance of new bonds declined by 11 per cent in 2022. The outstanding, cumulative value of the sustainable bond market increased from $2.5 trillion in 2021 to $3.3 trillion in 2022. Annual issuance of sustainability-themed bonds has grown fivefold in the past five years. Green bond issuance remained relatively resilient in 2022, decreasing by just 3 per cent.

The nascent voluntary carbon market holds great potential for the funding of sustainable investment in developing countries. In contrast to most compliance carbon markets, they can channel investment capital across borders to finance emissions reduction or avoidance projects. The record prices for a ton of CO_2 equivalent in 2022 also raise hopes that more realistic emissions costs can help accelerate the energy transition.

Institutional investors continue to make progress on sustainability performance and to finance investment in renewable energy. In 2022, the top 100 sovereign wealth and public pension funds monitored by UNCTAD improved their disclosure of climate actions, including investment in sustainable energy and divestment from fossil fuels. Two thirds of reporting funds have now committed to achieving net zero in their investment portfolios by 2050. However, nearly half of the investors in the UNCTAD top 100 still fail to disclose or report on sustainability-related risks and are not moving quickly enough to reorient their portfolios.

Stock exchanges continue to expand support for sustainable finance, with increases in the number of exchanges with written ESG disclosure guidance, mandatory ESG reporting, ESG training, and related bond and equity offerings. In 2022, training on ESG topics became the most common sustainability activity of exchanges, fuelled in part by the activities of the Sustainable Stock Exchanges (SSE) initiative of the United Nations, which works with development partners and exchanges to train market participants. The SSE Academy was created in response to growing demand from stock exchanges for education and training on ESG disclosure standards and regulatory developments.

Gender equality in corporate leadership made modest gains in 2022. Women hold 23 per cent of the board seats of listed companies on 22 major G20 stock exchanges. In seven G20 markets, policymakers have created mandatory rules regulating the minimum number of women required on boards of listed companies.

Policy and regulatory developments show the importance that countries attach to the sustainable finance market and its role in achieving net zero. In 2022, 22 of the 35 economies tracked by UNCTAD, which represent over 90 per cent of global GDP, introduced at least 50 measures dedicated to sustainable finance, including a number of measures adopted by the European Union at the regional level. Progress was made in taxonomy development, sustainability disclosure, sector- and product-specific measures, and carbon pricing, in both developed and developing economies.

China, the United States and the European Union maintained their momentum in sustainable finance policymaking, with continued progress on disclosure requirements and standards-setting. Broadly, the European Union has predominantly adopted a regulatory approach, prioritizing the establishment of a comprehensive framework for sustainable finance. China and the United States have so far pursued a hybrid approach, attaching importance to both regulation and the integration of climate and sustainable development dimensions in industrial policies. In 2022, the United States introduced the Inflation Reduction Act, with a focus on promoting green investment.

Securities regulators and international standards-setting bodies made further progress in codifying sustainability reporting. The International Sustainability Standards Board, with its forthcoming global sustainability standards on ESG and climate, aims to address the need for consistent, comparable and reliable standards for sustainability disclosure. Together with the standards of the Global Reporting Initiative, they form a comprehensive corporate reporting system for the disclosure of sustainability information.

Despite its resilience and growth, the sustainable finance market continues to face a myriad of challenges. It will need consistent and concerted global efforts to address those challenges in the years ahead.

INVESTMENT IN SUSTAINABLE ENERGY FOR ALL

The investment needs associated with the energy transition are enormous. *To stay close to the goal of limiting global warming to 1.5°C, the world needs about 1.5 times today's global GDP in investment between now and 2050.*

Investment needs are much higher in developing than in developed economies, relative to their existing asset bases. In developing countries, energy investment is needed not only for the transition, but also to ensure access to sustainable and affordable energy for all. *Installed capacity in renewable energy needs to increase by a factor of 2.5 in the most advanced economies, but by a factor closer to 25 in LDCs.*

International investment in the renewable energy sector has nearly tripled since the adoption of the SDGs and the Paris Agreement in 2015. However, this growth has been unbalanced, with much of it concentrated in developed countries. Also, while investment in renewables has grown, other sectors relevant for the transition, notably energy infrastructure, still see much lower involvement by international investors.

Placing international investment in the context of total energy transition investment confirms that FDI plays a significant role. In the renewable energy sector, international project finance accounts for 55 per cent of total project finance values. This share increases for developing countries, exceeding 75 per cent in LDCs.

For the poorest countries, therefore, attracting international investment is a crucial prerequisite for a timely energy transition. This is a concern, because many of these countries continue to struggle to attract significant amounts of FDI beyond the extractives sector. *To date, 31 developing countries, including 11 LDCs, have not yet registered a single utility-sized international investment project in renewables or other energy transition sectors.*

Most of the drivers and determinants of energy investment decisions affect domestic and international investors equally, but a few are more important or more binding for international investors, explaining the role of FDI and the specific contributions it can make. *Critically, international investors can often access cheaper finance, lowering the cost of capital for projects.*

The cost of capital is a key determinant for energy transition investment, because of the high upfront investment cost of renewable energy installations. *The high cost of capital in developing countries, and especially countries in debt distress, constitutes a significant economic disincentive for the energy transition.*

The cost of capital in project finance varies depending on the stakeholders involved. In developing countries, on average, bringing in international investors lowers the spread on debt finance by 8 per cent; adding in multilateral development banks (MDBs) lowers it by 10 per cent. Combining international, MDB and government stakes in public-private partnerships reduces the spread by 40 per cent. *This shows the importance of promoting such partnerships and lends support to the shift in MDB lending priorities towards sustainable energy and infrastructure assets.*

Following the Paris Agreement, all countries formulate energy transition targets and strategies in nationally determined contributions (NDCs). Not all of them show the same level of detailed investment planning. *Of 147 NDCs submitted by developing countries, 48 provide information on investment requirements and 40 discuss prospective sources of investment.*

Detailed planning for energy transition investment entails translating targets for emission reductions into a transition path for the energy mix, implied asset requirements and infrastructure gaps, and assessments of energy demand, potential and locations, among other efforts. *Such planning details are crucial to provide investors with greater certainty on investment opportunities and to allow the construction and marketing of bankable projects.*

In developing countries, the policy measures adopted for the promotion of investment in the energy sector are often generic (mostly tax) incentives. More effective mechanisms to market renewable energy projects such as feed-in tariffs, quota-based instruments, electricity price guarantees and auctions depend on adequate demand projections, asset planning and regulatory preparation. *Jumping from high-level NDC target setting straight to investment policy measures thus precludes the use of the most effective tools for promoting energy transition investment.*

IIAs, and especially old-generation ones, can hinder the implementation of policy measures needed for the transition. They also lack provisions that proactively support low-carbon energy investments. *UNCTAD proposes a reform toolbox with policy options in four areas: the promotion and facilitation of sustainable energy investment, technology transfer, the right to regulate for climate action and the energy transition, and corporate social responsibility.*

Global capital markets are the ultimate source for much of the investment needed for the energy transition. The growth rate of climate finance in those markets has slowed, and current financing levels remain inadequate. Moreover, the market for sustainable financial

products needs continued surveillance to prevent greenwashing. *UNCTAD will continue to monitor the sustainable and climate finance market, including through the coordination of the UNCTAD Global Sustainable Finance Observatory and the SSE initiative.*

Although public markets and reporting standards play key roles in driving sustainability performance, there are growing concerns that companies may opt to stay in the private market to avoid disclosure obligations. *Policy actions are necessary to enhance transparency and disclosure requirements in the private market.* This becomes more urgent as fossil fuel assets are gradually offloaded by public energy companies to private equity firms and smaller unlisted operators.

Institutional investors, pension funds and sovereign wealth funds are ideally placed to help finance sustainable energy. However, they often lack access to investment opportunities in developing countries as they are prevented from investing in non-investment-grade projects. *Policy action is needed to transform non-fiduciary investment opportunities in developing economies into fiduciary investment assets through international support for de-risking activities.*

In this report, UNCTAD proposes a Global Action Compact for Investment in Sustainable Energy for All. It contains a set of guiding principles that considers all three objectives of the energy transition – meeting climate goals, providing affordable energy for all and ensuring energy security – and puts forward six action packages covering national and international investment policymaking; global, regional and South–South partnerships and cooperation; financing mechanisms and tools, and sustainable finance markets.

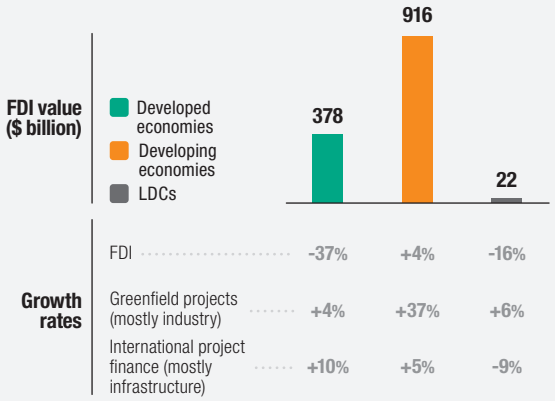
UNCTAD *World Investment Forum*, which will take place immediately ahead of the 28th Conference of the Parties (COP28) of the United Nations Framework Convention on Climate Change (UNFCCC) in 2023, in the same location, will be an opportunity for policymakers at the highest levels, and for the broadest possible constituency of investment-for-development stakeholders, to take forward the actions proposed in the Global Action Compact for Investment in Sustainable Energy for All.

CHAPTER I

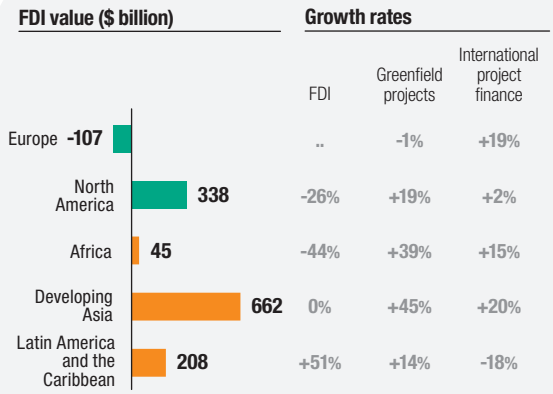
INTERNATIONAL INVESTMENT TRENDS

INTERNATIONAL INVESTMENT TRENDS in 2022

Income groups



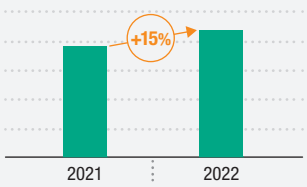
Regions



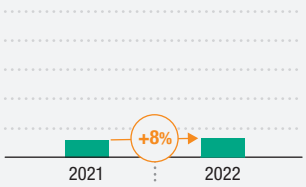
Developing economies account for **70% of global FDI**

Project activity in **developing regions** continues to **grow**

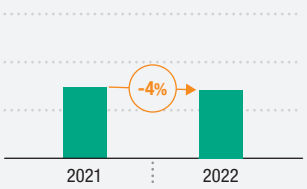
Greenfield projects
(Number)



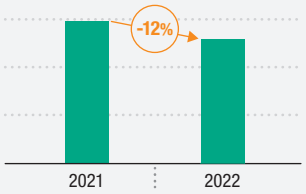
International project finance
(Number)



Cross-border M&As
(Value)



FDI
(Value)



Infrastructure, GVCs and chips see rising investment

SDG investment is moving, but **too slowly in some sectors**

Industries
(Project numbers)

- Infrastructure +6%
- GVC-intensive industries +5%
- Semiconductors +26%
- Digital economy -10%
- Energy -1%

SDG sectors
(Developing countries, project numbers)

- Infrastructure +26%
- Renewable energy +8%
- WASH +20%
- Agrifood systems +6%
- Health and education +8%

A. FOREIGN DIRECT INVESTMENT

1. Global trends

Global foreign direct investment (FDI) flows in 2022 declined by 12 per cent to $1.3 trillion, after nosediving in 2020 and rebounding in 2021.[1] The multitude of crises and challenges on the global stage – the war in Ukraine, high food and energy prices, risks of recession and debt pressures in many countries – negatively affected global FDI. International project finance values and cross-border mergers and acquisitions (M&As) were especially shaken by stiffer financing conditions, rising interest rates and uncertainty in financial markets. The value of international project finance deals fell by 25 per cent in 2022, while cross-border M&A sales were 4 per cent lower.

The global environment for international business and cross-border investment remains challenging in 2023. Although the economic headwinds shaping investment trends in 2022 have somewhat subsided, they have not disappeared. Commodity prices that rose sharply after the start of the war in Ukraine have tempered, but the war continues, and geopolitical tensions are still high. Recent financial sector turmoil in some developed countries adds to investor uncertainty. In developing countries, continuing high debt levels limit fiscal space. UNCTAD expects the downward trend of global FDI to continue in 2023.

Early indicators confirm the negative FDI outlook: FDI project activity in the first quarter of 2023 shows that investors are uncertain and risk averse. According to preliminary data, the number of international project finance deals in the first quarter of 2023 was down significantly; cross-border M&A activity also slowed (figure I.1).

Figure I.1. **Announced greenfield projects, international project finance deals and cross-border M&As, Q1 2021–Q1 2023** (Number)

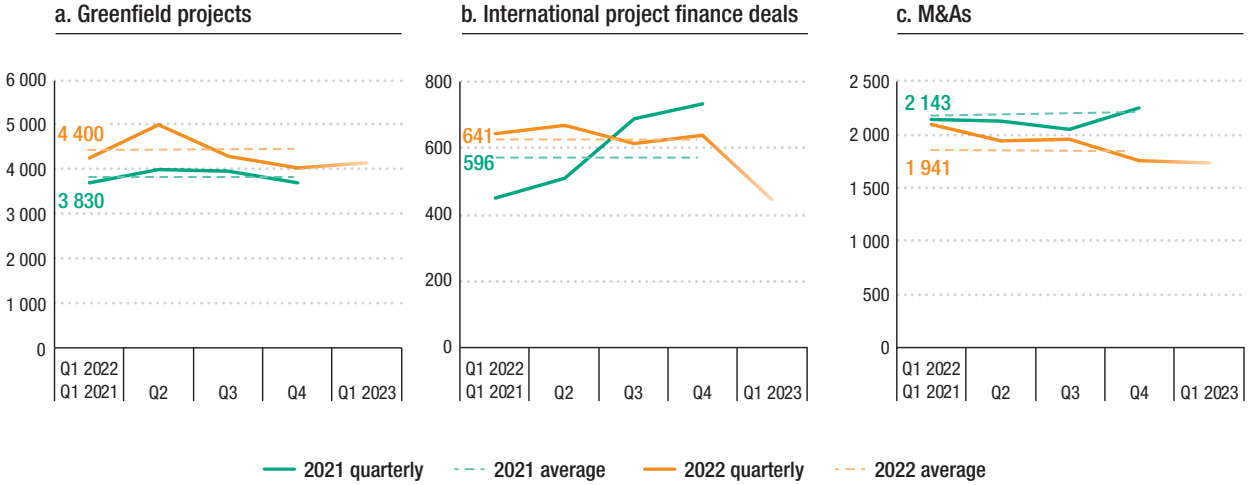


Table I.1. Growth rates of global GDP, GFCF, trade and FDI, 2020–2023
(Per cent)

Variable	2020	2021	2022	2023[a]
GDP	-2.8	6.3	3.4	2.8
Trade	-7.8	10.6	5.1	2.4
GFCF	-2.5	8.0	-2.4	2.4
FDI	-43.7	53.7	-12.4	
Memorandum: FDI value (trillions of dollars)	1.0	1.5	1.3	

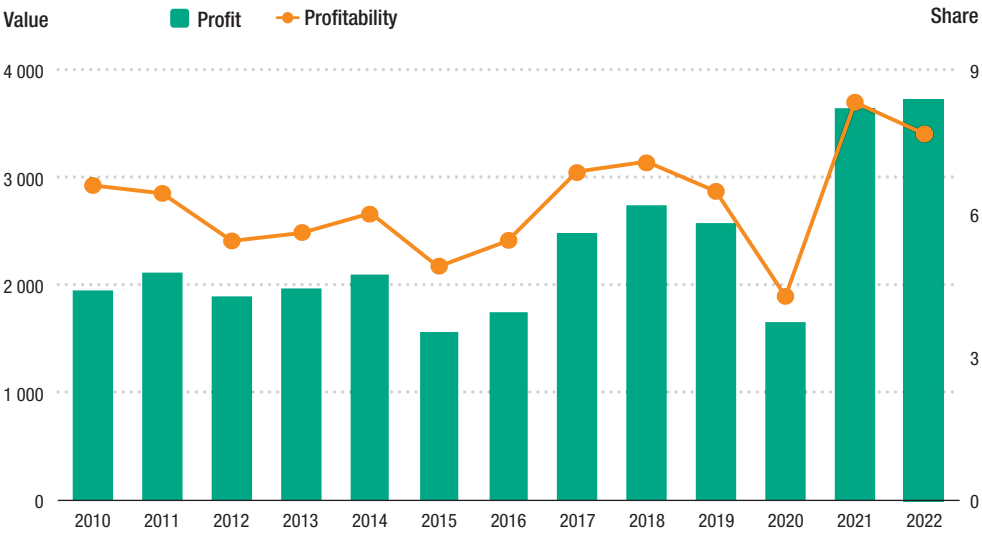
Source: UNCTAD, FDI/MNE database for FDI; IMF (2023) for GDP, GFCF and trade.
Note: GFCF = gross fixed capital formation.
[a] Forecast.

Global FDI trends are in line with other macroeconomic variables, which show either negative or slow growth rates (table I.1). Among the components of FDI, retained earnings remained high in 2022. This reflects the continued high profit levels of the largest multinational enterprises (MNEs) across all sectors (figure I.2), especially the extractive industries.

FDI flows to developed economies fell by 37 per cent, to $378 billion. Much of the decline was driven by one-off transactions and financial flows, and there were signs of investment strength in new projects. Announced greenfield projects were up 4 per cent in number and 37 per cent in value (table I.2).

FDI flows to developing economies rose by 4 per cent, to $916 billion – the highest level ever recorded. Announcements of greenfield projects in developing countries rose by 37 per cent in number, and their value more than doubled. This increase was mostly the result of megaprojects announced in the renewable energy sector, including five of the 10 highest-value projects.

Figure I.2. Profits and profitability levels of the largest MNEs, 2010–2022
(Billions of dollars and per cent)



Source: UNCTAD, based on information from Refinitiv.
Note: Covers 3,849 MNEs for which data were available for every year in the range. Profitability is calculated as the ratio of net income to total sales.

Table I.2. Announced greenfield projects, international project finance deals and cross-border M&As, by economic grouping, 2021–2022 (Billions of dollars, number and per cent)

Group of economies	Type of FDI	Value (Billions of dollars) 2021	Value (Billions of dollars) 2022	Growth rate (%)	Number 2021	Number 2022	Growth rate (%)
Developed economies	Greenfield projects	465	639	37	10 342	10 790	4
	International project finance	774	665	-14	1 413	1 549	10
	Cross-border M&As	624	599	-4	7 610	6 710	-12
Developing economies	Greenfield projects	274	573	110	4 976	6 808	37
	International project finance	609	379	-38	970	1 015	5
	Cross-border M&As	113	107	-5	961	1 053	10

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fDimarkets.com) and Refinitiv.

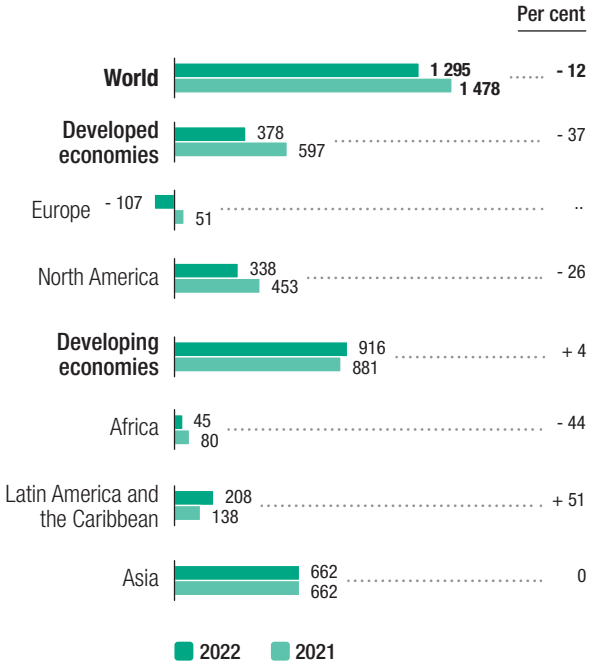
2. Trends by geography

a. FDI inflows

The 2022 decline in developed economies reflected the uncertainty in financial markets and the winding-up of stimulus packages, but the volatile nature of FDI flows in developed markets also continued to affect aggregate values. In Europe, FDI totals were affected by fluctuations in the major conduit economies as well as by a large withdrawal of capital by a telecommunication MNE operating in Luxembourg. In the United States, where inflows fell by 26 per cent, the halving of cross-border M&A values played a role.

FDI flows to developing economies as a group increased (figure I.3). Inflows to developing Asia remained flat at $662 billion (table I.3). Those to Latin America and the Caribbean rose by 51 per cent to $208 billion – a record level. And inflows to Africa fell by 44 per cent following the anomalous peak in 2021 caused by a large corporate reconfiguration in South Africa.

Figure I.3. FDI inflows by region, 2021–2022 (Billions of dollars and per cent)



Source: UNCTAD, FDI/MNE database (https://unctad.org/fdistatistics).

Developing countries accounted for more than two thirds of global FDI, up from 60 per cent in 2021. The impacts of the multidimensional crises, especially in food and energy, and financial and debt distress hit investment flows to the poorest countries disproportionally. Flows to the least developed countries (LDCs) fell by 16 per cent; they continue to account for only 2 per cent of global FDI.

Table I.3. FDI flows, by region, 2020–2022 (Billions of dollars and per cent)

Region	FDI inflows			FDI outflows		
	2020	2021	2022	2020	2021	2022
World	**962**	**1 478**	**1 295**	**732**	**1 729**	**1 490**
Developed economies	315	597	378	350	1 244	1 031
Europe	133	51	-107	-38	573	224
European Union	116	152	-125	64	477	96
Other Europe	17	-102	18	-102	97	128
North America	123	453	338	247	447	452
Other developed countries	60	93	147	141	224	354
Developing economies	647	881	916	382	485	459
Africa	39	80	45	1	3	6
Asia	516	662	662	383	445	396
Central Asia	7	7	10	-2	1	-2
East Asia	285	334	324	267	290	269
South Asia	71	53	57	11	18	16
South-East Asia	119	213	223	69	81	86
West Asia	35	56	48	38	55	27
Latin America and the Caribbean	90	138	208	-1.0	38	59
Oceania	1.0	1.3	1.2	-0.9	-1.6	-2.1
Structurally weak, vulnerable and small economies[a]	**38**	**43**	**41**	**0.2**	**2.2**	**1.0**
LDCs	23	26	22	1.4	-0.6	1.4
LLDCs	15	19	20	-1.4	1.6	-2.2
SIDS	6	6	8	1.0	0.8	1.6
Memorandum: percentage share in world FDI flows						
Developed economies	32.8	40.4	29.2	47.8	72.0	69.2
Europe	13.8	3.4	-8.2	-5.3	33.2	15.1
European Union	12.0	10.3	-9.7	8.7	27.6	6.5
Other Europe	1.8	-6.9	1.4	-13.9	5.6	8.6
North America	12.8	30.7	26.1	33.7	25.8	30.4
Other developed countries	6.3	6.3	11.4	19.3	13.0	23.8
Developing economies	67.2	59.6	70.8	52.2	28.0	30.8
Africa	4.1	5.4	3.5	0.2	0.2	0.4
Asia	53.7	44.8	51.1	52.3	25.8	26.6
Central Asia	0.7	0.5	0.8	-0.3	0.1	-0.2
East Asia	29.6	22.6	25.0	36.5	16.8	18.1
South Asia	7.4	3.6	4.4	1.5	1.0	1.1
South-East Asia	12.3	14.4	17.2	9.4	4.7	5.8
West Asia	3.7	3.8	3.7	5.2	3.2	1.8
Latin America and the Caribbean	9.3	9.3	16.1	-0.1	2.2	4.0
Oceania	0.1	0.1	0.1	-0.1	-0.1	-0.1
Structurally weak, vulnerable and small economies[a]	4.0	2.9	3.2	0.03	0.1	0.1
LDCs	2.4	1.8	1.7	0.2	-0.03	0.09
LLDCs	1.6	1.3	1.5	-0.2	0.1	-0.15
SIDS	0.6	0.4	0.6	0.13	0.05	0.1

Source: UNCTAD, FDI/MNE database (www.unctad.org/fdistatistics).
[a] Without double counting countries that are part of multiple groups.

The number of investment projects (including greenfield projects and international project finance deals) increased by 14 per cent in 2022. Although more projects were announced in developed countries, the share of developing economies reached close to 40 per cent, up from an average of 33 per cent in the last two years (table I.4).

Table I.4. Announced greenfield projects and international project finance deals, by region, 2020–2022 (Number and per cent)

Region	Greenfield projects				International project finance deals			
	2020	2021	2022	Growth rate, 2021–2022 (%)	2020	2021	2022	Growth rate, 2021–2022 (%)
World	**13 394**	**15 318**	**17 598**	**15**	**1 353**	**2 383**	**2 564**	**8**
Developed economies	9 101	10 342	10 790	4	797	1 413	1 549	10
Europe	6 377	7 475	7 382	-1	471	870	1 038	19
European Union	4 847	5 854	5 710	-2	365	617	781	27
Other Europe	1 530	1 621	1 672	3	106	253	257	2
North America	1 982	2 070	2 469	19	188	325	331	2
Other developed countries	742	797	939	18	138	218	180	-17
Developing economies	4 293	4 976	6 808	37	556	970	1 015	5
Africa	572	551	766	39	96	136	157	15
Asia	2 663	3 192	4 625	45	245	475	568	20
Central Asia	42	54	42	-22	17	24	20	-17
East Asia	582	672	557	-17	32	84	88	5
South-East Asia	759	848	1 083	28	117	152	226	49
South Asia	460	507	1 089	115	50	155	205	32
West Asia	820	1 111	1 854	67	29	60	29	-52
Latin America and the Caribbean	1 058	1 231	1 409	14	212	351	287	-18
Oceania	-	2	8	300	3	8	3	-63

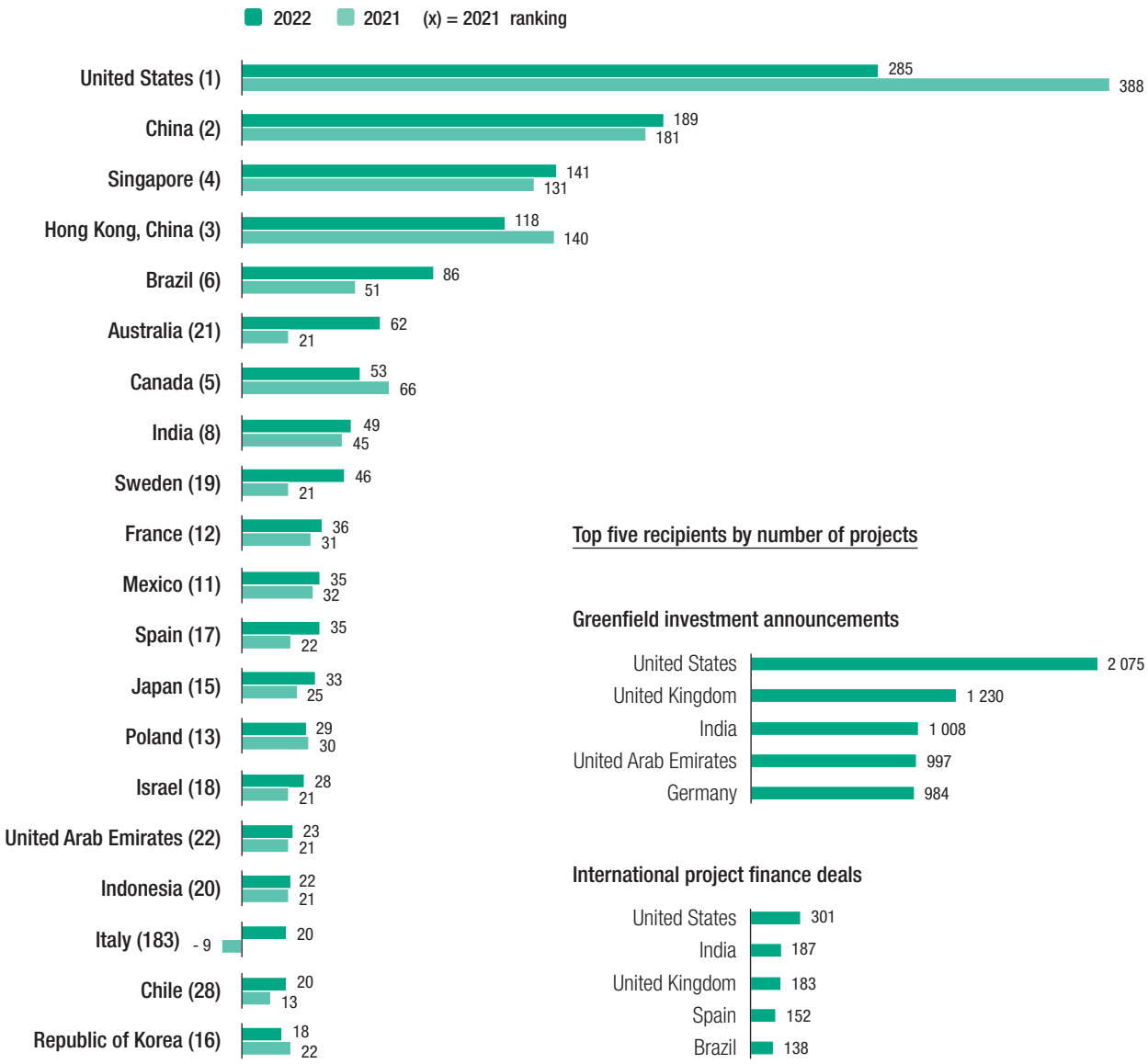
Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fDimarkets.com) and Refinitiv.

Most regions, other than Central and East Asia, recorded an increase in announced greenfield projects. The highest growth was in South Asia; the number in India more than doubled. The number of announced projects also increased by two thirds in West Asia, mainly because of the significant rise of activity in the United Arab Emirates, which made that country the fourth largest recipient of greenfield projects in the world (figure I.4). Africa also saw a jump in 2022 (39 per cent), mainly caused by a doubling of the number of projects in Egypt and increases in the number of projects, in that order. In East Asia, announced greenfield projects fell by 17 per cent.

The number of international project finance deals also rose in most regions, although more modestly. The most significant rise was in India, where project numbers increased by 64 per cent, making it the recipient of the second largest number of international project finance deals. In the European Union, project numbers increased by 27 per cent, with significant increases in Italy (78 per cent), Germany (57 per cent) and Spain (10 per cent).

The United States remained the largest host for announced greenfield projects and international project finance deals, followed by the United Kingdom, India, the United Arab Emirates and Germany for greenfield projects, and by India, the United Kingdom, Spain and Brazil for project finance deals.

Figure I.4. FDI inflows, top 20 host economies, 2021 and 2022 (Billions of dollars)



Source: UNCTAD, FDI/MNE database (https://unctad.org/fdistatistics).

(i) Developed economies

In 2022, FDI flows to developed countries as a group fell by 37 per cent, largely in Europe and North America. In other developed countries, they rose (figure I.5).

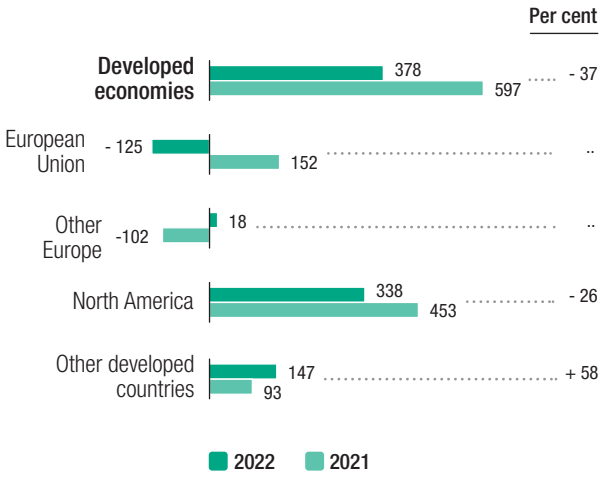
In the United States, flows declined by 26 per cent to $285 billion, mainly due to the halving of cross-border M&As, which generally account for a large share of inflows. Among the 10 largest sales, only one occurred in the United States. The decrease in M&As had a direct impact on the equity component of FDI, which fell by 35 per cent. Inflows declined strongly in chemicals, computer and electronic products and finance. Information and communication remained the largest recipient industry ($51 billion) – a 21 per cent increase from 2021.

FDI in Canada decreased by 20 per cent to $53 billion, as cross-border M&A sales fell by 37 per cent. As in 2021, large sales occurred in extractive industries. For example, Rio Tinto (United Kingdom) acquired Turquoise Hill Resources, an operator of copper and nickel

ore mines, for $3.3 billion, and Newcrest Mining (Australia) acquired Pretium Resources, an operator of a gold ore mine, for $2.8 billion.

Total values for FDI inflows in developed countries, Europe and the European Union are distorted by large fluctuations in conduit economies and by one-off M&A transactions. Excluding Luxembourg, inflows to the European Union increased from $127 billion to $197 billion. Sweden saw FDI inflows more than double to $46 billion – making it the largest recipient of FDI in the European Union. Equity investment accounted for two thirds of total inflows, mostly the result of a steep rise in cross-border M&As, to $35 billion. Flows in France were up 18 per cent to $36 billion, also mainly due to large M&A deals (from $4.6 billion to $31 billion), in transportation and storage, information and communication, and finance and insurance. Greenfield projects announced in France reached $20 billion, up from $14 billion in 2021.

Figure I.5. FDI inflows in developed economies, by subregion, 2021–2022
(Billions of dollars and per cent)



Source: UNCTAD, FDI/MNE database (https://unctad.org/fdistatistics).

FDI also grew in Italy, from -$9 billion to $20 billion. While cross-border M&As declined to $11 billion, announced greenfield projects rose 28 per cent, to $25 billion. The number of international project finance deals doubled to 114, making Italy the sixth largest recipient of such deals. In Germany, FDI flows fell by 76 per cent, to $11 billion, owing to a decline in equity investment caused mostly by the acquisition of a Finnish-owned affiliate by the Government of Germany, for $20 billion.

In Switzerland and the United Kingdom, flows turned positive after large negative values in 2021. In Switzerland, there was a large deal in pharmaceuticals with CSL Behring (Australia) acquiring Vifor Pharma for $11 billion. FDI flows to the United Kingdom rose to $14 billion after a revised -$71 billion in 2021. Cross-border M&A sales doubled to $202 billion.

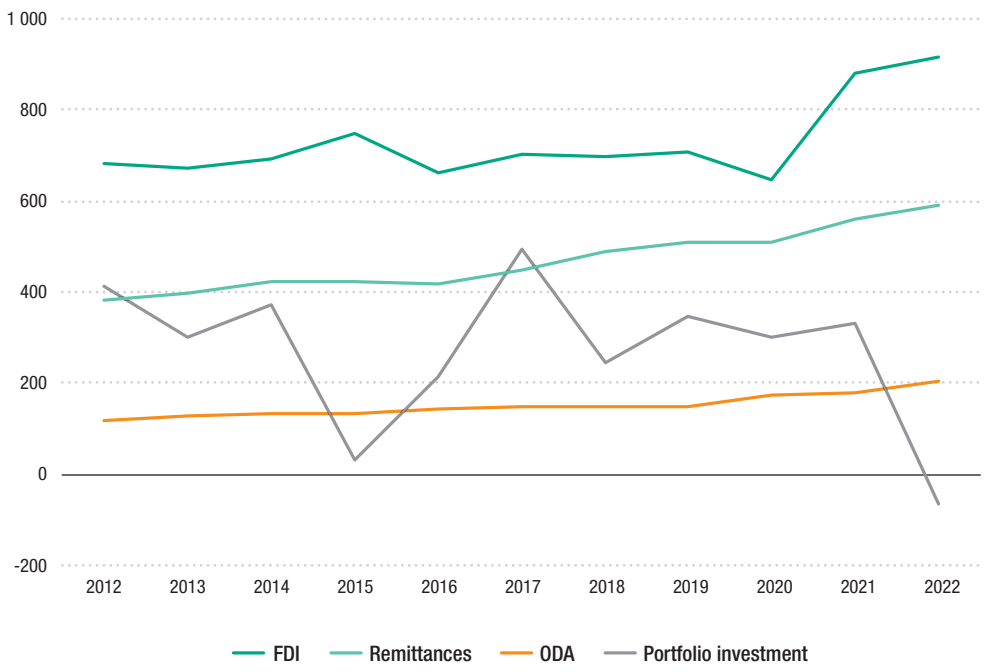
In the Russian Federation, FDI flows fell to -$19 billion in 2022 from $39 billion in 2021, as more large companies divested. Flows to Ukraine fell to $1 billion from $7 billion last year.

Most other developed economies saw FDI inflows rise in 2022. In Australia, flows tripled to $62 billion as M&A sales almost tripled. In Israel, FDI continued its upward trend, to $28 billion. FDI flows to Japan also increased again, reaching $33 billion – the highest level ever recorded. Flows to the Republic of Korea fell by 18 per cent, to $18 billion.

The value of announced greenfield projects in developed economies rose by 37 per cent to a record $639 billion, while the number of projects rose by 4 per cent. The value of projects in the primary sector remained low (at $12 billion); in manufacturing and services it rose by 39 and 35 per cent, respectively. Greenfield projects in electronics and electrical equipment grew to a record $118 billion. Automotive industries also saw a rise, to $37 billion. The value of announced projects in electricity and gas supply more than doubled, to $196 billion. The largest deal was in semiconductors, a plan by Taiwan Semiconductor Manufacturing (Taiwan Province of China) to boost capital spending in the United States to $28 billion.

The number of international project finance deals in developed economies rose by 10 per cent in 2022, reaching 1,549 projects – a record. However, the total value of deals fell by 14 per cent to $665 billion. Renewable energy remained the most important industry, with more than half the deals (855), the same level as in 2021.

Figure I.6. **Developing economies: sources of external finance, 2012–2022** (Billions of dollars)

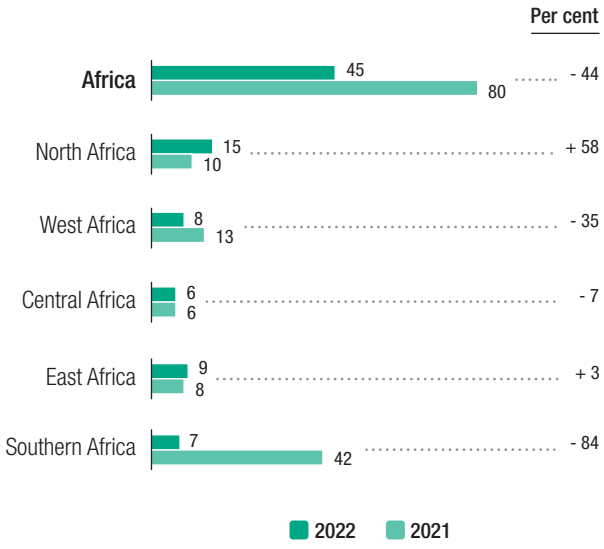


Source: UNCTAD, based on FDI/MNE database (https://unctad.org/fdistatistics) (for FDI), World Bank (for remittances), IMF International Financial Statistics (for portfolio investment) and OECD (for ODA).

(ii) Developing economies

FDI flows to developing economies as a group increased by 4 per cent to $916 billion in 2022. The increase was mainly the result of strong growth performance in Latin America and the Caribbean. FDI flows continue to be an important source of external finance for developing economies compared with other cross-border capital flows (figure I.6).

Figure I.7. **FDI inflows in Africa, by subregion, 2021–2022** (Billions of dollars)



Source: UNCTAD, FDI/MNE database (https://unctad.org/fdistatistics).

Africa

FDI flows to Africa fell by 44 per cent to $45 billion, following a record year in 2021 that was due to a single intrafirm financial transaction in South Africa (figure I.7). Excluding this deal, the change in FDI flows to Africa in 2022 would have increased by 7 per cent.

In North Africa, Egypt saw inflows more than double to $11 billion with increased cross-border M&A sales. Announced greenfield projects there more than doubled in number, to 161. And international project finance deals rose in value by two thirds, to $24 billion. Flows to Morocco decreased slightly, by 6 per cent, to $2.1 billion. Greenfield investment announced in that country quadrupled to $15 billion, with the plans by Total Eren (Luxembourg) to build a hydrogen and green ammonia production plant in Morocco for more than $10 billion.

In West Africa, Nigeria saw inflows turn negative, to -$187 million, due to equity divestments. However, the value of announced greenfield projects increased by 24 per cent. Among the largest were a data centre in Lekki announced by Airtel Nigeria, a subsidiary of Bharti Group (India), for $731 million and the construction of a 936 megawatt (MW) solar power plant and 443 megawatt-hour battery storage facility by Sun Africa (United States) and the Niger Delta Power Holding (Nigeria), for $1.8 billion.

In Senegal, FDI flows remained flat at $2.6 billion. Announced greenfield project values more than doubled to $1.4 billion. The value of international project finance deals rose to $1.2 billion, with the largest deal being the development of a 300,000 m^3 per day reverse-osmosis plant for $671 million, sponsored by ACWA Power (Saudi Arabia) in collaboration with the National Water Company of Senegal. In early 2023, logistics company DP World (United Arab Emirates) committed $1.1 billion to port construction in Senegal. FDI flows to Ghana fell by 39 per cent to $1.5 billion. The value of announced greenfield projects remained flat at $1.3 billion, while international project finance deals, at $358 million, were down from $1.8 billion in 2021.

Flows to Central Africa fell by 7 per cent to $6 billion. FDI to the Democratic Republic of the Congo remained flat at $1.8 billion, with investment sustained by flows in offshore oil fields and mining. For example, Ivanhoe Mines (Canada) is to expand its Kamoa–Kakula copper mining complex for $2.9 billion.

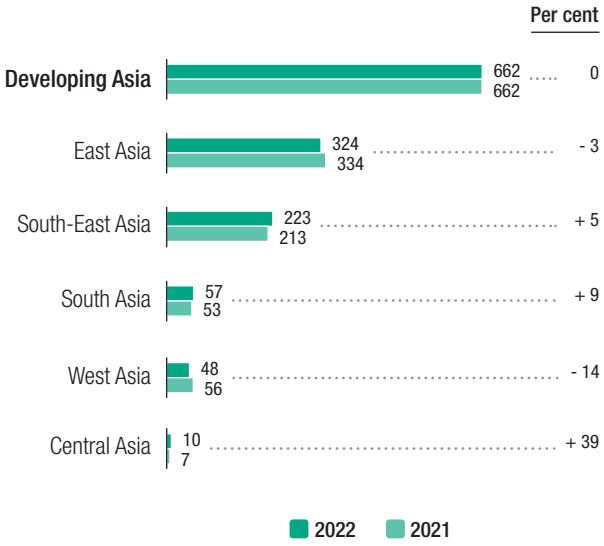
FDI to East Africa rose by 3 per cent to $8.7 billion. Flows to Ethiopia reached $3.7 billion – a 14 per cent decline from 2021. In Uganda FDI rose by 39 per cent to $1.5 billion. Two large greenfield projects were announced by TotalEnergies (France): the development of the Lake Albert oil field in a joint venture with China National Offshore Oil Corporation and the Uganda National Oil Company for $6.5 billion, and the construction of the 1,440-kilometre East African Crude Oil Pipeline in a $3.5 billion joint venture with the Uganda National Oil Company, the Petroleum Development Corporation (United Republic of Tanzania) and the China National Offshore Oil Corporation. FDI to the United Republic of Tanzania rose by 8 per cent to $1.1 billion; the number of announced greenfield projects in the country rose by 60 per cent; the number of international project finance deals also increased.

FDI to Southern Africa returned to normal levels, at $6.7 billion after the peak in 2021 caused by a one-off transaction. Flows to Angola remained negative (-$6.1 billion) as companies in the oil sector continued to pay back loans. FDI in South Africa reached $9.1 billion – double the average of the last decade. Cross-border M&As reached $4.8 billion from $280 million in 2021. Digital Titan (United States) acquired 55 per cent of TDE Investments, a Johannesburg-based provider of data processing and hosting services, for $1.7 billion. The value of greenfield projects rose fivefold to $27 billion. URB, a developer based in the United Arab Emirates, revealed plans for The Parks, a 17-square-kilometre project to build Africa's largest sustainable city; the $20 billion announcement was the third largest greenfield project worldwide in 2022. After one year of negative values, FDI to Zambia rose to $116 million. Flows to Mozambique registered at $2 billion, down from $5.1 billion in 2021, mainly due to negative intracompany loans.

The value of greenfield projects announced in Africa almost quadrupled, to a record $195 billion (from $52 billion in 2021). The number of projects also rose, by 39 per cent, to 766. The biggest increases were in energy and gas supply (to $120 billion), construction ($24 billion) and extractive industries ($21 billion). Six of the top 15 greenfield megaprojects announced in 2022 were in Africa.

In contrast, international project finance deals in Africa showed a decline of 47 per cent in value ($74 billion, down from $140 billion in 2021), but a 15 per cent increase in project numbers to 157. Decreases in values were registered in renewables, mining and power.

Figure I.8. FDI inflows in developing Asia, by subregion, 2021–2022
(Billions of dollars and per cent)



Source: UNCTAD, FDI/MNE database (https://unctad.org/fdistatistics).

European investors remain, by far, the largest holders of FDI stock in Africa, led by the United Kingdom ($60 billion), France ($54 billion) and the Netherlands ($54 billion).

Developing Asia

FDI flows to developing Asia remained flat at $662 billion (figure I.8). The region is the largest recipient of FDI, accounting for half of global inflows. The number of announced greenfield projects and international project finance deals in the region increased by 45 and 20 per cent, respectively.

In East Asia, FDI decreased by 3 per cent to $324 billion in 2022. Flows to China rose by 5 per cent, to a record $189 billion. The increase was concentrated in manufacturing and high-tech industries (mainly electronics and communication equipment) and came mostly from European MNEs. Cross-border M&A sales tripled to $15 billion. The largest deals were the $4 billion acquisition by BMW (Germany) of a further 25 per cent stake in BMW Brilliance Automotive, a Beijing-based manufacturer and wholesaler, and the $3.4 billion merger of COVA Acquisition (United States) and ECARX Holdings, a Shanghai-based manufacturer of semiconductors and electronics. A number of MNEs have been restructuring their global supply chains, with implications for FDI in China.

Flows to South-East Asia increased by 5 per cent to $223 billion – the highest level ever recorded. The values of announced greenfield projects and international project finance deals also increased, by 28 and 49 per cent, respectively. In contrast, the value of cross-border M&As fell by 75 per cent to $12 billion. Singapore, the largest recipient, registered another record, up 8 per cent to $141 billion (accounting for almost two thirds of flows to the Association of Southeast Asian Nations (ASEAN)). Flows to Malaysia rose by 39 per cent to $17 billion – a new record for the country. The number of both greenfield projects and project finance deals increased. The largest greenfield project announced was the plan by Bin Zayed International (United Arab Emirates) to invest $9.6 billion in developing a mixed-use real estate project in Langkasuka, following a joint venture with Widad Business Group (Malaysia). Flows to Viet Nam and Indonesia rose by 14 per cent and 4 per cent, to $18 billion and $22 billion, respectively. FDI to the Philippines fell by 23 per cent owing to acquisitions by local investors of foreign affiliates; for example, Union Bank of the Philippines acquired the Philippine consumer banking business of Citigroup (United States) for $1.4 billion.

In South Asia, FDI flows to India rose by 10 per cent to $49 billion, making it the third largest host country for announced greenfield projects and the second largest for international project finance deals. Among the largest greenfield projects were the plans by Foxconn (Taiwan Province of China) and Vedanta Resources (India) to build one of the first chip factories in India for $19 billion and a $5 billion project to produce urea from green hydrogen by a joint venture of TotalEnergies (France) and Adani Group (India). In project finance deals, Posco (Republic of Korea) and the Adani Group sponsored the construction of a steel mill for $5 billion in Gujarat.

In West Asia, FDI fell by 14 per cent to $48 billion, despite strong activity in greenfield projects and cross-border M&As. The number of greenfield projects rose to more than 1,800 – two thirds higher than 2021 – and the value of cross-border M&As increased by 18 per cent to

$37 billion. Flows to Saudi Arabia fell by 59 per cent to 7.9 billion. Cross-border M&A sales remained high. Among the largest deals was the $16 billion acquisition of a 49 per cent stake in Aramco Gas Pipelines by an investor group from from China, Hong Kong (China), Saudi Arabia and the United States. Flows to the United Arab Emirates increased by 10 per cent to $23 billion – the highest ever recorded. The country received the fourth largest number of greenfield projects (997), an 84 per cent increase. Two of the largest projects included the building of a neutron therapy hospital, medical university and convention centre in Abu Dhabi by Star Energy (Austria) in a $1.8 billion joint venture with locally based Royal Strategic Partners and MIG Group, and the building of a $1 billion green hydrogen plant at Khalifa Industrial Zone in Abu Dhabi by Korea Electric Power (Republic of Korea). Flows to Türkiye rose by 9 per cent to $13 billion. Banco Bilbao Vizcaya Argentaria (Spain) acquired a stake in Türkiye Garanti Bankasi, an Istanbul-based commercial bank, for $1.5 billion.

Flows to Central Asia increased by 39 per cent to $10 billion. FDI to Kazakhstan almost doubled to $6.1 billion, with increases in the extractive industries (to $4.1 billion), mainly from MNEs in the Netherlands and the United States. Flows rose by 11 per cent to $2.5 billion in Uzbekistan.

Latin America and the Caribbean

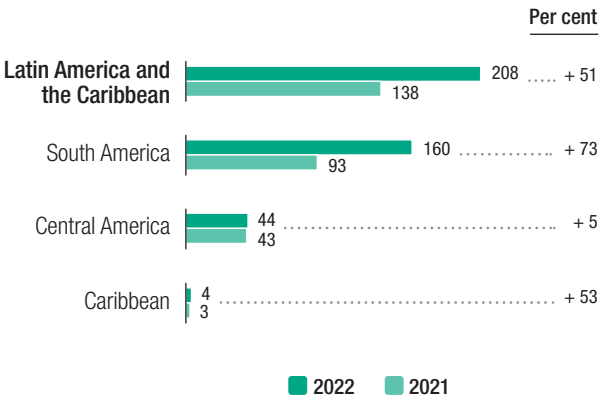
In 2022, FDI in Latin America and the Caribbean increased by 51 per cent to $208 billion, sustained by high demand for commodities and critical minerals (figure I.9).

In South America all major recipients saw their FDI flows rise, driven by investment in mining and hydrocarbons. In Brazil, flows rose by two thirds, reaching $86 billion, the second highest value ever recorded. Reinvested earnings doubled to $34 billion – a record. The number of announced greenfield projects and international project finance deals rose by almost 30 per cent, to 242 and 138, respectively. The country ranked fifth worldwide by number of international project finance deals. Large projects included the construction of a palm mill for $3 billion by Empresas Copec (Chile) and of the Rio-Valadares Highway in Brazil for $2.3 billion, sponsored by EcoRodovias (Brazil) and Logistica (Italy). FDI to Colombia grew by 82 per cent to $17 billion, led by extractives; construction; finance; and transport, logistics and communication services. FDI in Argentina and Peru doubled to $15 billion and $12 billion, respectively.

In Central America, FDI reached $44 billion – up 5 per cent from 2021. Flows to Mexico, the second largest recipient in Latin America, increased by 12 per cent to $35 billion, with a rise in new equity investment and reinvested earnings. The value of net cross-border M&A sales jumped to $8.2 billion (from less than $1 billion in 2021). A large deal was the acquisition by Univision Communications (United States) of the media, content and production assets of Grupo Televisa for $4.8 billion. The value of announced greenfield investment more than doubled to $41 billion. Tesla (United States) is planning to invest $5 billion in a plant in Mexico.

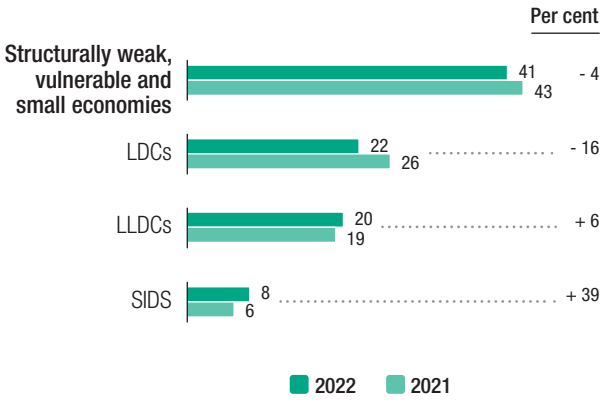
In the Caribbean, FDI increased by 53 per cent to $3.9 billion, mainly driven by growth in inflows to the Dominican Republic, to $4 billion.

Figure I.9. FDI inflows in Latin America and the Caribbean, by subregion, 2021–2022
(Billions of dollars and per cent)



Source: UNCTAD, FDI/MNE database (https://unctad.org/fdistatistics).

Figure I.10. **FDI inflows in structurally weak, vulnerable and small economies, 2021–2022** (Billions of dollars and per cent)



Source: UNCTAD, FDI/MNE database (https://unctad.org/fdistatistics).

Structurally weak, vulnerable and small economies

Flows to a group of 84 structurally weak, vulnerable and small economies declined by 4 per cent to $41 billion (figure I.10). Inflows to the least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing States (SIDS) combined accounted for 3.2 per cent of the world total in 2022, up from 2.9 per cent in 2021.

FDI in LDCs declined by 16 per cent to $22 billion. Flows remained concentrated, with the top five recipients (Ethiopia, Cambodia, Bangladesh, Senegal and Mozambique, in that order) accounting for about 70 per cent of the total. However, the picture is different for new project announcements. In international project finance the top recipients were Cambodia, the Niger, the Lao People's Democratic Republic, the United Republic of Tanzania and the Sudan, in that order. For greenfield projects the top recipients were the United Republic of Tanzania, Bangladesh, Senegal, Cambodia and Rwanda.

FDI in the 33 African LDCs accounted for 58 per cent of all LDC inflows. Inflows exceeded $1 billion in seven of them. Ethiopia was the largest recipient of FDI in the group, with $3.7 billion – a 14 per cent decrease from 2021.

In the nine Asian LDCs, FDI inflows rose by 2 per cent to $9.2 billion. In Cambodia, FDI increased by 3 per cent to $3.6 billion. While greenfield project values remained small at only $661 million, there were 12 international project finance deals with a total value of $1.2 billion. An example is the construction of a hydropower plant located between Cambodia and Malaysia for $241 million, sponsored by PESTECH International (Malaysia) and Hydrogène de France (France).

Although the number and value of greenfield project announcements in LDCs increased in 2022, they remained depressed: they were below their 10-year average, at about half in number and a quarter in value. International project finance deals targeting LDCs decreased by 9 per cent in number and by 68 per cent in value to $20 billion.

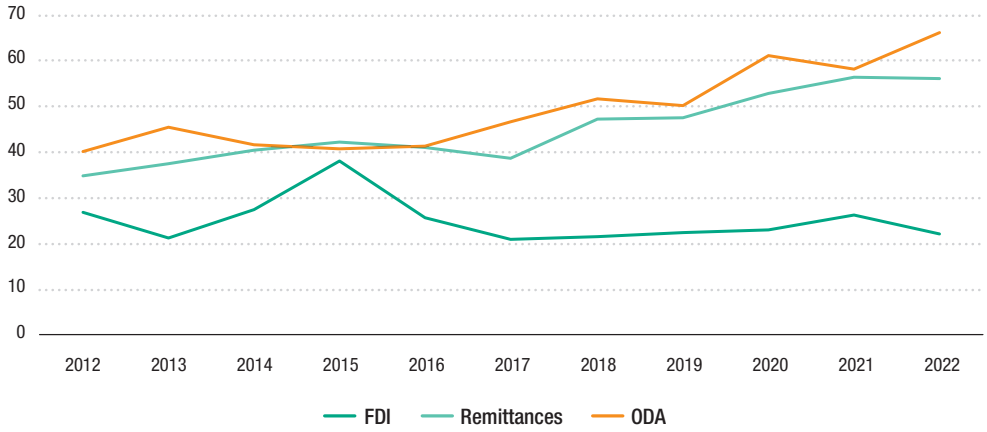
Investment activity in LDCs across sectors relevant for the attainment of the Sustainable Development Goals remained weak in 2022. The number of investment projects (both greenfield and international project finance deals) fell in important SDG sectors, including infrastructure, renewables and education. They rose in agrifood systems, WASH (water, sanitation and hygiene) and health.

The growth of FDI in LDCs has lagged that of other external sources of finance for most of the last decade. Official development assistance (ODA) and remittances were significantly higher. FDI flows remain, nonetheless, an important source of external finance for LDCs, crucial for their sustainable development and their graduation prospects (figure I.11).

FDI in the 32 *LLDCs* as a group rose by 6 per cent to $20 billion. Flows to LLDCs in Africa, Asia and Europe increased, while those to LLDCs in Latin America and the Caribbean fell. FDI remained concentrated in a few economies, with the top five recipients (Kazakhstan, Ethiopia, Uzbekistan, Mongolia and Uganda, in that order) accounting for 83 per cent of total FDI to the group.

In Africa, flows to LLDCs increased by 9 per cent to $8.2 billion, or 42 per cent of total FDI in the group. Although Ethiopia registered a decline, it remained the second largest LLDC

Figure I.11. LDCs: FDI inflows, ODA and remittances, 2012–2022 (Billions of dollars)



Source: UNCTAD, based on FDI/MNE database (https://unctad.org/fdistatistics) (for FDI), World Bank (for remittances) and OECD (for ODA).

recipient. FDI in Uganda increased by 39 per cent to $1.5 billion due to large projects in extractive industries. Flows to the Niger declined slightly, but international project finance activity increased. The two largest projects were the construction of a 16 MW diesel processing facility, 15 MW battery storage facility and 16 MW solar power plant, sponsored by Enernet Global (United States), and a hydrogen project sponsored by Emerging Energy (Germany) and the Government of the Niger.

The two Latin American LLDCs saw contrasting trends. Flows to Bolivia (Plurinational State of) turned negative again (-$26 million), mainly due to the extraordinary payment of dividends in the hydrocarbon sector. However, other economic sectors showed increased investment. In Paraguay, flows more than doubled to $474 million. Two international project finance deals were announced in the country: a hydrogen project sponsored by Atome Energy (United Kingdom) and the construction of the Bioceanica bridge from Paraguay to Brazil, sponsored by Itaipu Binacional (Brazil) for $82 million.

Among the LLDCs in developing Asia, Kazakhstan saw FDI increase by 83 per cent to $6.1 billion. While equity turned negative, reinvested earnings reached $10 billion – the highest value ever recorded – boosted by high profits in the extractive industries. Flows to Uzbekistan reached a record $2.5 billion, mostly due to the doubling of reinvested earnings to $1.2 billion. Payment of dividends in the extractive industries caused FDI flows to Azerbaijan to turn negative, to -$4.5 billion.

Looking at the LLDCs as a group, the number of greenfield project announcements increased by 15 per cent (the value tripled to $31 billion). The increase was particularly pronounced in extractive industries. The number of international project finance deals was 19 per cent lower than in 2021. The majority of projects targeted renewables, but projects were also announced in other sectors, including power, mining and industrial real estate.

FDI inflows to the *SIDS* rose by 39 per cent to $7.8 billion in 2022 – about 0.6 per cent of global FDI. Reflecting differences in levels of development and factor endowments, a handful of SIDS continued to attract the bulk of inflows. The top five recipients (the Dominican Republic, the Bahamas, Maldives, Jamaica and Timor-Leste, in that order) accounted for 85 per cent of FDI flows to the group.

Inflows to the 11 Caribbean SIDS rose by 27 per cent to $5.9 billion, due to some recovery in international tourism investment. FDI flows in the Dominican Republic rose by 25 per cent to $4 billion. The number of greenfield projects more than doubled to 30, and the value more

than quadrupled to $3.5 billion. In the Bahamas, inflows rose by 6 per cent to $1.3 billion, mainly due to intracompany loans. FDI to Jamaica increased by 12 per cent to $360 million. Flows to Trinidad and Tobago were negative, at -$0.5 billion, but there were several greenfield project announcements. The largest was the development of a solar project with a capacity of 148 MW of DC power and output of 112 MW of AC power by Shell Renewables Caribbean (Netherlands) and Lightsource (United Kingdom) for $180 million.

FDI in the two Asian SIDS turned positive to $984 million. In Maldives, FDI inflows rose by 12 per cent, to $722 million. In Timor-Leste, flows reached $262 million after registering negative values for the last three years.

Among the five African SIDS, Mauritius saw its FDI flows remain flat at $252 million. In Seychelles, FDI flows fell by 6 per cent (to $212 million). Masdar, a renewable energy company and a subsidiary of Mubadala Development (United Arab Emirates), entered a joint venture with Seychelles-owned Public Utilities Corporation to open a 5 MW solar photovoltaic plant for $181 million.

Among the 11 SIDS in Oceania, Fiji, the largest host country, saw FDI down by 74 per cent to $104 million. However, there were several greenfield project announcements in 2022 with a total value of $41 million, a significant increase from 2021.

b. FDI outflows

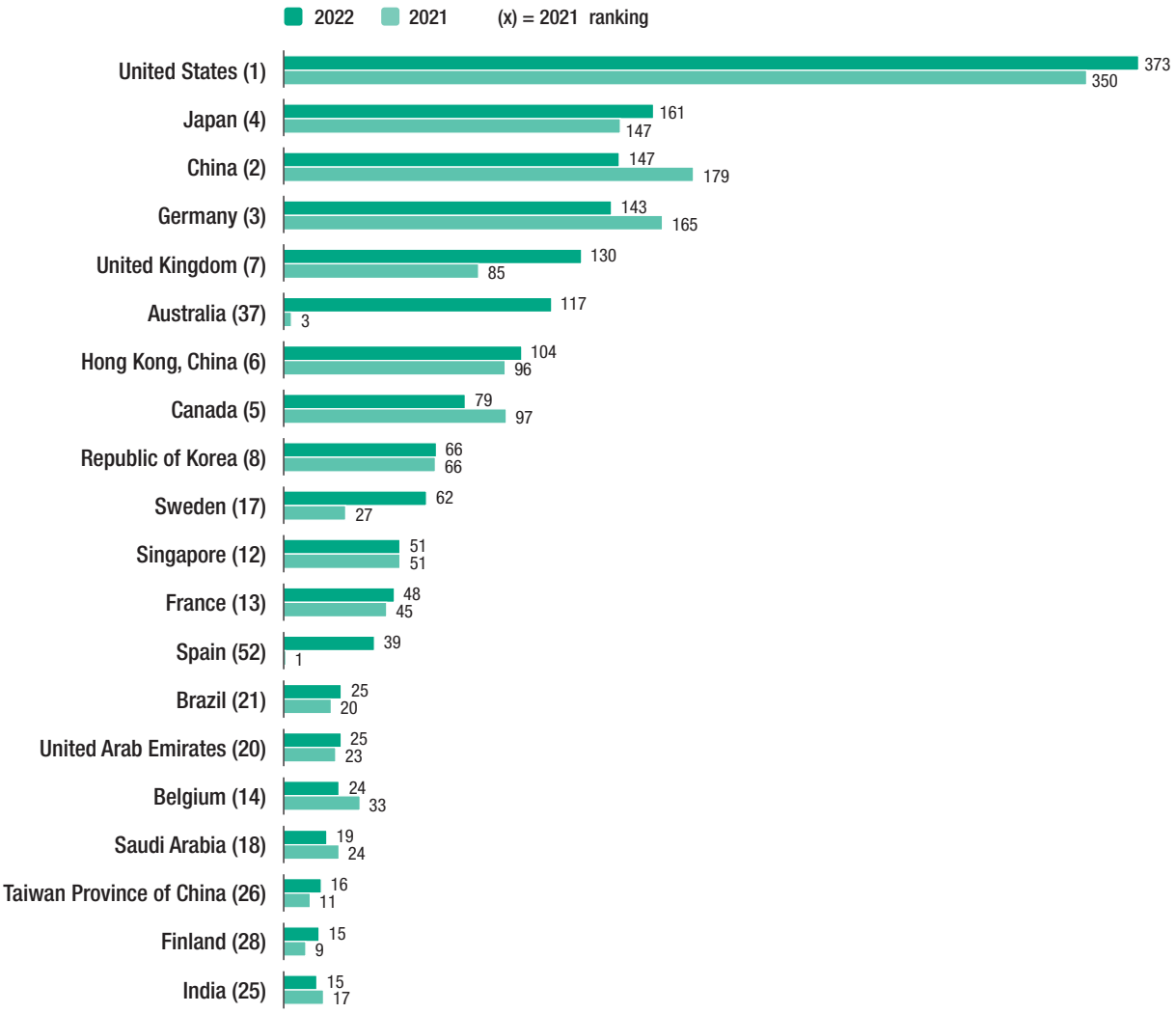
In 2022, MNEs from developed economies decreased their investment abroad by 17 per cent to $1 trillion. The trend was distorted by the withdrawal of capital by a telecommunication company in Luxembourg (excluding that, FDI outflows would have increased by 9 per cent). The share of developed economies in global outward FDI remained stable, at two thirds.

Aggregate outward investment by European MNEs fell by 61 per cent to $224 billion, down from $573 billion in 2021. Investment by German MNEs declined by 13 per cent, but at $143 billion they remained the largest European investors (figure I.12). Investment by Swedish MNEs tripled to $62 billion, reflecting a large increase in cross-border M&As. Deals included EQT's purchase of Baring Private Equity Asia (Hong Kong, China) for $7.6 billion and the merger of Telefonaktiebolaget LM Ericsson with Vonage Holdings (United States) for $5.7 billion. MNEs from Spain and France increased investment to $39 billion and $48 billion, respectively. MNEs from the United Kingdom increased FDI abroad to $130 billion, from $85 billion in 2021, mainly in the form of reinvested earnings and a rise in intracompany loans. Outward FDI flows from Switzerland remained negative (-$23 billion).

MNEs from the United States increased their investment abroad by 7 per cent, to $373 billion. Cross-border M&A purchases from the United States rose by 21 per cent to a record $273 billion. The biggest increases were in information and communication and in administrative and support services. Among more than 40 global deals worth more than $5 billion, 15 originated in the United States.

Japanese and Australian MNEs increased overseas investment as well. Outflows from Japan rose by 10 per cent to $161 billion – making it the second largest investor country. Announced greenfield projects rose by 47 per cent to $44 billion, while cross-border M&As declined from $60 billion to $6.2 billion. Outflows from Australia rose from $3.4 billion to $117 billion, mainly due to the acquisition of BHP (United Kingdom) from BHP (Australia). MNEs from the Republic of Korea continued their investment abroad at a similar rate as in 2021, at $66 billion, with the value of announced greenfield projects increasing for the second year in a row, from $34 billion to $76 billion.

Figure I.12. FDI outflows, top 20 home economies, 2021 and 2022 (Billions of dollars)



Source: UNCTAD, FDI/MNE database (https://unctad.org/fdistatistics).

The value of investment activity abroad by MNEs from developing economies decreased by 5 per cent, to $459 billion. Flows from developing Asia fell by 11 per cent, but the region remained an important source of investment, accounting for a quarter of global FDI. FDI from China fell by 18 per cent to $147 billion. Nevertheless, it was the third largest investor home-country in the world (see figure I.12). The value of cross-border M&A purchases rose to $10 billion from $1 billion, and announced greenfield FDI reached $41 billion, a 24 per cent increase. The largest greenfield announcements by Chinese MNEs were in the battery supply chain: Chinese Contemporary Amperex Technology is to set up its second European plant in Hungary, worth about $7.5 billion, while Gotion High Tech is set to build new electric-vehicle battery plants in the United States worth a combined $2.4 billion.

Outward investment by Indian MNEs fell by 16 per cent to $15 billion. However, greenfield project announcements by Indian MNEs more than tripled to $42 billion. Two of the largest greenfield projects were in renewables, with Acme Group announcing a $13 billion plant in Egypt to produce 2.2 billion tons of green hydrogen annually and ReNew Power announcing that it will set up a $8 billion green hydrogen plant in the Suez Canal Economic Zone.

Overseas investment by MNEs in ASEAN rose by 6 per cent, mainly due to the increase of FDI from Malaysia (from $5 billion to $13 billion) and Indonesia (from $4 billion to $7 billion).

Both cross-border M&A purchases and greenfield projects announced by Malaysian MNEs rose. Petronas Chemicals Group (Malaysia) acquired Perstorp Holding (Sweden) for $2.6 billion, and Petronas Hydrogen committed to invest $3.8 billion in India to set up a renewable energy plant. Singaporean MNEs remained the largest investor in the region, with outward FDI of $51 billion – the same value as in 2021.

Outward FDI from Latin America and the Caribbean continued its upward trend to $59 billion. FDI outflows from Mexico turned positive to $13 billion from -$2 billion in 2021. Investment by Brazilian MNEs rose by 23 per cent to $25 billion. Flows from Chile also grew, by 4 per cent to $12 billion.

3. Trends by type and sector

In 2022, international project finance deals and cross-border M&As were affected by the war in Ukraine, deteriorating financing conditions and uncertainty in financial markets. The value of project finance deals fell by 25 per cent and cross-border M&A sales by 4 per cent. The number of net cross-border M&As also fell by 9 per cent, while the number of project finance deals rose by 8 per cent (figure I.13). In contrast, announced greenfield projects rose by 15 per cent due to continued momentum in the first part of the year. The value of projects increased by 64 per cent because of several megaprojects.

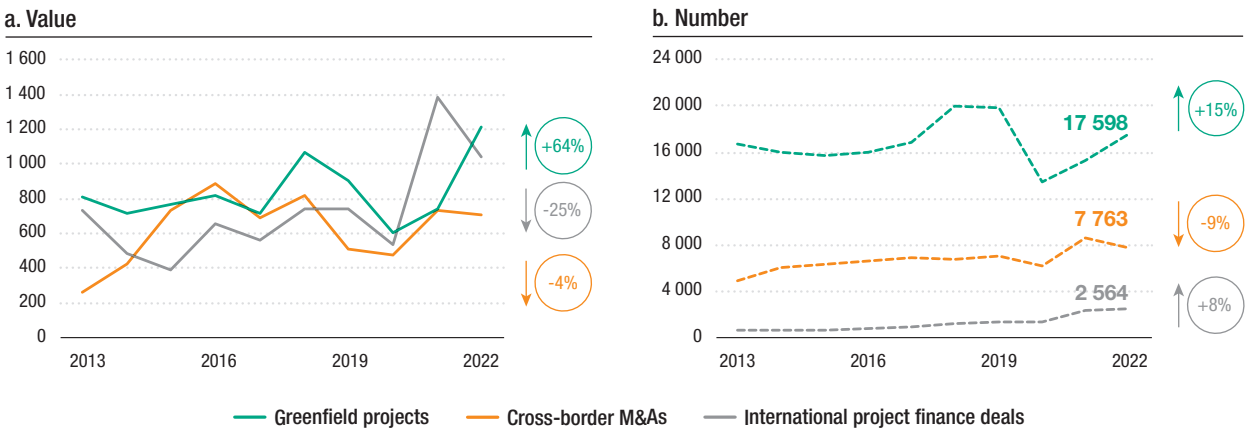
a. Project types

(i) Greenfield investment trends

In 2022, the value of announced greenfield investment projects rose by 64 per cent to $1.2 trillion – the second highest level recorded since 2008. It more than doubled in developing economies to $573 billion (with project numbers up 37 per cent) and rose by 37 per cent in developed countries (with project numbers up 4 per cent).

The sectoral distribution of greenfield megaprojects announced in 2022 illustrates key trends in cross-border investment. Of the 10 largest announced projects, 3 were in semiconductors, in response to global shortages and supply chain restructuring trends, and 5 were in renewables.

Figure I.13. **Value and number of announced greenfield projects, international project finance deals and cross-border M&As, 2013–2022** (Billions of dollars, number and per cent)



Source: UNCTAD, based on information from the Financial Times, fDi Markets (fDimarkets.com) and Refinitiv.

Table I.5. Announced greenfield projects, by sector and top industries, 2021–2022
(Billions of dollars, number and per cent)

Sector/industry	Value (Billions of dollars) 2021	2022	Growth rate, 2021–2022 (%)	Number 2021	2022	Growth rate, 2021–2022 (%)
Total	**739**	**1 213**	**64**	**15 318**	**17 598**	**15**
Primary	13	97	618	103	118	15
Manufacturing	320	437	37	5 934	5 970	1
Services	406	679	68	9 281	11 510	24
Top 10 industries in value terms						
Energy and gas supply	141	362	157	518	556	7
Electronics and electrical equipment	138	181	31	1 100	1 167	6
Information and communication	106	120	14	3 887	5 024	29
Extractive industries	12	95	718	59	89	51
Construction	49	62	27	332	211	-36
Automotive industry	39	59	53	718	694	-3
Transportation and storage	36	56	58	765	978	28
Basic metal and metal products	12	43	249	228	225	-1
Chemicals	23	26	12	456	474	4
Finance and insurance	15	22	46	727	1 032	42

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fDimarkets.com).

Also emblematic for global investment trends and the effects of the energy crisis was the eightfold increase in the value of greenfield projects in extractive industries. The number of projects increased by 15 per cent (table I.5). The largest included a $10 billion investment by ExxonMobil (United States) in a fourth oil production project off the coast of Guyana, a $7.5 billion extension of the oil extraction activity of Emirates National Oil Company (United Arab Emirates) in Turkmenistan and plans by Saudi Aramco (Saudi Arabia) to invest in a $7 billion project to produce petrochemicals from crude oil at its refining complex in the port city of Ulsan in the Republic of Korea.

The value of projects in manufacturing rose by 37 per cent to $437 billion – a quarter above the average of the last 10 years. The number of projects, however, remained stagnant at 5,970.

The increase in the number of greenfield project announcements was mostly driven by services, which now account for two thirds of all projects – the highest share on record. The value of greenfield projects in services also reached record highs.

(ii) International project finance trends

In 2022, the number of international project finance deals rose by 8 per cent, but their value was 25 per cent lower than in 2021 (table I.6). International project finance in renewable energy, which has accounted for much of the growth in project finance in recent years, slowed down. While the number of deals remained stable, values fell by almost 30 per cent to $368 billion. Large projects included the $15 billion construction of floating marine wind farms in Italy by Falck Renewables (Italy) and Bluefloat Energy (Spain), and the construction of a 4,000 MW offshore wind power plant in Binh Thuan, Viet Nam by AES (United States) for $13 billion.

Table I.6. Announced international project finance deals, top industries, 2021–2022
(Billions of dollars, number and per cent)

Industry	Value (Billions of dollars) 2021	2022	Growth rate (%)	Number 2021	2022	Growth rate (%)
Total	**1 384**	**1 044**	**-25**	**2 383**	**2 564**	**8**
Top 10 industries by number						
Renewable energy	521	368	-29	1 274	1 293	1
Industrial real estate	184	188	2	181	270	49
Residential/commercial real estate	42	48	14	190	223	17
Power	222	120	-46	152	178	17
Telecommunication	84	78	-8	95	118	24
Oil and gas	152	67	-56	126	105	-17
Transport infrastructure	53	44	-17	98	93	-5
Mining	42	42	-1	126	78	-38
Petrochemicals	55	54	-2	62	73	18
Waste and recycling	3	8	124	16	38	138

Source: UNCTAD, based on information from Refinitiv SA.

The number of international project finance deals in industrial real estate has grown for the last two years. In 2022, deal numbers rose further by 49 per cent, to 270 projects, with a value of $188 billion. The number of deals targeting residential and commercial real estate also increased, by 17 per cent, to 223. International project finance in the oil and gas industry in 2022 fell by 17 per cent in number and 56 per cent in value, showing that much of the activity in the sector has shifted to corporate-financed greenfield investment.

(iii) Cross-border M&A trends

Cross-border M&A sales reached $707 billion in 2022 – down 4 per cent (table I.7). In manufacturing, cross-border M&As fell by 42 per cent to $142 billion, while deals targeting services decreased slightly, by 5 per cent, to $442 billion. In the primary sector, M&A values more than quadrupled to $122 billion, breaking the decade-long downward trend.

After the rise in value in 2021, M&A sales in pharmaceuticals fell by 51 per cent to $36 billion, while the number of deals dropped by 22 per cent to 169. The largest deal of the year was recorded in the pharmaceutical industry: the $11 billion acquisition of Vifor Pharma (Switzerland) by CSL Behring (Australia) and the purchase of the biosimilars business of Viatris (United States) by Biocon Biologics (India) for $3.3 billion.

Table I.7. Net cross-border M&As, by sector and top industries, 2021–2022 (Continued)
(Billions of dollars, number and per cent)

Sector/industry	Value (Billions of dollars) 2021	2022	Growth rate (%)	Number 2021	2022	Growth rate (%)
Total	**737**	**707**	**-4**	**8 571**	**7 763**	**-9**
Primary	27	122	357	623	389	-38
Manufacturing	246	142	-42	1 608	1 406	-13
Services	465	442	-5	6 340	5 968	-6

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Table I.7. Net cross-border M&As, by sector and top industries, 2021–2022 (Concluded)
(Billions of dollars, number and per cent)

Sector/industry	Value (Billions of dollars) 2021	2022	Growth rate (%)	Number 2021	2022	Growth rate (%)
Top 10 industries in value terms						
Information and communication	135	166	23	2 045	1 799	-12
Extractive industries	25	121	387	420	216	-49
Finance and insurance	75	88	17	714	602	-16
Transportation and storage	53	41	-23	313	297	-5
Pharmaceuticals	73	36	-51	218	169	-22
Electronics and electrical equipment	39	29	-27	299	243	-19
Trade	64	27	-58	643	592	-8
Professional services	38	23	-39	666	730	10
Food, beverages and tobacco	10	21	116	197	157	-20
Real estate	34	20	-42	409	336	-18

Source: UNCTAD, based on information from Refinitiv SA.

b. Selected industries

(i) Infrastructure

In 2022 the combined number of greenfield project announcements and international project finance deals in infrastructure industries rose by 6 per cent, but the value fell by 4 per cent (table I.8). The decline in value was largely driven by lower investment in power after the boom in 2021. Also, deteriorating financing conditions in 2022 caused a slowdown in high-value international project finance deals, normally the preferred financing option for large projects in infrastructure. The effects of large-scale public support packages for infrastructure investment were still noticeable in high values of announced greenfield projects.

The number of greenfield projects in renewables rose by 6 per cent to 531. The value of projects more than doubled; COP27 motivated several investors to announce large plans. Other large projects announced in renewables included plans by POSCO (Republic of Korea), a steel producer, to invest $28 billion in green hydrogen manufacturing in Australia and plans by Marubeni (Japan) to develop the 3.6 gigawatt (GW) Ossian offshore wind farm off the east coast of Scotland (United Kingdom) for $12 billion.

The number of international project finance deals in transport infrastructure fell by 5 per cent, and values decreased by 17 per cent to $44 billion. The number of projects rose in Europe and developing Asia and fell in North America and in Latin America and the Caribbean. International project finance deals in telecommunication infrastructure rose by 24 per cent to 118 – a record level and several times the average of the last 10 years. Most of the projects were in information technology, personal communications networks and transmission lines. The bulk of projects were in developed economies, mainly in Europe (57 projects). Among the largest projects were the acquisition by GD Towers (Germany) of mobile telecommunication towers located in Germany and Austria for $11 billion, sponsored by DigitalBridge Group (Canada), and a fibre-optic expansion project in Germany for $6.9 billion, sponsored by Vodafone Group (United Kingdom) and Altice Group (France).

Table I.8. Infrastructure: announced investment projects, 2020–2022 (Millions of dollars, number and per cent)

Sector/industry	Greenfield projects				International project finance deals			
	2020	2021	2022	Growth rate, 2021–2022 (%)	2020	2021	2022	Growth rate, 2021–2022 (%)
Infrastructure								
Value	**206 037**	**244 039**	**470 120**	**93**	**342 196**	**880 962**	**609 778**	**-31**
Number of projects	**1 855**	**2 149**	**2 304**	**7**	**1 011**	**1 619**	**1 682**	**4**
Power[a]								
Value	11 828	5 271	8 552	62	30 024	222 177	119 596	-46
Number of projects	51	49	49	0	60	152	178	17
Renewable energy								
Value	110 404	135 971	353 602	160	230 374	521 414	368 306	-29
Number of projects	527	501	531	6	847	1 274	1 293	1
Transport[b]								
Value	26 416	34 822	52 215	50	41 990	53 433	44 245	-17
Number of projects	638	759	969	28	55	98	93	-5
Telecommunication[c]								
Value	57 389	67 976	55 750	- 18	39 808	83 938	77 631	-8
Number of projects	639	840	755	- 10	49	95	118	24

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fDimarkets.com) and Refinitiv.
[a] Excluding renewable energy.
[b] Transport services for greenfield projects and transport infrastructure for project finance.
[c] Including information services activities.

(ii) GVC-intensive industries

Investment projects in global value chain (GVC)-intensive industries, where investment trends are affected by exposure to supply-chain risks and restructuring pressures, rose by 5 per cent in number and by 34 per cent in value (table I.9). The number of announced greenfield projects in electronics and electrical equipment rose by 6 per cent. Global shortages for semiconductors prompted several investment megaprojects. Three of the five largest projects announced in 2022 were in semiconductors: Taiwan Semiconductor Manufacturing (Taiwan Province of China) intends to spend more than $28 billion in developing advanced chips and building plant capacity in the United States; Foxconn (Taiwan Province of China) and Vedanta Resources (India) are planning to build one of the first chip factories in India for $19 billion; and Intel (United States) has committed to investing a further $13 billion in its operations in Ireland.

The value of greenfield projects in the automotive sector rose by 53 per cent, mainly due to projects in electric vehicles. For example, Hyundai (Republic of Korea) plans to spend $5.5 billion to build its first dedicated electric vehicle and battery manufacturing facilities in the United States. Volkswagen (Germany) plans to spend $3.3 billion in the United Kingdom for Bentley, its subsidiary, to build its first battery-powered electric vehicle; it will spend a further $1.9 billion in Spain for SEAT to do the same.

Table I.9. GVC-intensive industries: announced greenfield projects, 2020–2022
(Millions of dollars, number and per cent)

Sector/industry	2020	2021	2022	Growth rate, 2021–2022 (%)
GVC-intensive industries				
Value	**101 373**	**197 388**	**264 813**	**34**
Number of projects	**2 796**	**3 232**	**3 402**	**5**
Electronics and electrical equipment				
Value	47 714	137 928	180 928	31
Number of projects	888	1 100	1 167	6
Semiconductors				
Value	*16 381*	*84 575*	*91 608*	*8*
Number of projects	*55*	*111*	*140*	*26*
Automotive industry				
Value	35 096	38 567	58 949	53
Number of projects	578	718	694	-3
Machinery and equipment				
Value	7 238	8 061	12 224	52
Number of projects	670	650	727	12
Textiles, clothing and leather				
Value	11 326	12 833	12 712	-1
Number of projects	660	764	814	7

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com).

(iii) Digital industries

Typically, digital MNEs engage less in greenfield investment, with most of their investment abroad relating to acquisitions of competitors or valuable start-ups. E-commerce companies are the exception; they need to set up networks of warehouses and distribution facilities. The pandemic-induced boom in e-commerce investment activities continued in 2022, although at a slower pace. The number of projects declined by 20 per cent but remained high compared with previous years (table I.10). Much of the decline was accounted for by e-commerce giant Amazon (United States), which announced half as many projects as in 2021; however, the total value at $18 billion was only slightly lower than in 2021. The largest deals included the launching of new services infrastructure in Europe, based in Switzerland, for $5.9 billion, and cloud infrastructure in Thailand for $5 billion.

Internet platforms were also active in greenfield investment in 2022, with a 6 per cent rise in project numbers causing values to double to $6.3 billion. Most of this was accounted for by the largest platforms, Alphabet (United States) and Meta (United States). While Alphabet has been active for some years, with an annual average of $3 billion spent over the last three years, Meta's overseas greenfield investment jumped from $103 million in 2021 to $2.7 billion in 2022. Examples include a $1.5 billion investment in a research and development (R&D) project in Canada and a $1 billion data centre in Spain.

Table I.10. Digital industries: announced greenfield projects, 2020–2022
(Millions of dollars and per cent)

	2020	2021	2022	Growth rate, 2021–2022 (%)
Digital industries				
Value	**21 211**	**31 172**	**32 057**	**3**
Number of projects	**306**	**376**	**338**	**- 10**
Digital content				
Value	506	1 804	506	- 72
Number of projects	30	43	37	- 14
Digital solutions				
Value	1 206	2 962	2 929	- 1
Number of projects	38	48	59	23
E-commerce				
Value	15 214	23 837	22 368	- 6
Number of projects	199	231	185	- 20
Internet platforms				
Value	4 285	2 569	6 254	143
Number of projects	39	54	57	6

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com).
Note: For the classification of digital industries, see *WIR17*.

B. SDG INVESTMENT

1. Investment trends

a. Overview of SDG investment sectors

The number of international investment projects announced in developing countries in sectors relevant to the Sustainable Development Goals (SDGs) increased substantially in 2022. However, the growth is unbalanced, with some SDG sectors showing only slow progress; it is highly uneven, with negative trends in LDCs and stagnation in many other developing countries; and growth prospects remain fragile because of the expected downward pressures on overall FDI in 2023.

Moreover, international investment activity in SDG sectors in developing countries is still catching up after slow or negative growth in the early period, after the adoption of the SDGs in 2015. The increase in investment since 2015, as measured by the number of greenfield projects and international project finance deals, is limited for most sectors; one sector (agrifood systems) even shows lower levels of investment activity in 2022 than in 2015 (table I.11). At the midpoint of the 2030 Agenda for Sustainable Development, the lack of progress in amplifying international investment activity in SDG sectors is a major concern.

In 2022, the combined value of SDG-relevant greenfield investment and international project finance in developing countries reached $471 billion, up from $290 billion in 2015. The number of international investment projects in infrastructure (which comprises transport infrastructure, power generation and distribution) and telecommunication saw the highest growth (26 per cent), followed by the water, sanitation and hygiene (WASH) sector (20 per cent). International investment in agrifood sectors, including fertilizers, remained stagnant at low levels.

Table I.11. International private investment in the SDGs: change in number of projects, 2021–2022 and 2015–2022 (Per cent)

		2021–2022	2015–2022
Infrastructure Transport infrastructure, power generation and distribution (except renewables), telecommunication		+26%	+16%
Renewable energy Installations for renewable energy generation, all sources		+8%	+21%
WASH Provision of water and sanitation to industry and households		+20%	+13%
Agrifood systems Agricultural production and processes; fertilizers, pesticides and other chemicals; R&D; technology		+6%	-19%
Health and education Hospital facilities, school buildings and other infrastructure for service delivery		+8%	+11%

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fDimarkets.com) and Refinitiv.
Note: Includes announced greenfield investment and international project finance deals.

Recent investment trends among LDCs stand in stark contrast to those in other developing countries. In LDCs, cross-border investment in SDG sectors has not yet recovered from the shockwaves of the pandemic. Both the number and the value of projects have been in decline since 2020. In 2022, LDCs received the smallest ever share of SDG-relevant investment projects within the broader developing countries group, dropping from 6.4 per cent in 2021 to 5.1 in 2022 (tables I.12 and I.13). The LDC share saw an even sharper decline in value terms, dropping from 12 per cent in 2021 to 5 per cent in 2022. Project numbers in the last two years were significantly lower in most sectors, except for renewables and WASH, than in 2015.

Cross-border investment in the power sector remained relatively stable in 2022. Greenfield project announcements decreased, while the number of international project finance deals increased marginally. Investment values declined sharply, but this is explained by some exceptionally large international project finance deals registered in 2021 (table I.14). Investment in renewable energy continued at high levels, but growth slowed down compared with 2021.

Table I.12. SDG sectors: announced greenfield projects in developing economies, 2020–2022
(Millions of dollars and per cent)

	Developing economies				LDCs			
SDG-relevant sector	2020	2021	2022	Growth rate, 2021–2022 (%)	2020	2021	2022	Growth rate, 2021–2022 (%)
Total								
Value	**99 927**	**113 607**	**242 959**	**114**	**11 067**	**8 428**	**8 358**	**- 1**
Number of projects	**1 155**	**1 296**	**1 540**	**19**	**85**	**69**	**61**	**- 12**
Power[a]								
Value	10 800	4 175	3 939	- 6	3 452	2 000	1 717	- 14
Number of projects	23	20	16	- 20	4	1	2	100
Renewable energy								
Value	38 523	52 739	162 505	208	3 758	3 337	3 970	19
Number of projects	191	146	176	21	21	9	11	22
Transport services								
Value	9 488	12 945	21 591	67	1 077	449	784	74
Number of projects	183	271	431	59	17	22	18	- 18
Telecommunication[b]								
Value	24 614	21 592	23 179	7	2 190	1 764	858	- 51
Number of projects	243	291	321	10	22	20	11	- 45
Water, sanitation and hygiene (WASH)								
Value	566	4 128	1 631	- 60	-	136	150	10
Number of projects	7	19	15	- 21	-	1	1	0
Agrifood systems								
Value	11 287	11 750	19 838	69	479	426	704	65
Number of projects	293	274	280	2	12	7	13	86
Health								
Value	3 776	5 137	9 350	82	77	180	168	- 7
Number of projects	151	190	207	9	5	3	4	33
Education								
Value	874	1 140	926	- 19	33	136	7	- 95
Number of projects	64	85	94	11	4	6	1	- 83

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com).
[a] Excluding renewable energy.
[b] Including information services activities.

Table I.13. SDG sectors: announced international project finance deals in developing economies, 2020–2022 (Millions of dollars and per cent)

SDG-relevant sector	Developing economies				LDCs			
	2020	2021	2022	Growth rate, 2021–2022 (%)	2020	2021	2022	Growth rate, 2021–2022 (%)
Total								
Value	**141 475**	**370 241**	**228 286**	**- 38**	**31 307**	**51 189**	**15 828**	**- 69**
Number of projects	**381**	**603**	**642**	**6**	**50**	**53**	**50**	**- 6**
Power[a]								
Value	23 123	105 667	48 213	- 54	4 092	42 811	1 811	- 96
Number of projects	37	57	60	5	7	7	7	-
Renewable energy								
Value	86 661	205 648	123 338	- 40	12 885	4 508	5 891	31
Number of projects	291	420	438	4	34	32	24	- 25
Transport infrastructure								
Value	23 344	28 624	25 708	- 10	13 977	2 963	4 858	64
Number of projects	24	57	53	- 7	7	6	6	-
Telecommunication[b]								
Value	4 863	18 345	12 263	- 33	-	527	319	- 39
Number of projects	9	32	37	16	-	3	4	33
Water, sanitation and hygiene (WASH)								
Value	1 486	1 159	13 247	1 043	354	138	1 001	623
Number of projects	13	11	21	91	2	2	5	150
Agrifood systems								
Value	1 851	8 137	4 424	- 46	-	-	1 932	..
Number of projects	4	10	20	100	-	-	3	..
Health								
Value	129	2 255	524	- 77	-	-	16	..
Number of projects	2	7	5	- 29	-	-	1	..
Education								
Value	18	406	569	40	-	242	-	..
Number of projects	1	9	8	- 11	-	3	-	..

Source: UNCTAD, based on information from Refinitiv SA.
[a] Excluding renewable energy.
[b] Including information services activities.

In transport infrastructure, international project finance declined by 7 per cent in project numbers and 10 per cent in value. Major projects included the South Western Railway Kadur–Chikkamagalur–Belur project in India, and the Sao Paulo Electric Bus Portfolio project in Brazil.

The telecommunication sector showed an overall increase in the number of projects in 2022. In this sector, LDCs still account for a minor share of investment, just 15 projects out of 358 in developing countries. Only 10 LDCs (Angola, Ethiopia, Myanmar, the Niger, Rwanda, Senegal, Solomon Islands, Somalia, the United Republic of Tanzania and Zambia) registered international investment projects in the sector in the form of wired or wireless telecommunication infrastructure or data processing and hosting services. With only a minority of the population in LDCs having access to the Internet, the contribution of international investment to SDG 9 (access to information and communication technology, and universal and affordable Internet coverage) remains limited.

In the WASH sector, which embraces SDG 6 (universal access to safe drinking water, sanitation and hygiene), public sources of finance account for most investment. After a

Table I.14. SDG sectors: top three projects in developing countries announced in 2022 (Millions of dollars)

SDG sector	Country	Project name	Cost estimate ($ million)
Power	South Africa	South Africa Green Hydrogen Project	10 000
	Egypt	ReNew Suez Canal Economic Zone Green Hydrogen Plant Project	8 000
	Thailand	Thailand Green Hydrogen and Ammonia Plant Project	7 000
Renewable energy	Viet Nam	AES Binh Thuan Offshore Wind Farm Project	13 000
	Brazil	Ceara Costa Nordeste Offshore Wind Farm Project	9 462
	China	CSI Solar Haidong New Energy Whole Industry Chain Project	8 874
Transport infrastructure	Sudan	Abu Amama Port Project	4 000
	Ghana	Ghana Western Railway Line Project	3 200
	Cambodia	Kampot Logistics & Port Changhon Village Multipurpose Port & Logistic Center Project	1 500
Telecommunication	Malaysia	YTL Green Data Center Park Project	3 497
	Singapore	East to Med Data Corridor Project	850
	Brazil	Infovia Digital Fibre Optic PPP Project	438
Water, sanitation and hygiene (WASH)	Mexico	IDE Technologies Desalination Facility and Pipeline Project	5 000
	Indonesia	Moya Indonesia Jakarta Water Supply and Treatment Project	1 747
	Egypt	400 MW Egypt Solar-Powered Desalination Plant Project	1 500
Agrifood systems	Sudan	Sudan Agricultural Project	1 600
	Malaysia	FGV Chuping Agro Valley Integrated Dairy Farming Project	1 074
	Morocco	Morocco Dakhla Agriculture Project	213
Health	China	Chimigen Biomedical Chengdu Global Headquarters and Infection Tumor Disease Vaccine R&D Center Project	168
	India	SMS Hyderabad Particle Characterization Laboratory Project	160
	Cambodia	National Pediatric Hosptial, New Treatment Building Project	16
Education	Nigeria	Huawei ICT Academy and Talent Cultivation Project	77
	Azerbaijan	Kurmangazy Creativity Development Centre Project	88
	Côte d'Ivoire	Ivorian Vocational Training School Project	81

Source: UNCTAD, based on information from Refinitiv SA.

spike in 2021, greenfield investment declined in 2022 but remained above the 2020 values. International project finance deals doubled in number and value. A significant share was in desalination projects, which address water scarcity and are important in the context of climate change adaptation.

Health and education are relatively marginal sectors for FDI. In 2022, China announced two of the largest projects in the health sector, the Chimigen Biomedical global headquarters in Chengdu and the Sartorius Chengdu Laboratory and Service Center project. Other project examples include the construction of a new treatment building at the National Pediatric Hospital in Cambodia.

b. Investment in agrifood systems

Food price inflation and the impact of the war in Ukraine on commodity prices have exacerbated food insecurity in developing economies, especially in some of the poorest and most vulnerable countries. Significant investment in transforming agrifood systems is needed also for climate change adaptation. However, international investment in agriculture and the agriculture value chain (including, among others, basic agricultural production; food processing; the production of seeds, fertilizers and pesticides; and related technology and R&D activities) has been stagnant since the adoption of the SDGs.

In 2022, announced greenfield investment projects increased by almost 70 per cent in value, but only marginally in numbers. The top destination for greenfield investment was Mexico, with 27 projects, followed by Türkiye and the United Arab Emirates, with 24 projects each. International project finance deals doubled in number, but project sizes were much smaller as the total value halved. In LDCs, investment in the agrifood systems sector increased (table I.15). The LDC share in the number of greenfield projects in developing countries almost doubled; however, LDCs attracted only 3 of the 20 – on average much larger – international project finance deals in developing countries.

(i) Basic agricultural production

Developing countries remain key destinations for investment in basic agricultural production, which encompasses crop production, processed crops, live animal production and primary animal products (FAO, 2023). Investment in agricultural production showed an increase in 2022. Most of the announced investment projects were in fruit and vegetable production, followed by animal production and then grains and oilseed production. EW Group (Germany) led greenfield investment in animal production through four projects in poultry breeding in Argentina, Brazil, Peru and Türkiye.

(ii) Food processing

The bulk of cross-border investment activity in agrifood industries is in food processing. In 2022, the value of projects in this category accounted for about 60 per cent of investment in both greenfield projects and international project finance deals. International project finance activity recorded significant growth (tables I.15 and I.16). Mexico, the United Arab Emirates and China were the top three destinations for investments in food processing.

Table I.15. Agrifood systems: announced greenfield projects in developing economies, 2019–2022
(Millions of dollars and per cent)

	Developing economies					LDCs				
	2019	2020	2021	2022	Growth rate, 2021–2022 (%)	2019	2020	2021	2022	Growth rate, 2021–2022 (%)
Total										
Value	**23 406**	**11 287**	**11 750**	**19 837**	**69**	**4 925**	**479**	**426**	**704**	**65**
Number of projects	**448**	**293**	**274**	**280**	**2**	**32**	**12**	**7**	**13**	**86**
Technology										
Value	158	8	98	10	- 90	5	-	-	-	..
Number of projects	13	3	7	5	- 29	1	-	-	-	..
R&D										
Value	155	129	205	99	- 52	-	-	12	-	..
Number of projects	14	13	17	9	- 47	-	-	1	-	..
Food processing										
Value	15 901	9 679	10 685	13 209	24	1 522	250	289	426	47
Number of projects	359	241	227	236	4	25	10	2	12	500
Basic agricultural production										
Value	1 355	1 307	432	526	22	99	229	83	-	..
Number of projects	28	27	11	13	18	3	2	2	-	..
Fetilizers, pesticides and other chemicals										
Value	5 837	164	329	5 994	1 722	3 300	-	42	279	564
Number of projects	34	9	12	17	42	3	-	2	1	- 50

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com).

Table I.16. Agrifood systems: international project finance deals in developing economies, 2019–2022 (Millions of dollars and per cent)

	Developing economies					LDCs				
	2019	2020	2021	2022	Growth rate, 2021–2022 (%)	2019	2020	2021	2022	Growth rate, 2021–2022 (%)
Total										
Value	**741**	**1 851**	**8 137**	**4 424**	**-46**	**173**	**-**	**-**	**1 932**	**..**
Number of projects	**5**	**4**	**10**	**20**	**100**	**1**	**-**	**-**	**3**	**..**
Food processing										
Value	567	1 351	167	2 513	1 405	-	-	-	166	..
Number of projects	4	3	3	17	467	-	-	-	1	..
Basic agricultural production										
Value	-	-	85	1 600	1 782	-	-	-	1 600	..
Number of projects	-	-	2	1	-50	-	-	-	1	..
Fetilizers, pesticides and other chemicals										
Value	173	500	7 885	310	-96	173	-	-	167	..
Number of projects	1	1	5	2	-60	1	-	-	1	..

Source: UNCTAD, based on information from Refinitiv SA.

(iii) Fertilizers, pesticides and other agricultural chemicals

Worldwide, the use of inorganic fertilizers has increased by almost 50 per cent over the last two decades, while the use of pesticides has increased by 30 per cent (FAO, 2022). The growing demand for fertilizers and pesticides in agricultural production has led to increasing interest on the part of international investors in this category. In 2022, Brazil was the top destination for such projects, accounting for a quarter of them, followed by the United Arab Emirates and Chile.

(iv) Technology and R&D

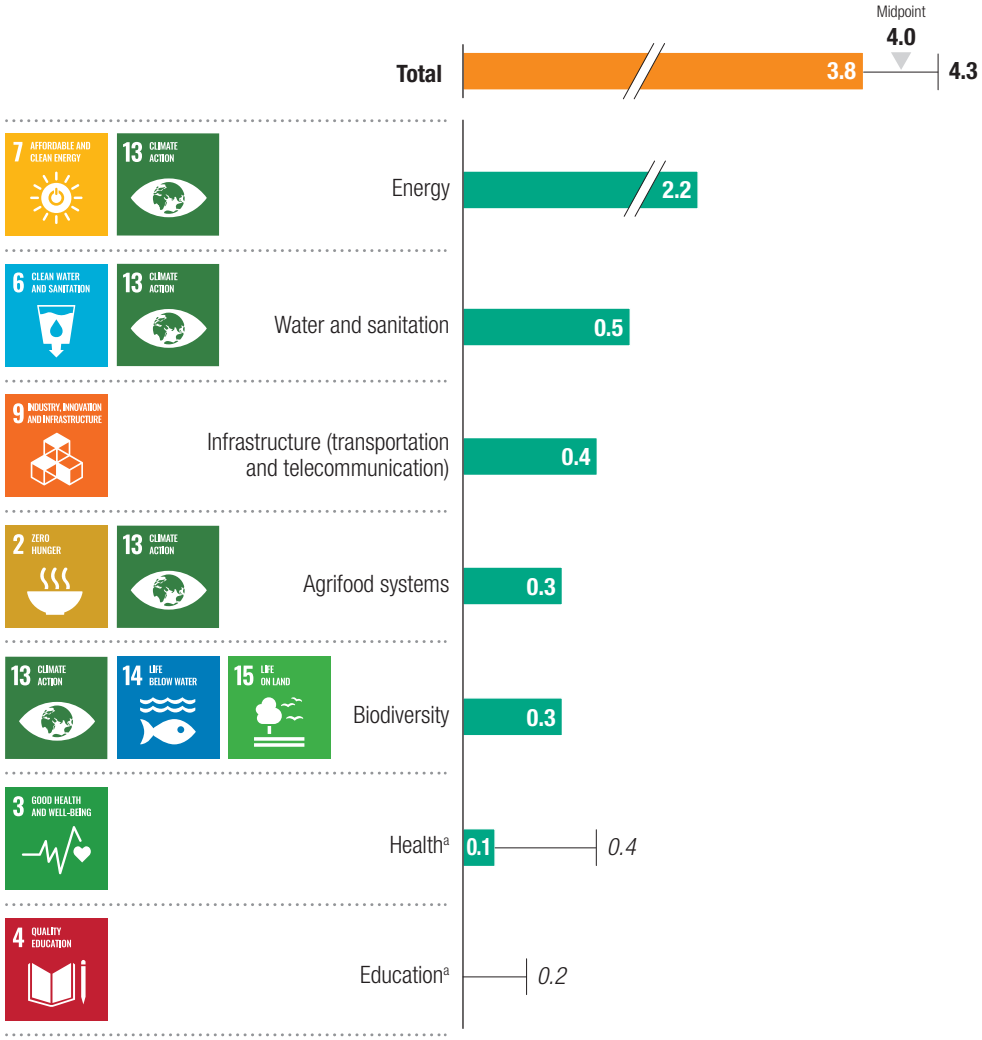
Investment in technology for the agrifood systems sector is an important component of agricultural modernization, as it enables food producers to automate, monitor and analyse processes. Project numbers and values in agricultural technology saw a decline in 2022, with just a few projects in sales, marketing and support activities.

R&D in the agrifood industry is key for productivity and yield growth. In the face of rising challenges from climate change, new crop diseases and increasingly scarce natural resources, R&D in agriculture is even more vital. International investment activity in this area remains marginal across developing countries. Both project numbers and values saw a decline in 2022 compared with 2021. Brazil was the top destination for R&D investment.

2. Investment needs at the midpoint of the 2030 Agenda

WIR14 presented the first comprehensive assessment of investment needs associated with the SDGs. In that report, UNCTAD showed a $2.5 trillion annual investment gap in developing countries. Today, at the midpoint of the 2030 Agenda for Sustainable Development, that figure has risen to $4 trillion per year (figure I.14). The increase in the gap is the result of shortfalls in the years since 2014, combined with the effects of multiple global challenges, including the pandemic and the triple food, fuel and finance crises (box I.1).

Figure I.14. **Key SDG sectors: estimated annual investment gap in developing countries, capital expenditure, 2023–2030** (Trillions of dollars)



Source: UNCTAD (forthcoming).
Note: Investment refers to capital expenditure.
[a] The range for the health and education sectors reflects uncertainty about the size of the capital expenditure component in the total investment gap for the two sectors, for which the operational expenditure component is expected to be substantial.

On an annual basis, the current investment gap is 60 to 70 per cent higher than the (already significant) gap estimated in 2014. If the SDGs are to be achieved by 2030, more than $30 trillion of new investment is necessary over the next eight years.

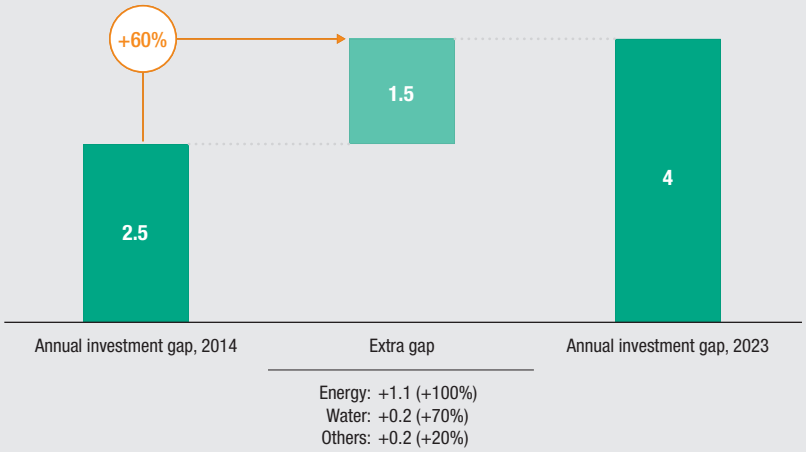
The estimate refers, primarily, to capital expenditure in (mostly) infrastructure projects. It is obtained as the sum of the investment gap derived for each SDG sector individually, which is assessed on the basis of the most recent studies published by specialized agencies, institutions and research entities in their respective areas of competence, using a meta-analytical approach.[2]

The increased investment requirements are huge, strengthening the case already made in *WIR14* for a step-change in public and private investment in the SDGs. Mobilizing sufficient funds for the SDGs was already a daunting task in 2014. Now it is even more challenging and pressing. Although SDG investment – as tracked by the UNCTAD *World Investment Report* and *SDG Investment Trend Monitor* – is growing, and in some critical areas such as renewables it is growing significantly, it is still not moving fast enough.

Box I.1. SDG financing at the midpoint of the 2030 Agenda: a comparison with the *WIR14* SDG investment gap

As of 2023 the annual SDG investment gap has increased by about 60 per cent compared with the $2.5 trillion estimated on the eve of the adoption of the SDGs (box figure I.1.1). The increase has occurred mostly in the two SDG sectors with the largest gaps – energy, and water and sanitation – where the gaps have grown by 100 and 70 per cent, respectively. Together these two sectors account for more than 85 per cent of the $1.5 trillion increase in the SDG investment gap. For the other SDG sectors, the aggregate funding gap has increased more moderately.

Box figure I.1.1. Key SDG sectors: change in annual investment gap in developing countries, 2014 and 2023 (Trillions of dollars)



Source: UNCTAD (forthcoming).

The additional gap weighing on SDG financing is the result of two critical trends that have taken place over the last 10 years.

- *Underinvestment:* Given the investment needed to achieve the SDGs, the pace of growth of SDG investment has been below the 2014 ambitions, with the COVID-19 pandemic playing a major role in slowing down progress in SDG financing (section B.1; UNCTAD, 2021; *WIR*, various editions).
- *Additional needs:* The context for SDG investment has deteriorated, particularly as a result of the exogenous shocks of the pandemic, the war in Ukraine and the triple food, fuel and finance crises. In addition, estimates by specialized agencies of investment needs for climate change mitigation and adaptation have increased (United Nations, Department of Economic and Social Affairs, 2022).

The relative contributions of underinvestment and additional needs in the "extra gap" accumulated since 2014 are difficult to assess on the basis of available data. A simulation exercise by UNCTAD for the two most relevant SDG sectors for financing – energy, and water and sanitation – suggests that both components are relevant, with underinvestment accounting for about two thirds of the increase.

Source: UNCTAD.

While all SDG sectors are crucial for sustainable development, the energy sector carries the most weight in terms of investment needs. At $2.2 trillion, energy needs make up more than half of the investment gap. This gap refers entirely to investment in renewable energy generation, energy efficiency and other transition-related technologies and sources, covering not only SDG 7 (affordable and clean energy) but also SDG 13 (climate action). The latter is also financed by investment in other SDG sectors, including water and sanitation, biodiversity and agrifood systems.

With an estimated investment gap of $0.5 trillion per year, the second most capital-intensive SDG sector is water and sanitation, which directly addresses SDG 6. It includes investment in water sources (for example, new water treatment plants and desalination plants), sanitation facilities and wastewater management. Combined, energy and water and sanitation represent almost 70 per cent of the total investment gap in the run-up to 2030.

Investment in economic infrastructure other than energy mainly addresses SDG 9 (industry, innovation and infrastructure), including the targets to "develop sustainable, resilient and inclusive infrastructure" (9.1) and to secure "universal access to information and communication technology" (9.8). For this, the bulk of the finance needed is in transportation and telecommunication infrastructure, for which the combined investment gap amounts to $400 billion annually (about equally split between the two).

Eliminating extreme poverty and hunger (SDG1 and SDG 2) will require an additional $300 billion per year in agrifood systems. Investment in agrifood systems is also instrumental for SDG 13, on climate action.

The investment gap in biodiversity is also estimated at $300 billion, mainly for SDG 14 (life below water) and SDG 15 (life on land), but also SDG 13 (climate action). Biodiversity encompasses a wide and heterogeneous range of investment in areas associated with environmental sustainability, including nature conservation, sustainable fishing practices, ocean pollution control and sustainable forestry.

Finally, investment in health and education is a prerequisite for sustainable development and a key enabler for the achievement of all SDGs. However, most of the financing needs in these areas are absorbed by operational costs (related to running hospitals and schools, for example), while the capital component is expected to be less relevant than for the other SDG sectors. Given this, a wide range has been estimated to reflect the uncertainty about capital requirements, resulting in a combined investment gap of $100 billion to $600 billion for health and education.

C. ENERGY TRANSITION INVESTMENT

The energy transition requires capital expenditures not only in renewable energy generation and electrification, but also in sustainable infrastructure, in energy-efficient buildings and in decarbonizing industry. Furthermore, energy transition investment requirements extend across the renewables supply chain, to include R&D; critical minerals; component manufacturing and production; and installation and operation of solar panels, wind turbines, batteries and other key technologies. This is an indication of the scope and scale of the potential investment areas.

All types of funds – private, public, domestic, international – are needed to achieve the levels of investment required. Traditionally, domestic operations have been prevalent in power generation, especially transmission and distribution. Public investment has also been important in these areas and remains so in sustainable infrastructure and low-emissions transport, among others. The role of international private investment varies depending on the sector but is significant in several dimensions. For example, capital expenditure towards energy-efficient buildings or industry decarbonization affect the investment plans of both domestic and international investors and tend to lead to investment in brownfield or modification projects rather than new greenfield projects. However, in the main energy transition sectors – such as renewable energy generation, electric vehicles and the phasing-out of fossil fuel industries – MNEs and international investors play a key role. Therefore, these sectors are the principal focus of this section.

1. Renewables and energy infrastructure

a. Energy production

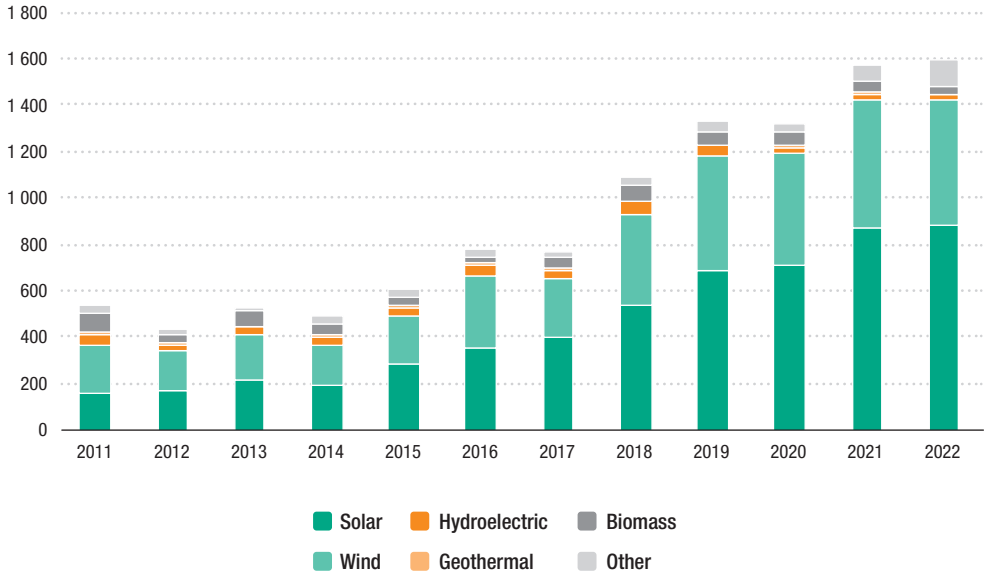
Several developments have driven up announcements of international investment in renewables over the past decade. Investment accelerated after the adoption of the SDGs and the Paris Agreement in 2015, and again in 2021 when stimulus packages focused on green infrastructure.

In 2022, the number of international projects in renewable energy increased marginally following a leap in 2021 (figure I.15). Investment in solar and wind continued to dominate, with 89 per cent of total projects. Wind projects are typically larger than solar projects because the technology is costlier. Exceptions exist, however, such as the Maharashtra Ultra Mega Renewable Energy Solar Park project in India, a $226 million construction. Other sources of renewable energy, although much smaller, also attract growing amounts of investment; tidal and wave projects and waste-to-energy projects are increasing in number.

Over the past decade, more than half of all international investment projects in renewables were solar energy projects, except in Europe, which is the leading region for investment in wind power. Two thirds of all renewable energy projects in Africa were in solar energy, as it is the continent's cheapest and most widely available source. In North America, developing Asia and Oceania, the share of solar was above 60 per cent.

New announcements of renewables investments in 2022 included several megaprojects, such as the 2 GW Ayana Karnataka wind and solar hybrid project in India, for an estimated cost of over $1.5 billion, and the Masdar Tanzania renewable energy project (United Republic of Tanzania), which will create a 2 GW solar power plant.

Figure I.15. **International investment projects in renewables, by type, 2011–2022**
(Number of projects)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv.
Note: Green hydrogen is not included in "Other" renewables as in *WIR22*, so as to be consistent with the IRENA and IEA classification. Hydrogen is often produced as a feedstock for industry. The data set captures internationally promoted projects of utility-sized installations.

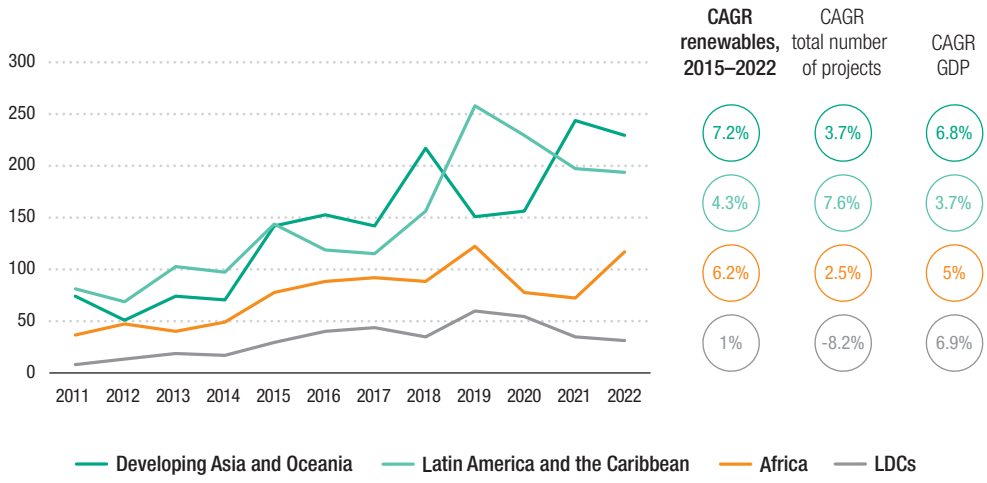
Countries in Europe and Latin America and the Caribbean have the highest shares of wind in international renewable energy projects (at 46 and 35 per cent, respectively). Offshore and floating wind power plants are becoming particularly important in Europe. The largest of these projects is the Sea Sapphire Baltic Four floating offshore wind project, which involves the construction of four commercial-scale installations generating up to 40 terawatt-hours per year to meet energy needs in Finland and Sweden. Others include a wind power development project off the coast of Ireland, which will create a 2.2 GW plant at an estimated cost of $4.3 billion.

The rapid growth in international investment activity in the renewable energy sector has been mostly confined to developed countries, particularly in Europe, where policy and investment trends have merged. In developing regions, the growth of international project finance and greenfield projects has been much more gradual. It has outpaced GDP growth, but only marginally. InCs, where the need for investment in energy is especially high, renewables investment from international sources has lagged GDP growth. Since 2015, LDCs have seen the number of renewables projects increase by only 1 per cent per year, while their economies grew almost seven times faster (figure I.16).

Since 2015, developing Asia has had the highest growth in incoming projects, followed by Africa. The growth of project numbers in Latin America and the Caribbean has stagnated since 2019, due in part to the shift towards domestic fossil fuel energy in Mexico, motivated by concerns about energy security. Average growth in international investment in renewables has been above the rate of growth of total FDI projects in most regions except Latin America and the Caribbean.

It should be noted that for some regions, looking only at international project numbers underestimates total investment in renewables. Several large emerging economies are major investors in renewable technologies, with limited need for foreign investment in their energy supply.

Figure I.16. **Renewable energy: international investment in developing regions, 2011–2022** (Number of projects)

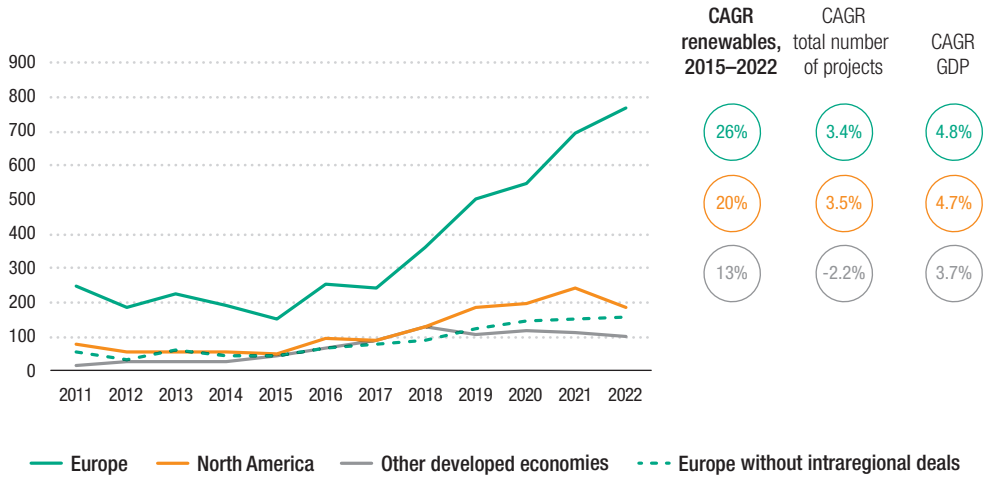


Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv for projects and IMF (2022) for GDP.
Note: Growth rate is calculated as the compound annual growth rate (CAGR) for the period 2015–2022. GDP growth is in terms of purchasing power parity. The data set captures internationally promoted projects of utility-size installations.

The situation in developed countries is markedly different. The number of international investment project announcements in renewable energy in developed countries was almost twice that in developing countries in 2022, and growth rates are significantly higher (figure I.17). Including intra-European investments, Europe alone accounted for almost three quarters of all international investment projects in renewable energy in 2022, reflecting energy security concerns and concerted efforts to reduce the region's reliance on gas supplies from the Russian Federation. Excluding intraregional deals, the trend in international investment in the region is comparable to that in the other developed regions.

In addition to the relatively slow growth of international investment in renewable energy

Figure I.17. **Renewable energy: international investment in developed regions, 2011–2022** (Number of projects)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv for projects, and IMF (2022) for GDP.
Note: Growth rate is calculated as the compound annual growth rate (CAGR) for the period 2015–2022. GDP growth is in terms of purchasing power parity. The data set captures internationally promoted projects of utility-size installations.

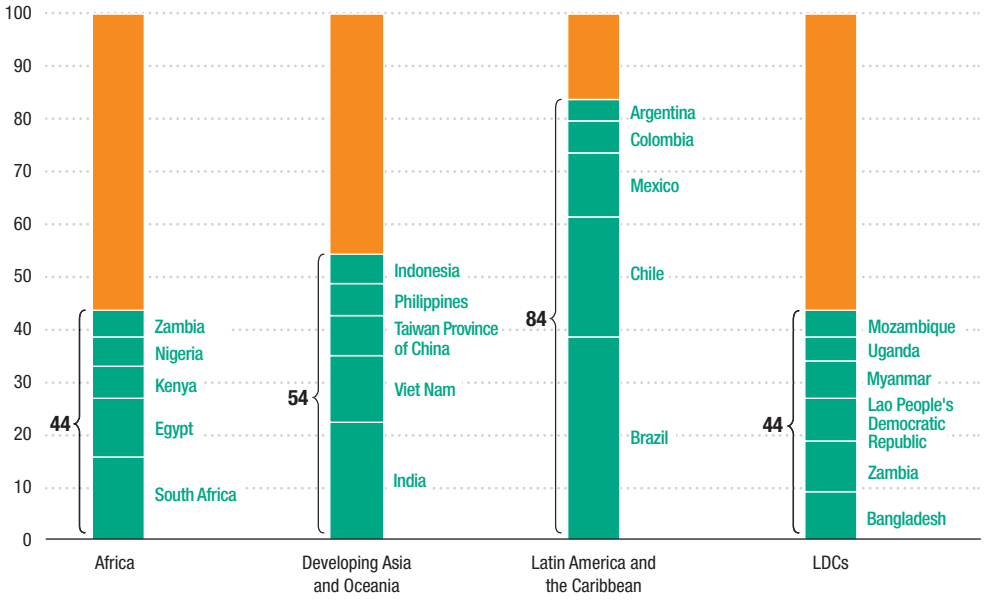
in developing regions, international project finance and cross-border greenfield projects also appear to show relatively high levels of concentration in a few countries (figure I.18). Larger and more advanced economies attract most of the projects. In Latin America and the Caribbean, three countries – Brazil, Chile and Mexico – attracted three quarters of all renewable energy projects announced in the region in 2022.

In developing Asia, the ranking of host economies does not reflect the importance of China in overall investment in renewable energy. It is the world's top investor in renewables (IRENA and CPI, 2023) through its domestic firms. The top host economies for international renewable energy projects in the region are India, Viet Nam and Taiwan Province of China, which attract more than 40 per cent of the projects.

In Africa, the economies of South Africa, Egypt, Kenya, Nigeria and Zambia account for about 40 per cent of projects on the continent. Among LDCs, five countries attracted almost 40 per cent of investments in 2022, while as many as 11 countries did not register a single international project in renewable energy between 2015 and 2022.

The ranking of the top 10 non-financial MNEs by the number of international greenfield projects and project finance deals in renewable power promoted during the period from 2015 to 2022 sees Enel (Italy) top the list, followed by other top European utility MNEs, the solar energy company Canadian Solar (Canada) and the fossil fuel company TotalEnergies (France) (table I.17). Other European energy MNEs such as BP (in 12th position) and Shell (16th) are also in the top 20 as they work to switch to renewable sources. European utilities are increasingly specialized in providing renewable energy, with most having set ambitious targets for their energy mix in transition. Several United States energy firms are also actively developing renewables projects, but mostly in their home market. Top domestic investors in renewable energy include NextEra Energy with 59 projects, followed at a distance by AES and Duke Energy with 45 and 44 projects.

Figure I.18. **Renewable energy: top five host economies by region, 2015–2022**
(Per cent)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv.
Note: In LDCs, the top five host economies for international renewable projects include six countries as Mozambique and Uganda received the same number of projects.

Table I.17. Top investors in renewable power by number of projects between 2015 and 2022

Company	Country	Industry	Number of projects, 2015–2022
Global			
Enel	Italy	Multilines utilities	361
Engie	France	Multilines utilities	195
Electricité de France	France	Multilines utilities	180
Iberdrola	Spain	Multilines utilities	161
Energías de Portugal	Portugal	Multilines utilities	142
Canadian Solar	Canada	Renewable energy	126
RWE	Germany	Multilines utilities	123
TotalEnergies	France	Oil and gas	119
Orsted (Dong Energy)	Denmark	Renewable energy	100
Impala	France	Diversified	95
Developing economies			
ACWA Power	Saudi Arabia	Renewable energy	53
Abdul Latif Jameel	Saudi Arabia	Diversified	50
Masdar Clean Energy	United Arab Emirates	Renewable energy	48
Vena Energy	Singapore	Infrastructure	44
China General Nuclear Power Corp	China	Energy	39
Ayala Group	Philippines	Diversified	31
Power Construction Corporation of China	China	Energy	26
AMEA Power	United Arab Emirates	Renewable energy	23
ReneSola	China	Renewable energy	19
Sembcorp Industries	Singapore	Infrastructure	19

Source: UNCTAD, based on information from The Financial Times, fDi markets (www.fdimarkets.com) and Refinitiv.

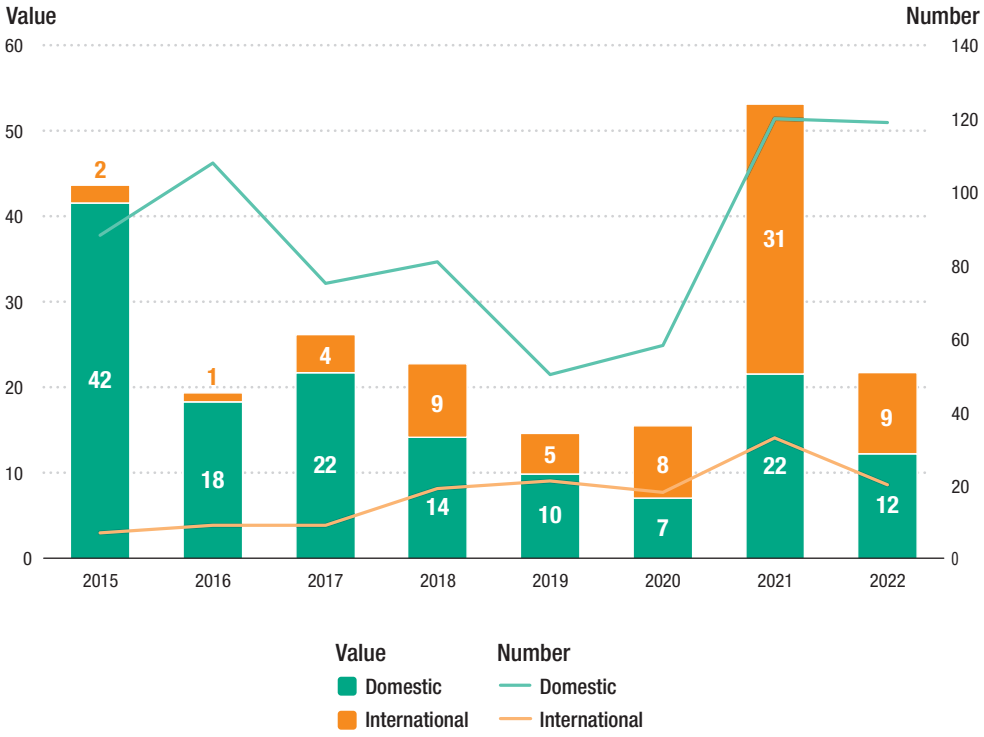
Among MNEs in emerging markets and developing economies, Western Asian companies top the ranking. In addition to companies specialized in renewable energy, there are a few diversified groups, such as Abdul Latif Jameel (Saudi Arabia) and the Ayala Group (Philippines), which have started to promote projects in this area only relatively recently.

b. Power grids and transmission lines

Numbers of investment projects in aspects of renewable energy other than power generation are significantly lower. International investment in power grids and storage capacity accelerated only after 2020, even though such investment is a critical complement to renewable energy generation. To date, most investment in this sector in developing countries remains domestic. However, the recent acceleration in international projects in energy infrastructure suggests that there is potential for FDI to play a bigger role.

Investment announcements in transmission lines in developing countries increased in 2021 but slowed again in 2022. Most transmission line construction projects were in large emerging economies, including India, Egypt, Brazil, the United Arab Emirates and Kuwait (in that order). In LDCs, more than half of the projects under way fall within the framework of the Belt and Road Initiative of China. Most of these projects have as their main sponsor a ministry, government agency or State-owned national utility.[3]

Figure I.19. **Transmission lines: announced project finance deals in developing countries, 2015–2022** (Billions of dollars and number)



Source: UNCTAD, based on information from Refinitiv.
Note: Includes only projects that are setting up independent transmission lines (not included in renewable energy plant installations).

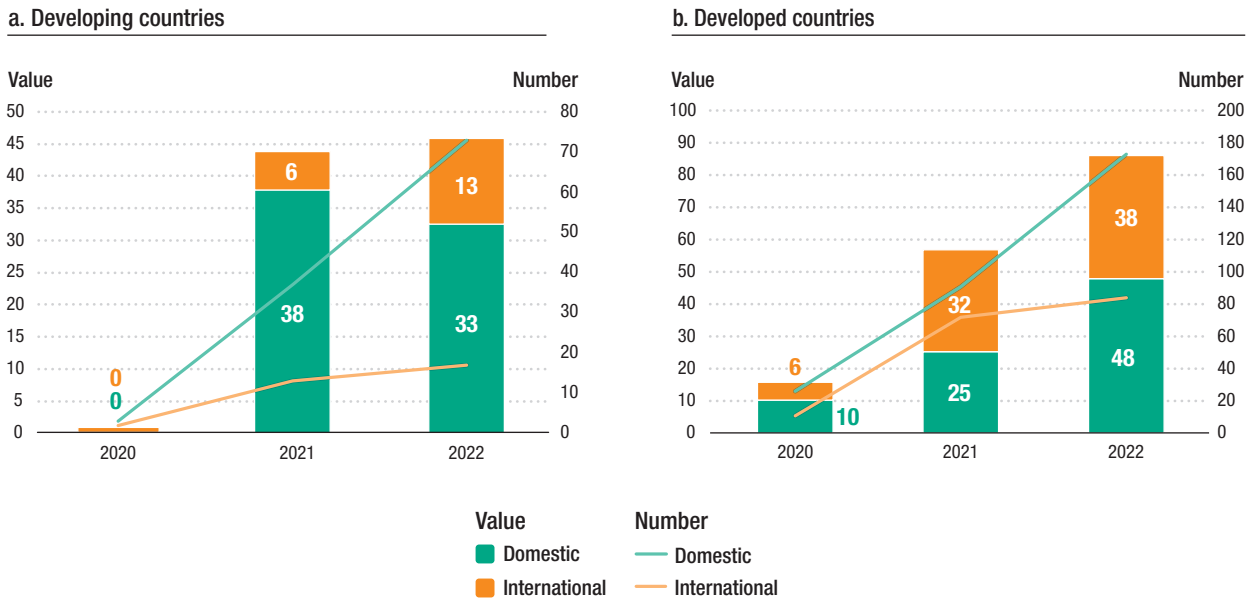
International investment in transmission lines tends to be significantly larger than domestic projects (figure 1.19). These projects can include not only the construction of a power plant, but also of transmission lines to overseas markets to allow trade in electricity. For example, the Elica Interconnection undersea power cable project involves the construction of a 963-kilometre double submarine cable between Egypt and the Attica region of Greece. The cable will transfer 3 GW of wind and solar energy, of which 1 GW will be supplied to domestic industry, 1 GW for the Greece–Italy and Greece–Bulgaria networks, and 1 GW for the production of hydrogen, which will be exported to Europe.

Several Latin American countries, such as Chile, Colombia and Brazil, have engaged international sponsors, including Albengoa (Spain), Enel (Italy) and Engie (France), in investment projects to expand their national grids. Brazil introduced the Cobra Minas Gerais public-private partnership project, which involved the design, construction and operation of six 500-kilovolt transmission lines, several smaller sections of lines, a new substation and eight substation extensions.

In developed economies, the number of transmission line projects also increased significantly, particularly for the modernization of infrastructure, the connection of offshore wind farms to the grid and grid digitalization. But, according to IEA (2022b), the current high prices of raw materials (particularly copper and aluminium) could reverse this upward trend.

Energy storage projects are also increasing in number. These projects are critical for the energy transition because variable weather patterns limit the capacity of renewable energy technologies to deliver consistent power. Energy storage systems can push surplus energy into the grid when needed. Battery storage is a relatively new area for international

Figure I.20. **Storage technologies: announced project finance deals in developing and developed countries, 2020–2022** (Billions of dollars and number)



Source: UNCTAD, based on information from Refinitiv.
Note: Includes deals not related to production of electric vehicles and only projects that are setting up independent storage systems (not included in renewable energy plant installations).

investment, with the first projects announced only in the last few years and concentrated in developed economies (figure I.20). Battery storage projects in the United States, the United Kingdom and Australia account for more than two thirds of total investment globally. Among emerging economies, India and China are the top investors, albeit almost exclusively through domestic projects. South Africa has attracted several battery storage projects, with capacities ranging from 35 MW to 300 MW.

c. Other low-emission energy sources

Investment in other low-emission energy sources are as important in the energy mix as renewable technologies, power grids and storage capacity. However, the number of cross-border investment projects in nuclear energy and green hydrogen, among other sources, is low.

The development of nuclear energy plants suffered significant setbacks in the last decade. The size of nuclear investment projects, as well as their technical complexity, long-term footprint and controversy make nuclear less popular as an investment decision. Because of the high risk involved, nuclear power plants are typically projects that are promoted by national State-owned utilities. The exception was in 2022 when European economies started attempts to attract foreign investors to develop smaller-scale nuclear plants.

Investment in hydrogen as a feedstock for heavy industry and for power generation is experiencing growing momentum. In power generation, hydrogen is one of the leading options for storing renewable energy. Hydrogen and ammonia can also be used in gas turbines to improve power system flexibility (IEA, 2022b) and in coal-fired power plants to reduce emissions. Hydrogen will be needed to decarbonize end-uses where other options are less mature or more costly, such as for heavy industry (chemicals, steel and refineries), long-haul transport and seasonal energy storage (IRENA, 2022e).

International investment projects in hydrogen started to register only recently, with the first projects announced in 2018. The number of projects accelerated in 2021 and 2022, with most of them in developed countries. In developing markets, the number of international projects is still limited. Egypt announced several large-scale projects when it hosted COP27 in 2022. Other developing countries that have attracted hydrogen projects include Chile, India and countries in the Persian Gulf region

In Africa, the Niger joined Egypt, Mauritania, Morocco, Namibia and South Africa as a hydrogen-producing country following the establishment of the Emerging Energy–Government of the vGreen Hydrogen Portfolio project. Three quarters of the projects in these countries produce hydrogen by electrolysis using renewable energy (green hydrogen). Top investors are mostly from Europe (including Linde (United Kingdom), Enel (Italy) and Air Liquide (France)) and from the United States.

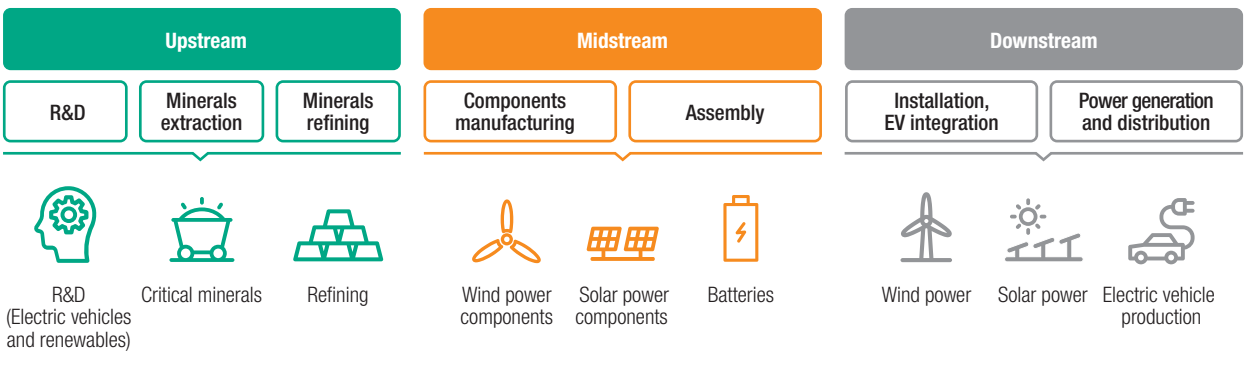
2. The renewable energy value chain

The global and regional supply chains underpinning the deployment of clean energy generation technologies (particularly wind and solar energy installations; figure I.21) are still being shaped through international investment in various upstream activities (R&D, critical minerals, processing industries and component manufacturing). Clean energy strategies are increasingly shaping industrial policies. New actors are emerging among developing countries – other than the traditional manufacturing centres – aiming to establish themselves as production hubs for clean energy technology. Still, the upstream and midstream parts of the renewable energy value chain – as in the case of many young industries – remain concentrated for now.

More than 80 per cent of investment across all segments of the renewable energy value chain is private investment. Today, China and a few developed economies are the leading producers of and investors in renewable energy technologies. However, opportunities to attract investment exist for developing countries as supply chains gradually become more diversified.

The energy transition has increased demand for numerous metals and minerals. Copper, nickel, cobalt, aluminium, chromium, lithium, manganese and molybdenum are required for a range of low-carbon technologies, particularly wind turbines, solar photovoltaic panels and electric vehicle batteries. Permanent magnets for wind turbines and for electric vehicles require rare earth metals such as neodymium and dysprosium, while battery storage and batteries for electric vehicles typically use lithium, nickel and cobalt. Solar energy

Figure I.21. Elements of the renewable energy value chain



Source: UNCTAD.

technologies, as well as the transmission lines and distribution cables that make up the electricity grids, use large amounts of copper.

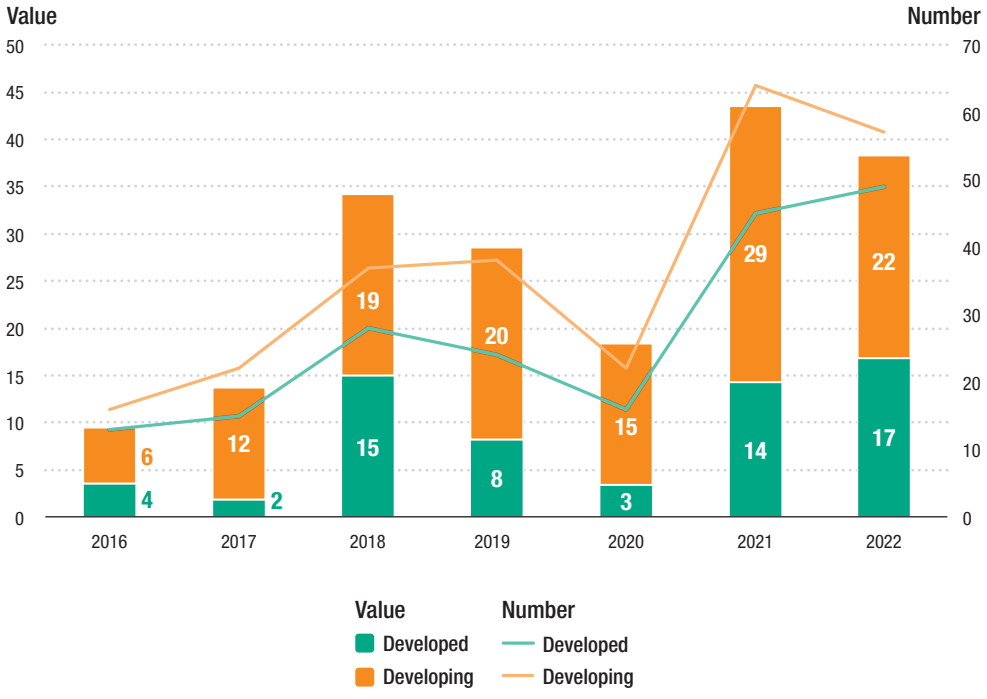
These critical minerals are traditionally mined in developing countries, including the Democratic Republic of Congo for cobalt, Indonesia for nickel and several Latin American countries for copper. Australia is among the top locations for almost all critical minerals. For lithium and rare earth metals, the race to establish new extraction sites is relatively recent. The United States and Latin American countries have been developing new projects to mine lithium.

The pace of announced investments in critical minerals has doubled in the last two years (figure I.22), and more growth is expected. Deployment of clean energy technologies will further push up demand for critical materials. Demand for copper in 2050 is projected to be twice the supply in 2020, while demand for nickel is projected to triple. Lithium will see the highest growth in demand, with a projected 5- to 10-fold increase (IRENA, 2022e).

While the concentration of mining activities is determined by the geographical location of deposits, the processing and refining of these materials is currently highly concentrated among the top three refiners, which account for more than half of global processing capacity. China provides the processing of 88 per cent of rare earths, 65 per cent of cobalt, 58 per cent of lithium, 40 per cent of copper and 35 per cent of nickel (IRENA, 2022e).

Both the International Renewable Energy Agency (IRENA) and the International Energy Agency (IEA) highlight the importance of R&D for the energy transition; in many of their scenarios and projections, innovation in key technologies plays a critical role (IEA, 2022b; IRENA, 2022e). Much of the R&D in technologies required for the energy transition has public support and most investment is domestic, although this is not true for R&D projects

Figure I.22. **Critical minerals: international projects in developed and developing countries, 2016–2022** (Billions of dollars and number)



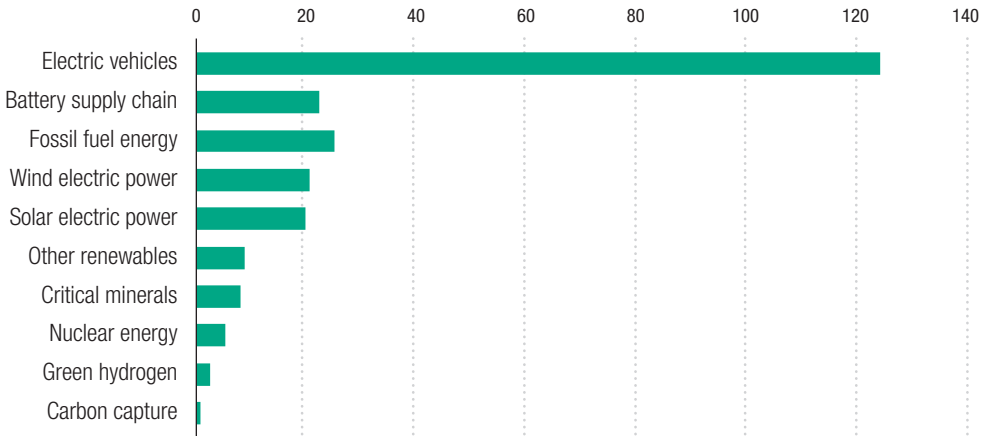
Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv.
Note: Includes projects for extraction and refining of critical minerals.

in electric vehicles and battery supply chains, where private investors are the major players (figure I.23). For international electric vehicle and battery R&D projects, China (18 per cent) is the top host location, followed by the United Kingdom, the United States, Germany and India. For projects in other renewable energy technologies, European countries attracted over 40 per cent of international projects, followed by China (10 per cent) and Singapore (8 per cent). The only international R&D project in carbon capture and storage is in Norway, where the oil field services company Schlumberger (United States) was selected to participate in the Northern Lights joint venture, which is deploying digital solutions in carbon sequestration.

International investment projects to produce or assemble components for renewable energy installations, such as solar cells and modules, polysilicon, ingots and wafers, and wind turbines, towers, blades and nacelles, have historically been located in developing economies, where producers have sought manufacturing efficiency. Since 2021, however, the number of projects announced in developed countries has been higher than the number in developing economies, especially for wind power components (figure I.24). The number of projects increased by 13 per cent in 2022; values decreased because of a large project announced in 2021 by the solar energy firm Risen Energy (China). The project, worth more than $10 billion, involves a new production facility to manufacture high-efficiency photovoltaic modules in Malaysia. For international investment projects in solar energy component manufacturing, concentration has been relatively low. The top five destinations were the United States, Brazil, India, Viet Nam and China, which attracted 42 per cent of all projects. Other developing countries that attracted solar components projects include Malaysia, Türkiye, Mexico and South Africa. The list of top home economies is much shorter, with the major providers from China (Hangzhou Gene Solar Industries, JinkoSolar, Risen Energy, Longi Green Energy Technology) accounting for over a quarter of international projects. A notable investor among those based in developing countries is the Nigerian conglomerate Enpee Group, which is investing in solar panel component facilities in India.

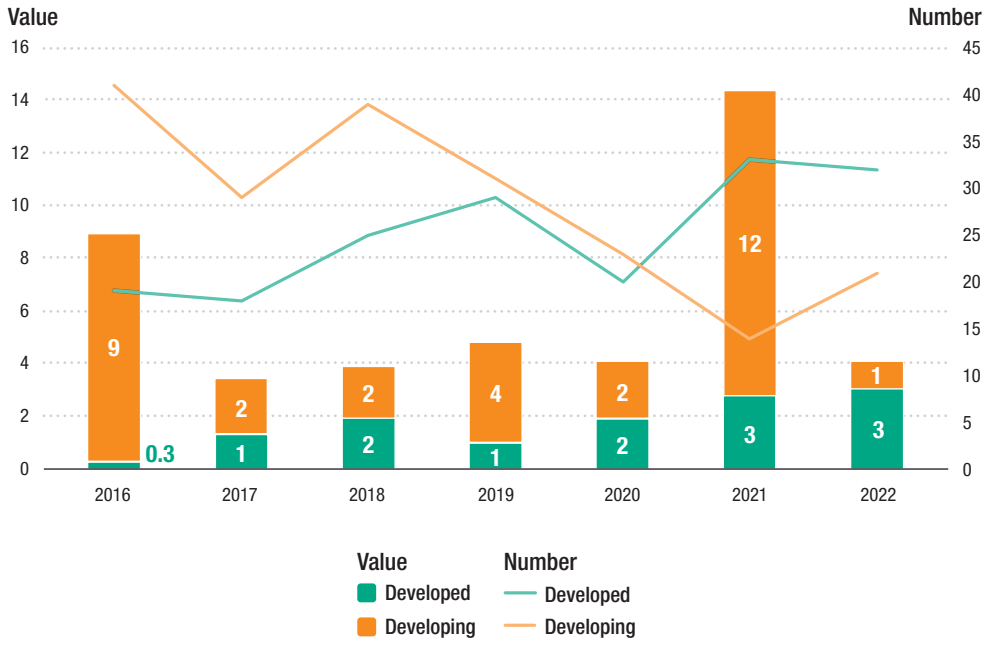
Top locations for the manufacturing of wind energy components include both developed and developing economies. The United Kingdom, United States, Türkiye, India and China accounted for almost half (46 per cent) of the total number of projects between 2016 and 2022. From a home-country perspective, investors from Europe and the United States accounted for more than half of all projects. The top MNEs are Vestas (Denmark),

Figure I.23. **R&D: announced greenfield projects, by energy transition industry, 2016–2022** (Number)



Source: UNCTAD. based on information from The Financial Times. fDi Markets (www.fdimarkets.com).

Figure I.24. **Wind and solar power components: international projects, 2016–2022** (Billions of dollars and numbers)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv.
Note: Includes only projects that develop, manufacture or assemble components and are not part of renewable energy plant installations.

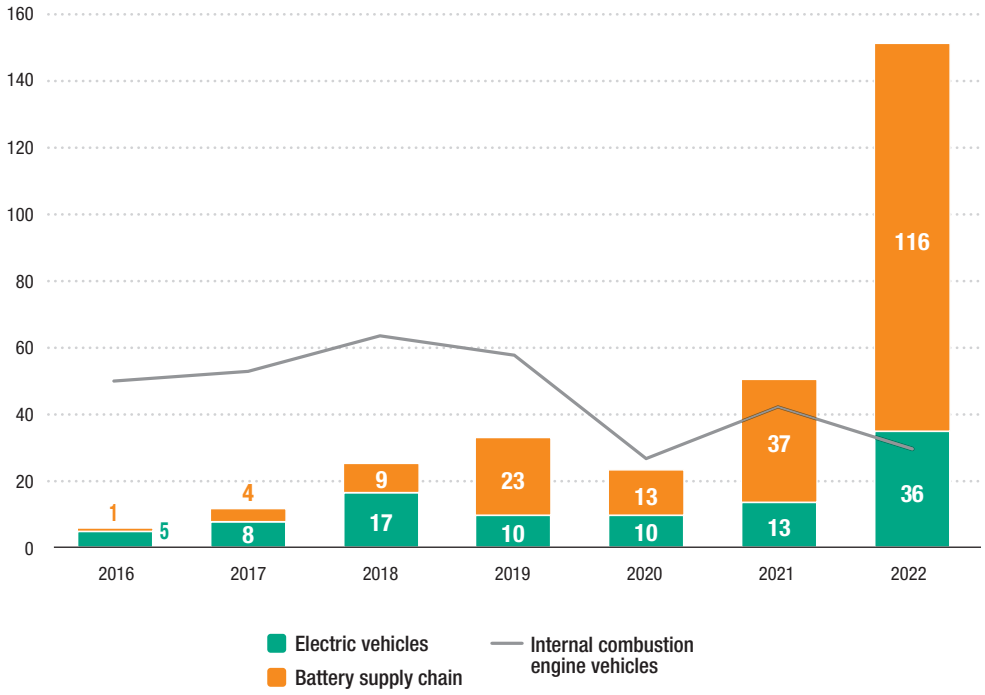
Siemens (Germany), GE (United States), Nordex (Germany) and CS Wind Corporation (Republic of Korea).

Electrified transport is one of the largest opportunities in energy transition investment (BNEF, 2023). International investment to set up electric vehicle manufacturing facilities has been growing since 2015, surpassing investment in internal combustion engine projects in 2022 (figure I.25).

Until 2020, the main investment destinations for producing electric vehicles were China, the United States and India. In value terms, China attracted almost 45 per cent of all such investment, followed at a distance by the United States and India, with shares of 10 and 7 per cent, respectively. In 2021 and 2022, the major destinations were developed economies and Mexico. European countries (including the United Kingdom) attracted 37 per cent, the United States 18 per cent and Mexico almost 17 per cent of the total investment in electric vehicle production. Other important destinations for electric vehicle production projects among developing countries since 2016 have been Thailand (six projects), Türkiye (six projects) and Brazil (five projects). The top five host economies – the United States, China, Mexico, India and Poland, in that order – attracted a little more than half (55 per cent) of all projects.

International investment in batteries has boomed in the last two years, reaching $116 billion in 2022, with many new battery producers setting up manufacturing facilities, mainly in developed countries and especially in the United States. The value of international investment projects announced in battery production in 2022 was almost twice that for electric vehicles and internal combustion engine car manufacturing combined, driven by international competition to develop this technology.

Figure I.25. **Electric vehicles, battery supply chain and internal combustion engine vehicles: announced international investment, 2016–2022**
(Billions of dollars)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv.
Note: Only projects that are setting up manufacturing facilities.

Between 2016 and 2020 half of the international investment in batteries went to Europe (Germany, 26 per cent; France, 11 per cent; Hungary, 10 per cent), followed by China (17 per cent), the United States (15 per cent) and Indonesia (10 per cent). Other top destinations for battery manufacturing among developing countries included Brazil, India, Malaysia and Mexico (in that order).

In 2021 and 2022, the United States attracted 40 per cent of all investment, Europe about 30 per cent and Indonesia 11 per cent. The largest project was announced by the Hon Hai Group (Taiwan Province of China): an $8 billion project in Indonesia to manufacture electric vehicles and batteries. The project was developed under the framework of a cooperation agreement between the Indonesian Ministry of Investment, the Indonesia Battery Corporation, the Indonesian coal miner Indika and the scooter producer Gogoro (Taiwan Province of China). The cooperation will also extend to the development of electric vehicle support industries such as energy storage systems, battery exchange stations and battery recycling. Indonesia is a major producer of nickel; the international cooperation framework is intended to leverage its supplies of nickel laterite ore (used in lithium batteries) to become a global production and export hub for electric vehicles.

The top investors in electric vehicles and batteries (combined) include all the major car producers, with Tesla (United States) topping the ranking, followed by BMW (Germany), Hyundai (Republic of Korea), Toyota (Japan) and Volkswagen (Germany). The top 10 investing MNEs account for about 50 per cent of international projects and include also top battery producers such as Chinese Contemporary Amperex Technology (China) and LG (Republic of Korea).

As electric vehicles become more common, investment in electricity charging infrastructure should increase. However, most of these projects are currently undertaken by domestic investors. The number of international projects recorded accounts for only one fifth of total projects. Moreover, very few projects to develop electric vehicle charging stations are recorded in developing economies.

3. Fossil fuel investment

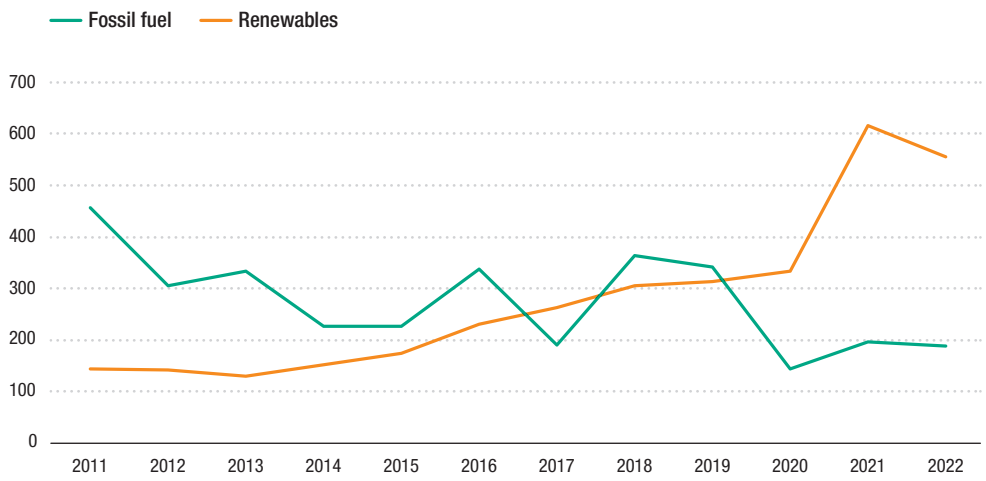
a. Investment trends

Despite the fear that high energy prices and the push for energy security would lead to a reversal in the downward trend of international investment in fossil fuel assets, the data for 2022 show stable numbers overall for both fossil fuel-based power plants and extractive industries. (In extractives, greenfield investment by major oil and gas companies increased, but project finance deals declined.) The gradual shift from fossil fuel investment to renewable energy investment has continued since 2015, with the latter surpassing the former in 2020 (figure I.26).

Nonetheless, new fossil fuel-related investment is expected to continue for some time. It is necessary as a complement to renewable energy generation, it helps to deal with intermittency problems until new storage technologies are developed and, more generally, it is needed to meet energy demand while renewable capacity builds. During this transition time, fossil fuel power needs to invest in greater efficiency, carbon capture and storage, and technologies to allow the discontinuation of damaging practices such as flaring of waste gas.

In 2022, energy security concerns pushed countries to re-evaluate new fossil fuel-related investment projects aimed at securing supply chains. National strategic changes included the re-opening of coal plants and the building of infrastructure to import fossil fuels. For example, Germany approved 11 new liquefied natural gas ports to import fossil fuels until 2043. However, as requirements for the installation of carbon capture and storage become

Figure I.26. **Renewable and fossil fuel energy: international project finance deals and announced greenfield projects, 2011–2022** (Billions of dollars)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv.
Note: Fossil fuel projects include extractive and refining activities and power plant installations.

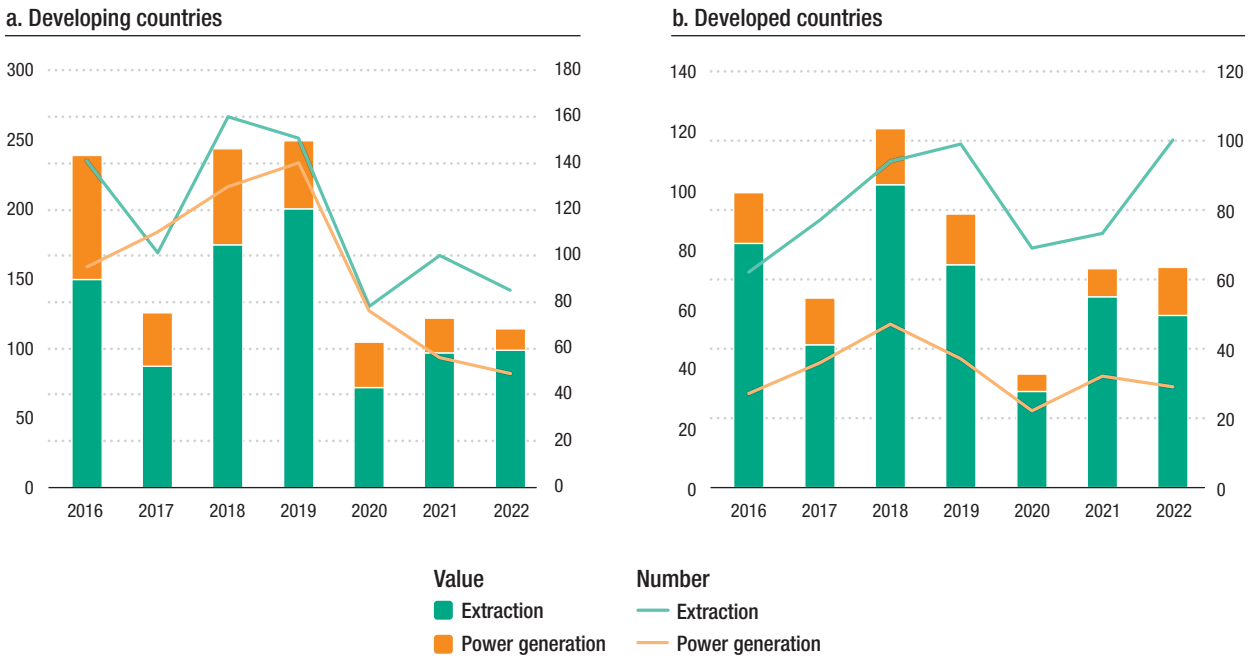
more stringent, rising investment costs should disincentivize the installation of new fossil fuel-based power plants. Moreover, financing may become difficult, with banks increasingly committed to climate goals (IEA, 2022b).

In developing countries, international investment in fossil fuel power generation has been declining since 2019 (figure I.27). Support from international financiers and development banks for new fossil fuel projects is waning or being withdrawn, and international investors are more attracted by renewable energy projects. As a result, development of new capacity in fossil fuel-based electricity generation is more and more left to domestic financiers.

In developed economies, the number of investment projects in oil and gas extraction and refining activities increased in 2022, in response to the energy crisis. Most of these projects involved expansion, rather than exploration projects. Top destinations included the United States (with a revamp of shale oil projects), the United Kingdom, Australia and Canada. The number of projects in fossil fuel power generation has remained roughly constant since 2016, suggesting that these energy facilities may not be phased out in the near term in developed regions. Conversely, they are likely to become costlier as a result of the need to install carbon capture and storage technologies. For example, in 2022, Kenon (Singapore) announced a $3 billion project to build an 1,800 MW combined-cycle natural gas power station with carbon capture and storage capabilities in West Virginia in the United States.

Although the global trend for new coal-fired and gas-fired power plants is on a downward slope, new projects are still being announced every year. Assuming a trend consistent with the average yearly decrease of 10 per cent seen over the last five years, 10 new projects will still be announced in 2040. Considering that each of these projects has a minimum lifespan of 30 years (and in most cases significantly more), this implies that it will take well into the second half of the century before fossil fuel energy is replaced by renewable energy.

Figure I.27. **Fossil fuels: international investment in developing and developed countries, 2016–2022**
(Billions of dollars, number and per cent)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv.
Note: Extraction projects include refining activities.

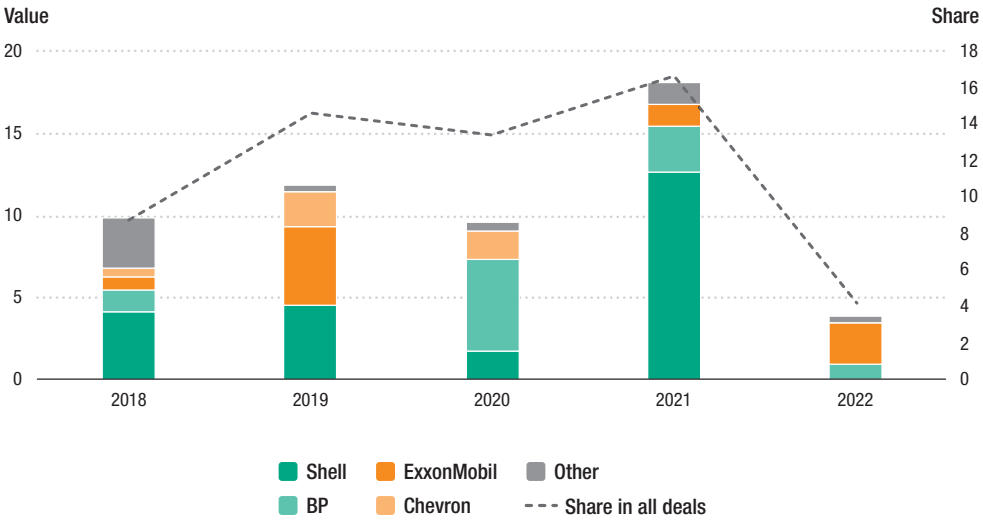
b. Divestment trends

Driven by climate targets, reputational risks and financial considerations, top energy MNEs have pledged to prioritize decarbonization strategies and to reduce their reliance on fossil fuel assets. In the last five years, energy MNEs in the UNCTAD top 100 ranking have been selling fossil fuel assets at a rate of about $15 billion every year, with Shell (United Kingdom) and BP (United Kingdom) leading the trend.[4] Divestments peaked in 2021, when sales of fossil fuel assets by the top eight energy MNEs represented more than 16 per cent of the total value of the oil and gas assets trade (figure I.28). This divestment trend reversed last year as major oil companies slowed sales in light of high energy prices.

Divestment does not imply that oil fields, gas plants and other upstream assets cease operations. Buyers of assets sold by energy majors typically aim to make that asset generate the highest possible returns. This often means improving the overall productivity of the fossil fuel asset, including by pushing for increased output or extending lifetimes. Another concern is that buyers often have lower or no emission-reduction goals and weaker climate reporting standards, as in the case of private (unlisted) or smaller companies. This would make monitoring oil and gas emissions more difficult, slowing the energy transition.

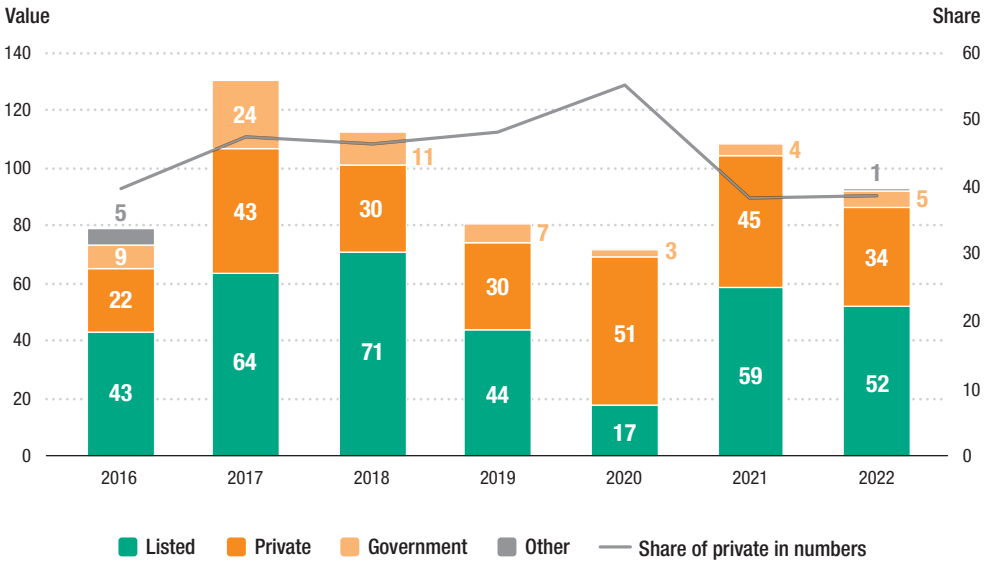
The share of unlisted investors in fossil fuel assets increased between 2016 and 2020, although transactions by major oil and gas companies reversed the trend in 2021 and 2022 (figure I.29). The trend could be underestimated, considering that the values of private transactions often remain undisclosed. Two thirds of private investors are investment and management firms, funds and private equity companies. They also include smaller independent energy companies (in about 20 per cent of cases) and commodity traders such as Trafigura (Singapore) and Vitol (Switzerland). For example, some of the largest sales that top oil and gas MNEs closed in recent years include Shell's sale of North Sea assets to the private equity company EIG Energy Partners (United States) for $3.8 billion in 2017 and ExxonMobil's sale of its North Sea assets to the private equity group HitecVision (Norway) for $1.3 billion in 2021.

Figure I.28. **Upstream fossil fuel asset sales by major energy MNEs, 2018–2022**
(Billions of dollars and per cent)



Source: UNCTAD, based on information from Refinitiv.
Note: Other includes TotalEnergies (France), Eni (Italy), Equinor (Norway), OMV (Austria) and Repsol (Spain). Transactions exclude mergers of companies within the sector and spin-offs.

Figure I.29. **Buyers of upstream fossil fuel assets by type, 2016–2022**
(Billions of dollars and per cent)



Source: UNCTAD, based on information from Refinitiv.
Note: Transactions exclude mergers of companies within the sector and spin-offs.

Among the private equity firms that have been actively buying fossil fuel assets are the start-up and tech investment fund Investore (Norway), which concluded 15 deals involving upstream assets between 2016 and 2022; the investment firm Blackstone (United States) with 9; and the Carlyle Group (United States), Riverstone (Singapore), Warburg Pincus (United States) and the Canada Pension Plan Investment Board, each with 8 acquisitions.

Although the trend of divesting fossil fuel assets slowed last year, top energy MNEs will continue to reshape their portfolio and energy mix through M&As, which has spurred calls for a new model of climate-aligned dealmaking. Top sellers, such as Shell, BP and Chevron, are well positioned to pilot climate-aligned asset transfers by devising contracts that require buyers to disclose emissions and emission-reduction targets. Institutional investors can require the companies they invest in to incorporate climate safeguards into M&A deal terms, while buyers can commit to enhanced climate disclosure, guarantee best-in-class methane mitigation and flaring reduction, and put up the funds for decommissioning. Banks facilitating these deals can ensure that climate standards are integrated in the transactions (Environmental Defense Fund, 2022; Arnold et al., 2023). An alternative idea that has been put forward is the creation of new financial instruments in the form of "carbon retirement portfolios", which would buy carbon-emitting assets with the commitment to retire them more quickly than the business-as-usual scenario, and with incentives in place to lower greenhouse gas emissions while the assets are still operating (Handler and Bazilian, 2021).

D. INTERNATIONAL PRODUCTION

1. Key indicators of international production

International production indicators showed diverging movements in 2022, with FDI flows and stock lower, but income in foreign affiliates as well as new project values largely stable (table I.18). FDI stock, measured at market value, fell by 6 per cent to $44 trillion, reflecting the poor performance of stock markets around the world. The ratio of FDI stock to global GDP fell to 44 per cent from 49 per cent in 2021. Rates of return (on FDI stock in book value, which increased) fell to 5.9 per cent from 6.5 per cent in 2021, despite the fact that FDI income rose moderately, by 2 per cent, in line with the continued high profit levels of the largest MNEs.

Table I.18. Selected indicators of FDI and international production, 2022 and selected years
(Billions of dollars)

	Value at current prices					
Item	1990	2005–2007 (Pre-crisis average)	2019	2020	2021	2022
FDI inflows	205	1 425	1 708	962	1 478	1 295
FDI outflows	244	1 463	1 401	732	1 729	1 490
FDI inward stock	2 196	14 589	35 971	41 919	47 079	44 253
FDI outward stock	2 255	15 299	34 741	40 144	42 667	39 853
Income on inward FDI[a]	82	1 130	2 017	1 837	2 383	2 434
Rate of return on inward FDI[b]	*5.2*	*9.3*	*6.5*	*5.4*	*6.5*	*5.9*
Income on outward FDI[a]	128	1 244	2 053	1 755	2 411	2 337
Rate of return on outward FDI[b]	*8.4*	*10.6*	*6.6*	*5.1*	*6.6*	*6.1*
Announced greenfield projects	..	744	908	604	739	1 213
International project finance deals	..	..	744	534	1 384	1 044
Cross-border M&As	98	729	507	475	737	707
Sales of foreign affiliates	4 801	19 798	31 049	30 260	..	..
Value added (product) of foreign affiliates	1 074	4 674	6 455	6 463	..	..
Total assets of foreign affiliates	4 649	47 075	91 244	98 863	..	..
Employment by foreign affiliates (thousands)	20 449	49 875	79 927	79 979	..	..
Memorandum:						
GDP	22 612	52 680	87 284	84 895	96 314	100 218
Gross fixed capital formation	5 838	12 482	22 379	21 886	25 061	26 335
Royalties and licence fee receipts	31	191	464	467	520	431

Source: UNCTAD, FDI/MNE database, IMF (2023) and information from the Financial Times, fDi Markets (www.fDimarkets.com) and Refinitiv.
Note: Not included in this table are the value of worldwide sales by foreign affiliates associated with their parent firms through non-equity relationships and the value of the sales of the parent firms themselves. Worldwide sales, gross product, total assets, exports and employment of foreign affiliates are estimated by extrapolating the worldwide data of foreign affiliates of MNEs from countries for which the data are available, on the basis of three-year average shares of those countries in worldwide outward FDI stock.
[a] Based on data from 168 countries for income on inward FDI and 142 countries for income on outward FDI in 2022, in both cases representing more than 90 per cent of global inward and outward stocks.
[b] Calculated only for countries with both FDI income and stock data. The stock is measured in book value.

2. Internationalization trends of the largest MNEs

The degree of internationalization – the ratio of foreign over total assets, sales and employment – of the top 100 MNEs remained stable in 2022 (table I.19). High energy prices boosted revenues of companies in oil and gas, commodity trading and utilities, but this did not translate into higher overseas investment. On the contrary, Chevron and Exxon (both United States) and SaudiAramco (Saudi Arabia) divested foreign assets while increasing domestic investment. European energy companies, including Shell (United Kingdom), BP (United Kingdom) and TotalEnergies (France), continued their divestment of fossil fuel assets. Equinor (Norway) was the exception; it increased investment both domestically and overseas to provide gas supplies to Europe. OMV (Austria) and Repsol (Spain) did not significantly change the level or the geographic distribution of their assets.

Utility MNEs also enjoyed high revenues but were cautious in investing in new overseas projects, discouraged by government measures to shield consumers from higher energy bills, discussions on taxing windfall profits and the general geopolitical uncertainty. For example, despite having a profitable year, Enel (Italy) launched a large asset sale plan (in Latin America, Greece, Spain and Australia) to reduce its debt. RWE (Germany) continued its restructuring to become a renewable-energy-only company, shedding some foreign assets.

Table I.19. Internationalization statistics of the 100 largest non-financial MNEs, worldwide and from developing economies (Billions of dollars, thousands of employees and per cent)

	100 largest MNEs, global					100 largest MNEs, developing economies		
Variable	2020[a]	2021[a]	Change, 2020–2021 (%)	2022[b]	Change, 2021–2022 (%)	2020[a]	2021	Change (%)
Assets (billions of dollars)								
Foreign	9 765	10 428	6.8	10 065	-3.5	2 644	2 927	10.7
Domestic	8 489	8 829	4.0	9 139	3.5	6 009	7 142	18.9
Total	18 254	19 256	5.5	19 204	-0.3	8 653	10 069	16.4
Foreign as share of total (%)	53	54		52		31	29	
Sales (billions of dollars)								
Foreign	5 203	6 681	28.4	7 413	11.0	1 817	2 288	25.9
Domestic	3 999	4 943	23.6	5 552	12.3	3 079	4 243	37.8
Total	9 203	11 624	26.3	12 965	11.5	4 897	6 531	33.4
Foreign as share of total (%)	57	57		57		37	35	
Employment (thousands)								
Foreign	9 261	9 051	-2.3	9 167	1.3	4 107	4 053	-1.3
Domestic	10 132	11 053	9.1	10 833	-2.0	9 112	9 548	4.8
Total	19 393	20 103	3.7	20 000	-0.5	13 219	13 601	2.9
Foreign as share of total (%)	48	45		46		31	30	
Unweighted average TNI	62	62		62		46	47	
Median TNI	62	63		62		44	46	

Source: UNCTAD.

Note: TNI = Transnationality Index. Data refer to fiscal year results reported between 1 April of the base year and 31 March of the following year. Complete 2022 data for the 100 largest MNEs from developing economies are not yet available.

[a] Revised results.

[b] Preliminary results.

In the automotive sector most of the top 100 MNEs enjoyed an increase in revenues and invested overseas in new ventures, often to integrate the supply chain of their electric vehicle production or to expand production capacity. For example, GM (United States) has invested heavily in lithium extraction and refining activities, both domestically and in South America. BMW (Germany) expanded its electric vehicle production facilities in China.

In pharmaceuticals several top MNEs restructured, unwound R&D investments or sold business units. Four – GlaxoSmithKline (United Kingdom), J&J (United States), Sanofi (France) and Novartis (Switzerland) – completed or announced important spinoffs. The largest of these operations involved GlaxoSmithKline spinning off its consumer health care business (jointly owned with the United States MNE Pfizer) to create a new company called Haleon, focused solely on vaccines and prescription drugs.

In the tech industry, only semiconductor MNEs (Intel and Micron Technology, both United States) significantly increased their overseas investment. Global competition and geopolitical tensions pushed the world's largest contract chipmaker, Taiwan Semiconductor Manufacturing Corp (Taiwan Province of China) to start setting up semiconductor manufacturing facilities in the United States, in Japan and possibly in Europe. Until 2020, it had off-island production facilities only in China and its foreign long-term assets were below $2 billion; at the end of 2022, its foreign assets had already more than quadrupled, to $8.5 billion.

Other top MNEs in the technology sector did not expand their operations abroad, although their revenues continued to grow in 2022. All major United States tech companies – Alphabet, Microsoft, Apple and Amazon – shifted their operational footprint to the domestic market, reducing foreign assets. Asian MNEs, including Tencent (China), Hon Hai (Hong Kong, China), Huawei (China), Samsung (Republic of Korea) and Sony (Japan), also reduced their foreign assets relative to domestic assets.

MNEs in other industries did not experience significant shifts in their internationalization rates. As a result, the average transnationality index did not change in 2022.

One exception was the shipping and logistics company AP Moller-Maersk (Denmark). In recent years, the company has transformed into an integrated logistics service provider, coming back to the top 100 ranking after six years of absence. Other new entries include the business services company AerCap (Ireland), which bought the aviation leasing business of GE (United States) in 2021, as well as the heavy machinery and vehicles manufacturer Volvo (Sweden).

MNEs exiting the ranking in 2022 include the trading house Marubeni (Japan), which divested non-core assets worth more than $3 billion, including the grain business Gavilon Agriculture (United States) for $1.1 billion. The commercial real estate company Unibail-Rodamco-Westfield (France) also exited the ranking after selling its malls in the United States.

With Chinese MNEs still dealing with pandemic measures and supply chain disruptions in 2022, and continued geopolitical tensions, their overseas activity was relatively limited. In the ranking of top MNEs from developing economies, the three largest deals were the acquisition by Petroliam Nasional (Malaysia) of inorganic chemicals manufacturer Perstorp (Sweden) for $2.5 billion, the acquisition by telecommunication company Ooredoo (Qatar) of the wireless telecommunications carrier PT Hutchison 3 Indonesia for $1.7 billion and the acquisition by FEMSA (Mexico) of snack bar operator Valora (Switzerland) for $1.2 billion.

NOTES

1 The 2022 decrease would have been even steeper if the 2021 FDI figures had not been revised downward for Switzerland and the United Kingdom of Great Britain and Northern Ireland. In the former, revisions derived from corporate restructuring and liquidation of several special-purpose entities and in the latter from changes in statistical methods.

2 The analysis follows a taxonomy of SDG sectors in line with recent UNCTAD studies (see for example UNCTAD's SDG Investment Trends Monitors and various editions of the *WIR*). This taxonomy has the advantage of building on categories that are mutually exclusive (to avoid overlaps and double counting) and collectively (quasi-)exhaustive (i.e. together they cover the bulk of the capital investment needed to achieve the 17 Goals). Unlike in *WIR14*, this approach does not separate climate change investment (in mitigation and adaptation) from investment in other SDG sectors.

3 The nationality of the sponsor defines the type of investment project: if there is only one local sponsor – as it is often the case for Belt and Road Initiative projects where developers from China do not appear as sponsors – the project is classified as domestic.

4 The shares of individual companies are indicative, as most upstream assets have multiple owners.

CHAPTER II

RECENT POLICY DEVELOPMENTS AND KEY ISSUES

INTRODUCTION

In response to the economic challenges posed by the expected economic downturn, many countries ramped up their investment policymaking activity in 2022 (section A). Measures favourable to investment surged in both developed and developing countries. Their number nearly doubled, bringing their share of total measures back to pre-pandemic levels. Developing countries continued to prioritize investment promotion and facilitation measures to attract foreign direct investment (FDI) across various sectors, while developed countries mainly incentivized investments that have a positive environmental impact.

In parallel, the trend observed in recent years towards introducing or tightening national security regulations that affect FDI in strategic industries continued and expanded. The approach to FDI screening varies significantly from country to country, resulting in a patchwork of different regimes. Together, countries with FDI screening regimes accounted for 71 per cent of global FDI flows and 68 per cent of FDI stock in 2022, compared with 66 and 70 per cent, respectively, in 2021. Furthermore, the number of merger and acquisition (M&A) deals valued at more than $50 million withdrawn by the parties for regulatory or political concerns in 2022 increased by a third, and their value increased by 69 per cent.

The trend towards reforming the international investment agreements (IIA) regime continued in 2022, with several notable developments (section B). These included the emergence of new types of investment-related agreements, the termination of bilateral investment treaties (BITs) and continued multilateral discussions on the reform of investor–State dispute settlement (ISDS) mechanisms. Negotiations were concluded on several international investment governance instruments with proactive investment facilitation features and with an increased focus on responsible investment. At the same time, about 2,300 old-generation IIAs are still in force. Their continued prevalence entails risks for climate action, the energy transition and other global objectives, highlighting the need to accelerate the reform of the IIA regime.

Looking at trends in investment treaty arbitrations, about 80 per cent of the new ISDS cases in 2022 relied on IIAs signed in the 1990s or earlier. The total count of ISDS had reached 1,257 by the end of 2022, with 46 new arbitrations initiated that year. The Energy Charter Treaty (ECT) continued to be the most frequently invoked IIA.

Investment policies at both national and international levels play a crucial role in driving the shift towards clean energy, which is at the centre of the policy response to climate change (section C). Countries utilize a variety of policy instruments to promote investment in the renewable energy sector. Section C.1 provides an overview of the key ones, based on analysis of renewable energy policies worldwide. Developing countries and least developed countries (LDCs) typically favour conventional promotion instruments such as tax incentives (particularly profit-based ones). In contrast, developed economies tend to rely on financial incentives as well as more complex, but more targeted tools, such as feed-in tariffs and green certificates, to promote investment in renewables and facilitate the low-carbon energy transition. Auctions have increasingly been embraced by countries at every level of development. These policy tools come with both benefits and challenges, and they should be implemented and tailored to country-specific circumstances and objectives.

The chapter also reviews the use of fossil fuel subsidies, which effectively disincentivize renewable energy investment because they artificially lower the cost of producing and consuming fossil fuels, making them more attractive to consumers and investors. In addition, fossil fuel subsidies create an incumbent advantage, reinforcing the position of fossil fuels in

the energy system. Despite reiterated commitments to discontinue fossil fuel subsidies, they have reached record levels and increasingly benefit producers. Phasing them out remains a complex issue, particularly for developing countries, but it would help increase investment in renewables and signal a country's commitment to a low-carbon economy.

At the international level, the energy transition adds to the urgency of international investment governance reform (section C.2). Most IIAs do not include proactive investment promotion and facilitation provisions supporting low-carbon energy investments. This challenge is compounded by the rising number of ISDS cases related to the fossil fuel and renewable energy sectors that are brought based on IIAs. Investors in these sectors – albeit different, but equally important to the energy transition – have been frequent claimants, together accounting for about 25 per cent of all ISDS cases. To transform IIAs into tools that are conducive to sustainable energy investment and climate objectives, UNCTAD has developed a toolbox with policy options focused on four action areas: the promotion and facilitation of sustainable energy investments, technology transfer, the right to regulate for climate action and the energy transition, and corporate social responsibility. Renegotiation, amendment and termination of the large stock of old-generation IIAs are the main options to ensure that the international investment regime positively contributes to – and does not constrain – the energy transition and climate action.

A. NATIONAL INVESTMENT POLICIES

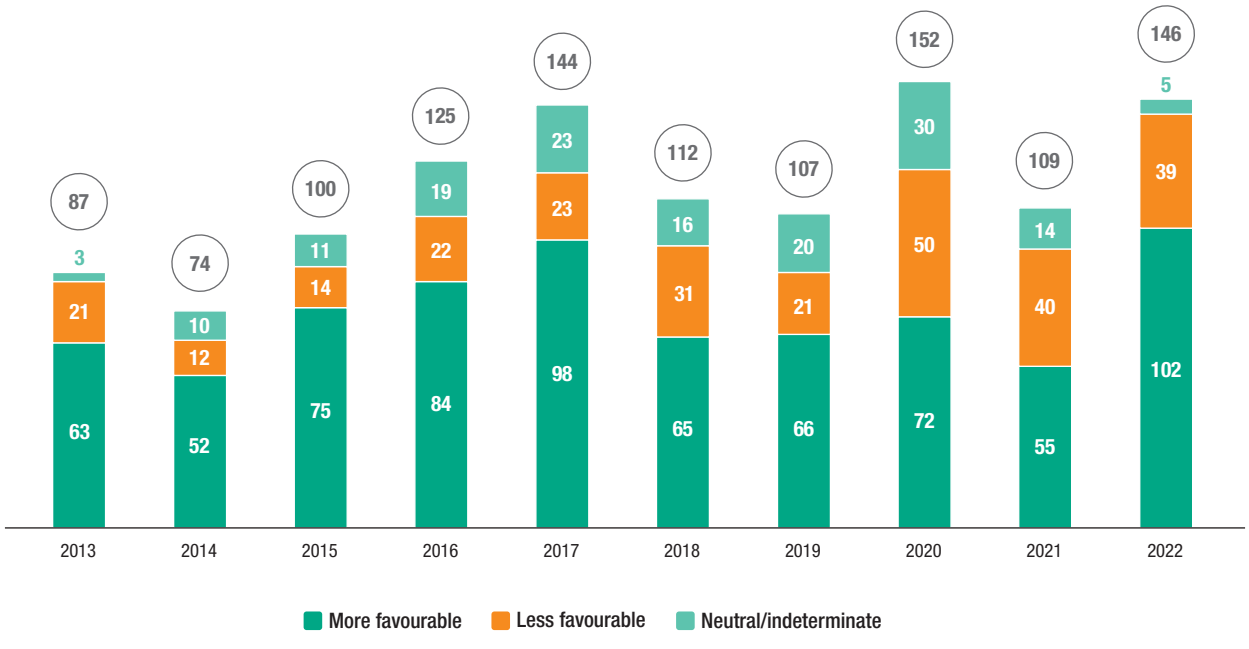
1. Overall trends

Investment policymaking activity surged in 2022, as many countries adopted measures to counter an expected economic downturn. After registering record low levels in the aftermath of the pandemic, measures favourable to investment increased in both developed and developing countries, bringing their relative share back to pre-pandemic trends.

Sixty-six countries introduced a total of 146 policy measures affecting foreign investment in 2022, an increase by 35 per cent from the number in 2021 (figure II.1). The number of measures favouring investment nearly doubled, from 55 to 102, while the number of policies that were less favourable to investment remained stable. This brought the relative share of favourable policies back to pre-pandemic levels (figure II.2), reflecting recognition by policymakers of the need to stimulate investment and promote economic growth in the face of unprecedented challenges posed by the current global crises.

Developing countries continued to prioritize investment attraction as a key element in their economic recovery and development strategies. In 2022, three quarters of the measures more favourable to investment were adopted in developing countries. For the first time since the pandemic, the share of more favourable investment measures also grew significantly in developed countries (by 21 per cent). Investment facilitation initiatives and incentive regimes for promoting renewable energy and other climate-related investment were among the measures most frequently implemented (section 1.b).

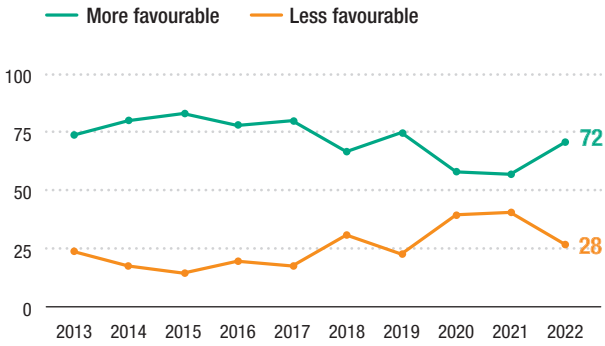
Figure II.1. Changes in national investment policies, 2013–2022 (Number of measures)



Source: UNCTAD, Investment Policy Monitor.

The number of new measures less favourable to investment remained stable compared with 2021, and their share returned to the pre-pandemic level (28 per cent of non-neutral measures) (figure II.2). In developing countries, less favourable measures constituted only 13 per cent of the total. In contrast, half of the measures adopted by developed countries introduced or reinforced investment restrictions, a decrease of 29 percentage points compared with 2021. Several of these policies were directly or indirectly related to national security concerns about foreign ownership of critical infrastructure, core technologies or other sensitive domestic assets. Often, they represented an extension of restrictions introduced during the pandemic, motivated by the desire to protect sensitive domestic businesses from foreign takeovers (section 2).

Figure II.2. Changes in national investment policies, 2013–2022 (Per cent)



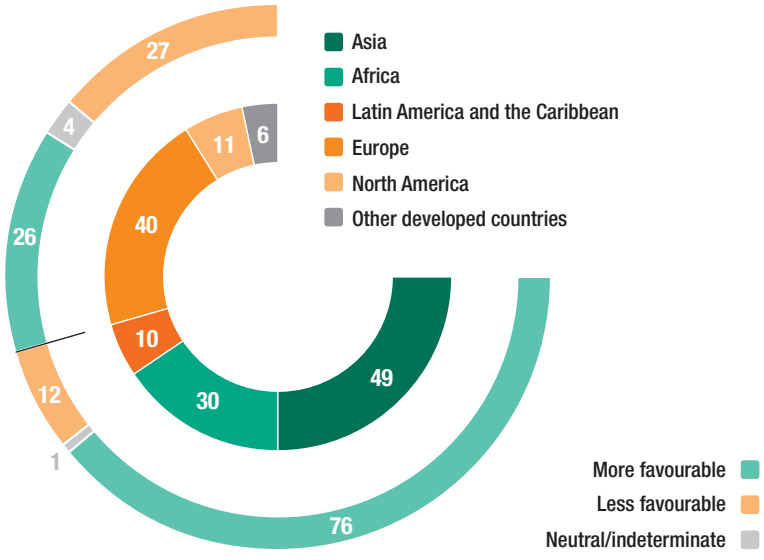
Source: UNCTAD, Investment Policy Monitor.

An additional five measures were of a neutral or indeterminate nature, such as changes of mandate for institutions in charge of investment promotion or screening (figure II.1).

In regional terms, countries in Asia continued to be the most active reformers, followed by those in Africa and in Latin America and the Caribbean. Among developed regions, European countries continued to adopt the largest number of measures, more than double the number in 2021. The number of measures adopted in North America and other developed regions remained stable compared with 2021 (figure II.3).

Among the 21 investment policy measures adopted in the first quarter of 2023, 76 per cent (16 measures) were adopted by developing countries. Fourteen of them aimed to facilitate or attract FDI. In contrast, among the remaining five measures adopted by developed countries, two aimed to tighten control on FDI and one adopted a windfall profit tax.

Figure II.3. Regional distribution of national investment policies in 2022
(Number of measures)



Source: UNCTAD, Investment Policy Monitor.

a. FDI screening and windfall profit taxes were prominent among measures introduced in developed countries

In 2022, the trend towards increased screening of FDI continued and expanded. Another significant trend was the introduction of windfall profit taxes by several European countries.

The introduction or tightening of national security regulations affecting FDI represented 44 per cent of policy measures less favourable to investment, most of them introduced by developed countries (section 2). In addition, several developed countries introduced taxes aimed at (i) ensuring a fair distribution of profits in industries that have experienced significant gains because of the pandemic and (ii) financing recovery programmes or subsidies for energy consumers. For example,

- *Croatia* adopted the Corporate Windfall Tax Act, which affects all companies with revenue greater than approximately $42.6 million in 2022. Any profit higher than 20 per cent of the average taxable profits generated in fiscal years 2018–2021 will be taxed at a rate of 33 per cent.
- *Italy* introduced a temporary solidarity tax for enterprises operating in the energy, oil and gas sectors. It applies to entities that derived at least 75 per cent of revenues for fiscal year 2022 from the production, import or sale of electricity, natural gas or oil products.
- *Portugal* introduced a temporary solidarity tax in the energy and food distribution sectors. It levies a rate of 33 per cent on taxable profits in 2022 and 2023 to the extent that they exceed by 120 per cent the average taxable profits in the preceding four years (2018 to 2021).
- *Romania* adopted a windfall tax on companies operating in the oil, natural gas, coal and refining sectors. Revenues that exceed the average profits of the preceding four years by more than 20 per cent will be taxed at a rate of 60 per cent.
- The *United Kingdom* imposed new windfall taxes on energy companies. The Energy Profit Levy, which applies to the profits of oil and gas companies, was introduced in May 2022 at a rate of 25 per cent and later increased to 35 per cent. In addition, a temporary 45 per cent levy was imposed on the extraordinary profits of companies that operate electricity-generating assets (Electricity Generator Levy).

b. Support for renewable energy and carbon neutrality predominated in developed countries' investment promotion measures

FDI promotion measures in developed countries focused on incentivizing renewable energy and other investments with positive environmental impact.

In 2022, developed countries' efforts to encourage FDI centred on providing incentives for investments in renewable energy and other environmentally beneficial projects. For example,

- *Albania* introduced a one-stop-shop service, as well as financial grants and other support measures for domestic and foreign start-ups supporting innovation in priority areas, including initiatives that have positive environmental impacts.
- *Italy* provided incentives for building sustainable biomethane or electricity plants using agricultural waste or biogas. They include a 40 per cent capital contribution on eligible investment costs, up to a maximum limit, as well as a 15-year incentive tariff for biomethane production.
- The *Republic of Korea* decided to provide a cash reimbursement of up to 50 per cent for foreign investment in strategic areas such as chips, batteries and vaccines.

- *Spain* introduced incentives for investing in renewable energy, allowing 100 per cent depreciation for facilities intended for self-consumption of electricity that use energy from renewable sources, as well as those installations for thermal use for own consumption that use energy from renewable sources, which replace installations that use non-renewable fossil energy sources.
- The *United States* offered $369 billion in incentives for energy and climate-related programmes, including tax credits, grants and research loans to boost manufacturing of clean energy components in the country. The country also provided tax credits for production of clean electricity and investment in clean energy infrastructure, and manufacturing tax credits for investments to cut emissions and improve efficiency. It also offered programmes to reduce the environmental impact of agriculture.

c. In developing countries, investment promotion and facilitation measures continued to dominate

At least 40 developing countries implemented promotion and facilitation measures in 2022, to attract additional FDI and to help overcome the economic challenges caused by the global crisis. Investment facilitation measures accounted for almost 52 per cent of all measures more favourable to investment.

(i) New investment incentives

At least 22 developing countries introduced incentives for investors, most of them in the form of new fiscal benefits for priority sectors or the institution of special economic zones. For example,

- *Algeria* implemented a law on free trade zones, which exempts activities in these zones from most taxes, duties and levies, except for taxes related to vehicles and passenger cars and contributions to the social security system.
- *Argentina* implemented tax benefits for investors in the automotive industry, including accelerated depreciation and early refund of value added tax (VAT) paid on acquisitions of new capital goods and full exemption (a zero per cent rate) from export duties for manufactured goods produced by investment projects.
- *Egypt* announced incentives on FDI-funded projects in key industries and areas of up to 55 per cent of the value of the tax on the income generated. The incentives will be granted if at least 50 per cent of the investment project or its expansion is financed by foreign currency.
- *Ethiopia* implemented income tax exemption for investors from the date of obtaining a business licence or expansion permit and allowed investors to import capital goods, construction materials and motor vehicles free from customs duties.
- *Saudi Arabia* unveiled its first Special Integrated Logistics Zone, which offers investors (including those with 100 per cent foreign ownership) a 50-year tax holiday. In addition, it provides investors with VAT advantages on servicing and assembly.

(ii) Other legal and institutional reforms to promote and facilitate FDI

Several countries adopted new or enhanced legal and institutional mechanisms to promote FDI in 2022. For example,

- *Bangladesh* enacted the Bangladesh Patents Bill 2022, which extended the duration of patent protection from 16 to 20 years.
- *Fiji* realigned the mandate and functions of Investment Fiji to enable it to transition from being a regulator of foreign investors to being a promotion agency for attracting both

foreign and domestic investors. The agency will focus primarily on promoting investment and expanding exports.

- *Mexico* launched the Invest in Mexico Business Center, which will provide investors with economic and commercial intelligence, information on investment opportunities in different regions, guidance on national procedures and assistance in establishing linkages with companies and vendors of the supply chain.
- *Saudi Arabia* established the Saudi Investment Promotion Authority, which will collaborate with the Ministry of Investment to gather opinions and prepare proposals for laws, procedures and manuals.
- *Sri Lanka* introduced a new Ministry of Technology and Investment Promotion, which will promote FDI and private sector investment.

(iii) FDI liberalization

FDI liberalization accounted for 21 per cent of the policy measures more favourable to FDI that developing countries introduced in 2022. For example,

- *China* revised the Negative List for Foreign Investment Access, removing the 50 per cent cap on foreign investment in automobile manufacturing and in ground-receiving facilities for satellite television broadcast.
- *Ethiopia* announced the privatization of 40 per cent of Ethio Telecom, the public telecommunication operator. The process is open to foreign investors.
- *India* approved a policy amendment allowing FDI in up to 20 per cent of the State-run Life Insurance Corporation of India. Until this amendment, even though foreign institutional investors were allowed to hold up to 74 per cent of private insurance companies and up to 20 per cent of State-owned banks, they were not permitted to own shares in the State-run insurer.
- The *Philippines* allowed international investors to set up and fully own small and medium-sized businesses and hold 100 per cent equity in firms in sectors where they could already operate. Previously, foreign investors could invest in small businesses only if they hired at least 50 Filipino workers.
- The *United Arab Emirates* allowed investors and entrepreneurs to establish 100 per cent foreign-owned companies in almost all sectors, except activities deemed to be strategic, such as defence and communications. Historically, foreign ownership was capped at 49 per cent with the remaining 51 per cent mandated for nationals of the country.

d. Investment restrictions in developing countries targeted, among other matters, national security and the protection of strategic assets

National security considerations and the protection of strategic industries also featured in some developing-country measures.

Some developing countries also placed emphasis on implementing investment measures that prioritize the protection of strategic industries and national security considerations. For example:

- *India* announced that any national from a country with which it shares a land border (Bangladesh, Bhutan, China, Myanmar, Nepal, Pakistan) must seek security clearance from the Ministry of Home Affairs in order to be appointed as director in any Indian company.

- *Mexico* declared lithium a national resource of public utility and banned all concessions, licences, contracts, permits or authorizations for exploration or exploitation of the mineral in the country. All such activities will be carried out by a decentralized public authority to be created by the Government.
- The *Philippines* introduced an FDI review mechanism in military-related industries, cyber-infrastructure, pipeline transportation and other such activities that may threaten the territorial integrity and the safety, security and well-being of citizens.

2. Investment screening

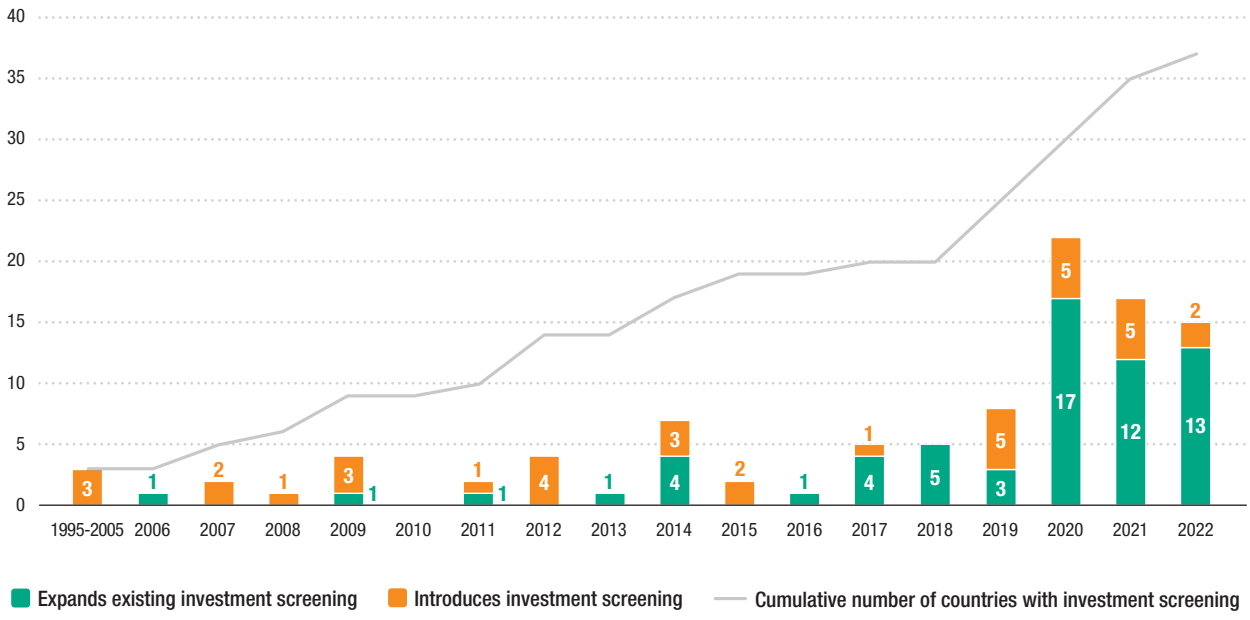
a. Continued expansion of FDI screening regimes

In 2022, the number of countries conducting investment screening on national security grounds continued to rise, reaching 37. Among them, 16 countries undertook 24 measures related to FDI screening, most of which expanded the scope of existing regimes.

As documented in recent editions of the *World Investment Report* and in UNCTAD's latest *Investment Policy Monitor* (UNCTAD, 2023b), the implementation of FDI screening mechanisms to address security concerns related to foreign investment is becoming increasingly common among countries (figure II.4).

The current trend began to emerge in the latter half of the 2000s. From 2006 to 2009, the number of countries making use of investment screening for national security increased from three to nine. In the aftermath of the global economic and financial crisis, and in parallel with the expansion of outward FDI from developing countries, more developed countries began to introduce dedicated regimes for screening investments. The main concern among some appeared to be that foreign investors may buy stakes in strategic industries to gain access to and knowledge of the latest technology or "national champions" (*WIR07*). By 2014, a total of 17 countries had incorporated elements of investment screening in their national investment policies.

Figure II.4. Countries introducing or expanding security-related investment screening, 1995–2022 (Number)



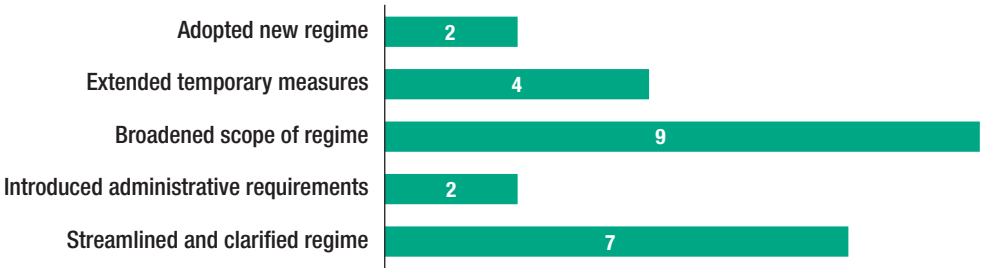
Source: UNCTAD.

Starting from 2016, countries have introduced a significant number of amendments to existing investment screening regulations, mostly seeking to expand their scope. Most of these reforms took place in 2020 and 2021, when 17 and 12 countries respectively adopted amendments to their screening regimes. The peak of regulatory activity came in 2020 (see figure II.4), when the world economy faced risks associated with the COVID-19 pandemic, which accelerated the trend.

Between 1995 and the end of 2022, at least 37 countries had established investment screening mechanisms for national security reasons.[1] Of these, 22 are developed economies in Europe. In other regions, a handful of developed and developing countries have implemented comprehensive FDI screening regimes (nine in Asia, two in North America, two in Oceania, one in Latin America, and one in Africa). In addition, at least eight countries are in the process of introducing FDI screening mechanisms to address potential risks posed by certain investments to their national security.[2] Finally, discussions are ongoing in the European Union and the United States about the possible introduction of outward investment controls.[3]

In 2022 alone, a total of 24 policy measures related to FDI screening were adopted by 16 countries, nearly all of them developed economies. Most of the measures that were adopted focused on extending the scope or requirements for screening, though some were meant to streamline or clarify procedures (figure II.5).

Figure II.5. Key changes to FDI screening in 2022 (Number of measures)



Source: UNCTAD, Investment Policy Monitor.

(i) New or expanded regimes

In 2022, new FDI screening regimes entered into force in the United Kingdom (section 1.a) and in the Philippines (section 1.d), bringing to 37 the total number of countries with comprehensive FDI screening regimes based on national security. Together, these countries accounted for 71 per cent of global FDI flows and 68 per cent of FDI stock that year (compared with 66 and 70 per cent respectively in 2021).

At least four countries (France, Italy, Poland and Spain) extended the temporary screening provisions introduced during the COVID-19 pandemic or made them a permanent part of their screening regime. Originally, these temporary regimes aimed to safeguard domestic capacities related to strategic sectors, especially in health care, pharmaceuticals, medical supplies and equipment (*WIR20*). Subsequently, their extension was justified by broader considerations including, in Italy, "the extraordinary need and urgency to ensure the strengthening of safeguards for security, national defence, electronic communication networks and supplies

of raw materials",[4] and, in Spain, "the impact of the pandemic and the geopolitical tensions on different sectors, global value chains and the instability of financial markets".[5]

Seven countries broadened the scope of their FDI screening mechanisms by including additional sectors, activities or strategic assets or by expanding the definition of investment or investor, or the level of control that triggers FDI screening. For example,

- *Canada* released a policy statement clarifying that investment in Canadian entities and assets by State-owned enterprises in critical minerals sectors could be deemed injurious to national security as per the Investment Canada Act. The policy applies to all stages of the value chain and all types of investment, regardless of value, or level of control.
- *Italy* expanded its special power over strategic assets in the energy, transport and communication sectors to cover geothermal resources, procurement related to 5G networks and cloud services, and other cybersecurity assets and technologies. In addition, it extended the mandatory notification regime to new legal entities in strategic sectors that have ownership from countries outside the European Union of more than 10 per cent of capital or voting rights.
- *Japan* introduced a pre-notification procedure for real estate objects located in "special monitored areas" to safeguard national security interests by preventing "inappropriate use of real estate that impedes the functions of important facilities and border islands".
- The *Russian Federation* expanded the list of activities considered strategic for national security and subject to FDI screening to include analysis of the vulnerability of fuel and energy complex facilities, physical protection of these facilities, and the transportation of goods by sea and inland waters and associated information technology services.
- *Slovakia* broadened its FDI screening regime to include all foreign investments that may threaten security or public order. Previously, only investments in critical infrastructure were subject to screening. In addition, it expanded definitions of foreign investment, effective participation and foreign control, foreign investors, and critical foreign investments.

Two countries increased control over FDI by introducing or tightening administrative requirements:

- *New Zealand* tightened the test for overseas investors seeking to convert land to new forestry production by eliminating the option of relying on the simplified "special forestry test".
- *Romania* expanded the screening framework by adopting a mechanism in line with the European Union Guidance on FDI screening. Under the new law, the de minimis threshold for screened investment is €2 million. However, if an investment is deemed to have the potential to affect national security or public order, the screening procedure may be initiated ex officio, regardless of whether the investment exceeds the required threshold.

(ii) Streamlining and clarification of existing regimes

At least five countries introduced measures to clarify or streamline their FDI screening procedures and reduce the regulatory burden on investors. For example,

- *Australia* amended the Foreign Acquisitions and Takeovers Regulation of 2015 to clarify certain aspects of the foreign investment review framework and streamline the process for certain less sensitive types of investment. It also updated the Guidance Notes covering agriculture, commercial land, mining, residential land and securities, among other investment targets.
- *Canada* allowed non-Canadian investors to seek pre-implementation regulatory certainty for national security review of investments that do not require filing under the Investment Canada Act, by introducing a voluntary filing process that shortens the review period to 45 days from five years.

- *France* issued its first set of guidelines on FDI control that "aims to ensure predictability and legal certainty of the operations envisaged by foreign investors and thus contribute to further enhancing the attractiveness of France".[6] The guidelines clarify the official position on the scope of the definition of an investor, types of investments covered by the screening regime and covered activities, and procedural aspects of FDI screening.
- *Italy* introduced a pre-filing procedure for FDI transactions in strategic sectors. The new procedure seeks to shorten the time frame for the preliminary assessment of transactions by the Government.
- The *United States* updated the "excepted foreign States" list to include Canada and Australia. Subject to certain conditions, investors from these countries do not fall under the jurisdiction of the Committee on Foreign Investment in the United States over non-controlling investments and certain real estate transactions, and they are exempt from mandatory filings.

b. Significant differences exist among FDI screening regimes

A recent review by UNCTAD highlighted that the approach to FDI screening varies greatly from country to country, leading to a patchwork of differing regimes.

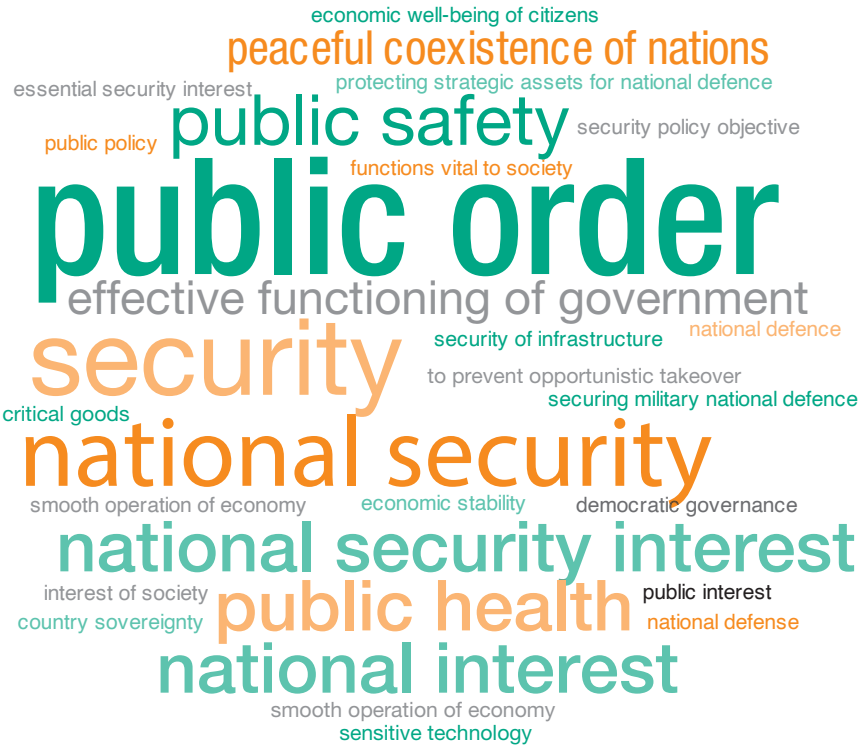
UNCTAD recently conducted an extensive review of investment screening mechanisms in 29 countries that have established comprehensive rules for screening investments on national security grounds (UNCTAD, 2023b). The review revealed that there is no standardized approach, resulting in significant differences in the clarity, scope and transparency of various mechanisms. In some cases, these mechanisms can create significant barriers to investment and a high administrative burden for host-country authorities.

Notably, the review identified significant variations in the scope and rationale of investment screening mechanisms, including how the subject of the mechanism is determined. Some are based on the economic grouping(s) of the country of origin of the investor, while others are based on whether the foreign entity subject to screening is public or private. In addition, there is a wide range of often undefined screening criteria and rationales (figure II.6), and the scope of the screening procedures can be sector-specific, cross-sectoral or entity-specific.

Wide variations also exist in the governance of screening mechanisms. In over half of the countries reviewed, screening is conducted by the authorities in charge of investment matters; only six countries rely on a national regulatory authority to take on screening duties. In addition, investors affected by screening can be subject to different administrative requirements such as filing schemes, notification procedures and pre-authorization procedures, or different combinations of those requirements.

Finally, investment screening regimes tend to operate outside public scrutiny and provide limited levels of transparency to those involved in the screening process. To increase legal certainty and predictability for investors, several countries have introduced provisions that set out in detail the factors to be considered by the authorities in the screening process, as well as the aspects or investor features that are taken into consideration for assessment of an investment project. Efforts to improve the transparency, predictability and administrative efficiency of investment screening mechanisms and introduce effective appeals will become increasingly important, as investment screening regimes become more widespread and comprehensive.

Figure II.6. **Investment screening rationale, most frequently used criteria**



Source: UNCTAD

c. FDI screening – summary of available data

A limited number of countries currently disclose official data on FDI screening and there is no standardized reporting framework, but the data point to an increase in the number of screened projects and a low rejection rate.

Table II.1 on the following page presents data drawn from official sources or provided directly by the screening authorities to UNCTAD, detailing the number of FDI projects undergoing evaluation processes and, where available, information about rejected, blocked or withdrawn projects, as well as those that have undergone modifications.

In the absence of a standardized reporting framework, significant variations exist in the type of information reported, the reporting periods and the metrics used by countries. Specifically, some countries consider the total number of FDI applications received, whereas others focus solely on FDI projects that require a thorough examination or evaluation to address national security concerns.

Despite the differences in methodology, two notable trends appear. The first is an increase in the number of transactions that undergo review, likely because of the expansion of screening regimes and their scope in recent years. This applies to all countries with historical data. The second is that instances of investment rejection or prohibition are relatively infrequent (less than five per year across all countries). This can be attributed to the widespread implementation of robust mitigation measures, along with the high number of projects withdrawn from the screening process, whether for commercial reasons or for failure of the parties to address national security concerns raised by the screening authority during the review process.

Table II.1. FDI projects screened on national security grounds (selected countries)

Country	Period	Screened	Authorized	Modified or authorized with conditions	Rejected	Withdrawn
Australia	4/2020–3/2021	..	28	4	..	..
	4/2021–3/2022	..	67	39	..	..
	3/2022–12/2022	..	55	10	..	..
Austria	7/2020–7/2021	50	41	2	3	4
Canada	4/2019–3/2020	10	4	..	3	3
	4/2020–3/2021	23	16	..	3	5
	4/2021–3/2022	24	16	..	0	7
Czechia	5/2021–12/2021	3	1	0	0	0
	2022	6	3	0	0	1
Finland	2019	15	..	..	0	..
	2020	15	..	..	0	..
	2021	32	..	..	0	..
	2022	35	..	..	0	..
France	2021	328	57	67	..	..
Germany	2019	106	..	12	..	..
	2020	160	..	12	..	..
	2021	306	..	14	..	..
	2022	306	..	7	..	..
Italy	2019	83	39	13	0	..
	2020	342	135	40	2	..
Malta	10/2020–12/2020	13	2	1	0	0
	2021	81	2	6	2	0
	2022	22	0	0	1	3
Slovakia	2021	0	0	0	0	0
	2022	0	0	0	0	0
Spain	2019	6	6	0	0	0
	2020	37	34	3	0	1
	2021	57	51	6	0	1
	2022	77	67	9	1	1
United Kingdom	2022	222	..	9	5	..
United States	2019	231	..	28	1	30
	2020	313	..	16	1	30
	2021	436	..	26	0	74

Source: UNCTAD, based on official sources and country inputs.
Notes: The number of authorized projects does not include the number of projects modified or authorized with conditions. For Germany, the number of projects modified or authorized with conditions includes prohibitions, side conditions, public legal contracts and administrative orders. In the United Kingdom, data on screened projects are valid only for the first quarter of 2022, and the review mechanism applies equally to domestic and foreign parties.

d. M&A controls affecting foreign investors

In 2022, the number of M&A deals valued at more than $50 million that were withdrawn because of regulatory or political concerns increased by a third (21 deals), and their total value increased by 69 per cent, to $70 billion.

The greater attention paid to national security considerations in regulatory approaches to FDI is reflected in the implementation of M&A controls. Among large M&A deals for which data are available, at least 21 were terminated by the parties in 2022 for regulatory or political

reasons, 7 more than in 2021, and their aggregate value jumped by almost 70 per cent, to $70 billion from $47 billion. This corresponds to 5.4 per cent of total FDI inflows in 2022. The terminated deals were in a variety of sectors, including extractive industries, semiconductors, automotive, aviation, communication, financial and banking services, trading and media, and commercial physical and biological research.

At least four deals were formally prohibited by the host country for national security reasons (table II.2). Another four were discontinued because of concerns from competition authorities, and at least six were withdrawn for regulatory reasons. Finally, at least seven planned deals were terminated because of delays in receiving approval from the host country. It should be noted that the total number and value of deals screened out by Governments worldwide for these reasons is likely to be significantly higher. The adoption or announcement of tighter screening mechanisms, discussed earlier, is also likely to have had a chilling effect on the number of deals initiated in several strategic sectors.

Table II.2. Foreign acquisitions withdrawn for regulatory or political reasons in 2022
(Illustrative list)

For national security reasons	
Silex Microsystems–Elmos Semiconductor	On 9 November 2022, Silex Microsystems (Sweden) withdrew its plans to acquire the 200 mm wafer fabrication activities of Elmos Semiconductor (Germany) for $95.9 million after the Federal Cabinet prohibited the sale. In a press release emitted on 2 November 2022, the Federal Ministry for Economic Affairs and Climate Protection justified the ban by stating that "the acquisition would have endangered public order and security in Germany".
Magnum Opus Acquisition–Forbes Media	On 1 June 2022, Magnum Opus Acquisition (Hong Kong, China) withdrew its agreement to merge with Forbes Media (United States), a periodical publisher, for $180 million. A group of United States senators had expressed concerns for national security regarding the proposed acquisition of Forbes by an entity with ties to the Communist Party of China.
2869889 Ontario–Petroteq Energy	On 29 August 2022, 2869889 Ontario (Canada) announced the withdrawal of its tender offer to acquire the entire share capital of Petroteq Energy, a United States–based natural gas distributor, for $410.2 million in cash. The withdrawal was prompted by the rejection of the company's request for clearance by the United States Department of the Treasury. The company decided not to proceed with the transaction without the safe harbour that the notice would have offered by preventing any later determination that the protection of United States national security could be invoked.
Asymchem Laboratories–Snapdragon Chemistry	On 18 September 2022, Asymchem Laboratories (China) cancelled its acquisition plans for the remaining 81.8 per cent interest in Snapdragon Chemistry (United States), a provider of biotechnology R&D services, for $57.9 million in cash. The two firms were unable to agree on mitigation terms that would satisfy the Committee on Foreign Investment in the United States, which has the authority to block FDI on the grounds of national security.
For competition reasons	
Nvidia–ARM	On 8 February 2022, Nvidia Corp (United States) withdrew its plans to acquire the entire capital of ARM (United Kingdom), a manufacturer of semiconductors and related devices, for $40 billion after the transaction was blocked by the United States Federal Trade Commission, which argued that Nvidia would gain too much control over chip designs used by the world's biggest technology companies.
FNZ –Link Administration Holdings	On 21 March 2022, FNZ (United Kingdom) terminated its plans to acquire the Retirement & Superannuation Solutions business of Link Administration Holdings (Australia), a provider of office administrative services, for an estimated $1.1 billion in cash. The Australian Competition and Consumer Commission had raised concerns over the "vertical integration" of the company's then $3.5 billion takeover by Dye & Durham.
China International Marine Containers–Maersk Container Industry	On 25 August 2022, China International Marine Containers (China) withdrew its agreement to acquire the entire share capital of Maersk Container Industry (Denmark), a manufacturer of metal shipping containers, for a combined estimated value of $1.1 billion. The decision to withdraw came after the Federal Cartel Office, the competition regulatory agency of Germany, provided the companies with a detailed explanation of its considerable concerns regarding concentration and competition.
Hydro Aluminium–Alumetal	On 12 October 2022, Hydro Aluminium (Norway) abandoned its planned acquisition of the entire share capital of Alumetal (Poland), an aluminium foundry operator, for $238.9 million. The Commission expressed concern that Alumetal had a "strong growth potential" for alloys made with recycled aluminium and that the deal may (1) reinforce Norsk Hydro's leading position as a supplier of aluminium foundry alloys, and (2) "eliminate a growing competitor able to bring cheaper and advanced recycled aluminium products to the market".

/…

Table II.2. Foreign acquisitions withdrawn for regulatory or political reasons in 2022
(Illustrative list) (Concluded)

For other regulatory reasons	
True Corporation–Total Access Communication	On 22 November 2022, True Corporation, a joint venture between Charoen Pokphand (Thailand) and Telenor (Norway), withdrew its tender offer for the entire share capital of Total Access Communication (Thailand), a wireless telecommunication carrier, for $3.2 billion in cash. The cancellation followed a notification from the Securities and Exchange Commission of Thailand about the conditions and methods for the acquisition of securities for business takeovers, which require a tender offeror to announce the abolition of the offer if it cannot meet the conditions within one year.
Penguin Random House–Simon & Schuster	On 21 November 2022, Penguin Random House, a multinational conglomerate publishing company owned by Bertelsmann (Germany), withdrew its definitive agreement to acquire Simon & Schuster (United States), a book publisher for an estimated $2.2 billion in cash. This decision came in response to a court ruling that deemed the sale illegal due to potential adverse effects on authors' compensation and on competition in the industry.
Dye & Durham–Link Administration Holdings	On 23 September 2022, Dye & Durham (Canada) cancelled its plans to acquire the entire share capital of Link Administration Holdings (Australia), a provider of office administrative services, for $1.7 billion. The looming threat of regulatory fines for Link's United Kingdom subsidiary led Dye & Durham to revise its offer from $5.50 to $4.81 per share in July. The risk perception was heightened in September when the Financial Conduct Authority of the United Kingdom approved the takeover with a proviso setting aside £306 million for the payment of fines, followed by a warning notice about additional penalties.
Lunar Group–Instabank	On 30 September 2022, Lunar Group (Denmark) withdrew its tender offer for the entire share capital of Instabank (Norway), a commercial bank, for $144.8 million in cash. In May, the Norwegian Financial Supervisory Authority notified the company that extra capital would be needed to receive approval of the acquisition. Lunar could not raise sufficient capital to obtain the regulatory approval.
SAN JV–SAHAM Assurance	On 4 January 2022, SAN JV (South Africa) abandoned its planned acquisition of a minority stake in SAHAM Assurance (Morocco), a direct life insurance carrier, for $138.5 million in cash, owing to failure to fulfil the conditions precedent to the transaction. One of the conditions was the approval of relevant regulatory authorities in both countries.
Edison Motors–SsangYong Moto	On 7 April 2022, Edison Motors (Republic of Korea) withdrew its plans to acquire an undisclosed majority interest in SsangYong Motor, a manufacturer of automobiles owned by Mahindra & Mahindra (India), for $240 million, following a court decision that cancelled its proposed takeover for failing to make the scheduled second and final payment by 25 March 2022.
While waiting for host-country approval	
Jadestone Energy–Maari Oil Field	On 27 September 2022, Jadestone Energy (Singapore) aborted its plans to acquire a 69 per cent interest in Maari Oil Field (New Zealand), a producer of crude petroleum and natural gas, for $52.6 million. The decision was taken for lack of progress in obtaining the regulatory approval almost three years after the planned acquisition was disclosed.
First Abu Dhabi Bank–EFG Hermes Holdings	On 14 April 2022, First Abu Dhabi Bank (United Arab Emirates) reversed its decision to acquire a 51 per cent interest in EFG Hermes Holdings (Egypt), an investment bank, for $601 million in cash, after Correction required: delete, or otherwise revise, to avoid insinuation of blaming a country lengthy regulatory delays in Egypt.
GlobalWafers–Siltronic	On 1 February 2022, GlobalWafers (Taiwan Province of China) withdrew its conditional tender offer to acquire the entire ordinary share capital of Siltronic (Germany), a manufacturer of semiconductors and related devices, for $5.3 billion in cash. GlobalWafers could not secure the final approval from the economy ministry of Germany before the offer expired.
VPC Impact Acquisition Holdings II–FinAccel	On 11 March 2022, VPC Impact Acquisition Holdings II (United States) dropped its plans to merge with FinAccel (Singapore), a provider of financial transactions services, for $2.5 billion, because of delays caused by tighter audit and compliance standards set by the United States Securities and Exchange Commission.
Au Xingao Investment–Bullseye Mining	On 2 September 2022, Au Xingao Investment, an Australian subsidiary of Xinhu Zhongbao (China), withdrew its hostile tender offer for the entire share capital in Bullseye Mining (Australia), a gold ore mine operator, for $97.2 million in cash. The offer expired while it was still subject to various defeating conditions, including approval by the Foreign Investment Review Board.
Fintech Acquisition Corp V–eToro Group	On 5 July 2022, Fintech Acquisition Corp V (United States) withdrew its plans to acquire the entire share capital of eToro Group (Israel), a brokerage, for $10.4 billion. The cancellation was caused in part by the lengthy scrutiny by the United States Securities and Exchange Commission, which is increasingly cautious about special-purpose acquisition companies involved in crypto-related deals.
SportsTek Acquisition Corp–Metavisio	On 23 December 2022, SportsTek Acquisition (United States) abandoned its plans to acquire the entire share capital of Metavisio (France), a manufacturer of electronic computers, for an estimated $160.6 million. The decision was made after considering the costs, benefits and risks of prolonging SportsTek's existence, including current adverse market conditions and greater regulatory uncertainty about special-purpose acquisition companies.

Source: UNCTAD, based on media and company reports.

B. INTERNATIONAL INVESTMENT POLICIES

1. Trends in IIAs: new treaties and other policy developments

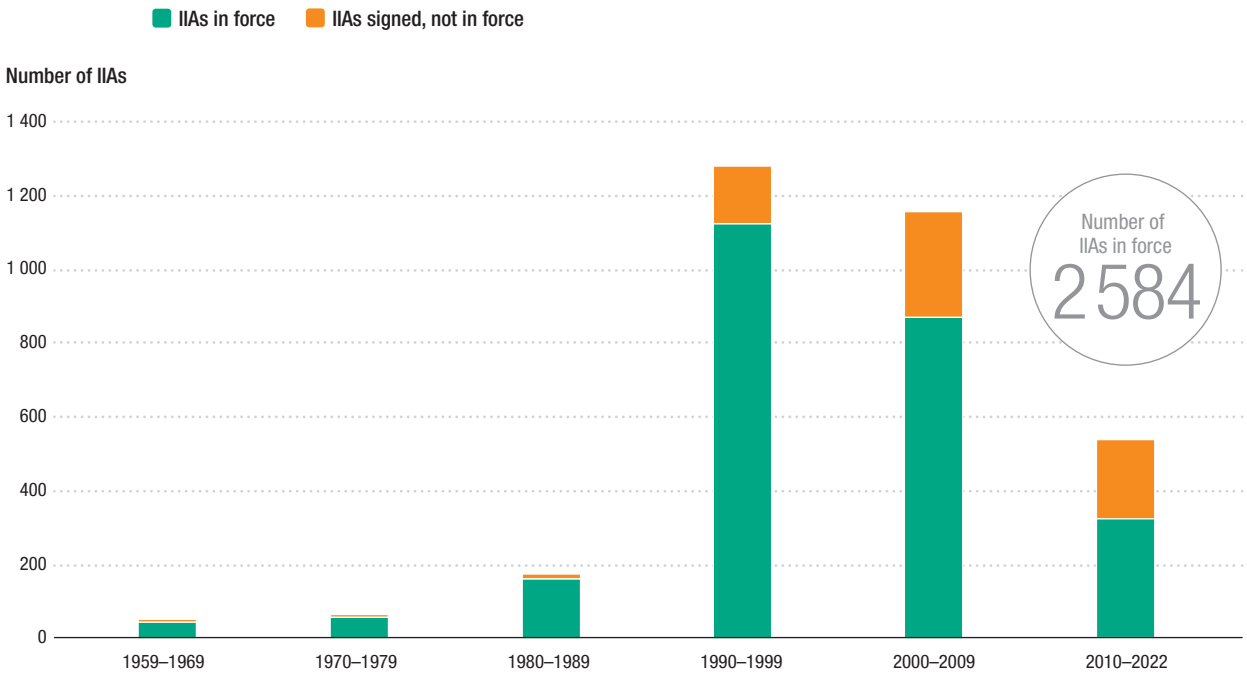
Several notable developments in 2022 continued the reform of the international investment agreements (IIA) regime at the bilateral, regional and multilateral levels. These include new types of investment-related agreements, the termination of bilateral investment treaties (BITs) and continued multilateral discussions on the reform of investor–State dispute settlement (ISDS) mechanisms.

a. Developments in the conclusion and termination of IIAs

In 2022, countries concluded 15 IIAs. For the third consecutive year, the number of effective treaty terminations exceeded that of new IIAs, with 84 terminations.

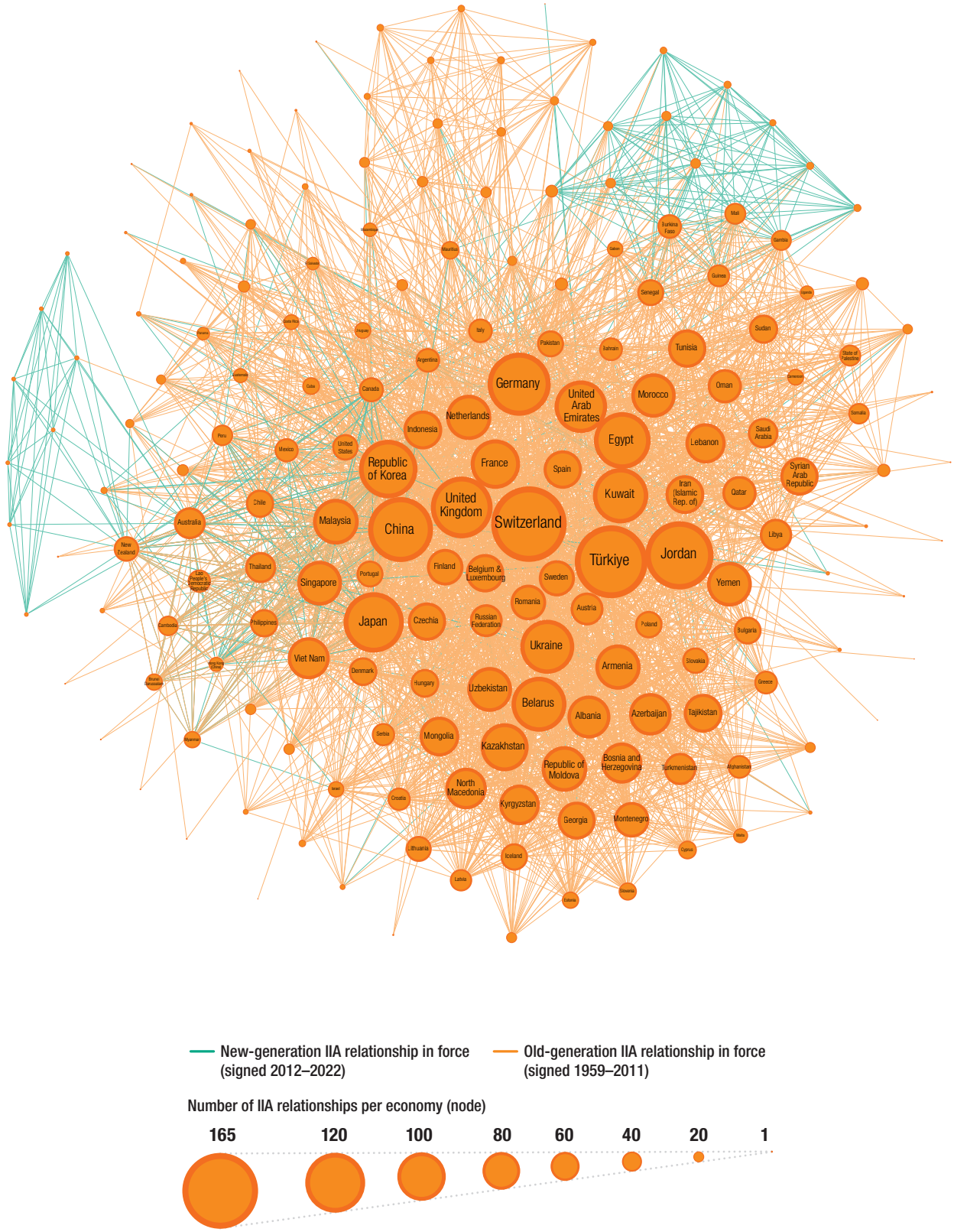
In 2022, countries concluded at least 15 new IIAs: 10 BITs and 5 treaties with investment provisions (TIPs). This brought the size of the IIA universe to 3,265 (2,830 BITs and 435 TIPs).[7] In addition, at least 17 IIAs entered into force in 2022, bringing the total of IIAs in force to at least 2,584 by the end of the year (figure II.7). The network of IIAs currently in force is complex and largely dominated by old-generation IIAs (figure II.8).

Figure II.7. Stock of IIAs signed and in force, 1959–2022 (By date of signature)



Source: UNCTAD, IIA Navigator.
Note: The figure does not include IIAs that were effectively terminated.

Figure II.8. Network of old-generation and new-generation IIAs, 1959–2022 (Bilateral IIA relationships)



Source: UNCTAD, IIA Navigator; data visualization through Gephi (https://gephi.org).

Note: Based on IIAs in force, not including "framework agreements" that lack substantive investment provisions or agreements with limited investment-related provisions. The IIA relationships of Belgium and Luxembourg and of Switzerland and Liechtenstein have been counted only once. IIAs between member States of a country grouping and an external partner have been considered not to create intracountry grouping effects unless the IIA text explicitly clarifies it to have such effects.

The IIAs currently in force create a network of more than 4,400 bilateral IIA relationships between pairs of economies. Close to a third of them overlap with at least one other IIA between the same economies. Over 88 per cent of IIA relationships are based on IIAs signed before 2012, and the IIA networks of all but eight economies contain such old-generation IIAs. In addition, at least 40 per cent of the relationships created by new-generation IIAs coexist with an earlier one between the same economies. This is the case also for the majority of relationships created by megaregional agreements such as the Regional Comprehensive Economic Partnership (2020) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (2018) (*WIR19*).

The number of terminations in 2022 exceeded the number of newly concluded IIAs: At least 58 IIAs were effectively terminated, of which 54 were by mutual consent, 1 was unilateral and 3 were replacements (through the entry into force of a newer treaty). Most terminations by mutual consent were based on the agreement to terminate intra-EU BITs, which became effective in 2022 among all 23 European Union member States that had signed it.[8] By the end of the year, the total number of effective terminations reached at least 569, with about 70 per cent of IIAs terminated in the last decade (figure II.9).

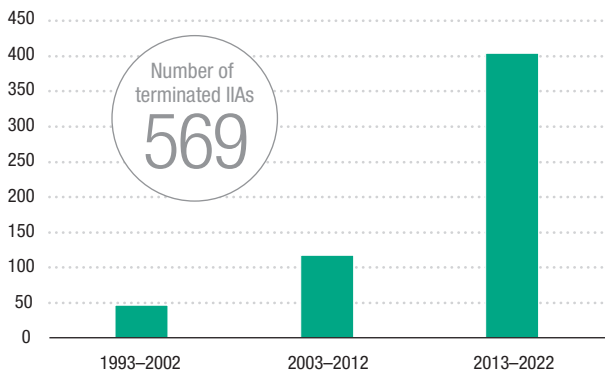
TIPs signed in 2022 can be grouped into two categories:

1. Agreements with obligations commonly found in BITs, such as substantive standards of investment protection:
   - New Zealand–United Kingdom FTA
   - Pacific Alliance (Chile, Colombia, Peru)–Singapore FTA
2. Agreements with limited investment provisions (e.g. market access, national treatment and most-favoured-nation treatment with respect to commercial presence, investment promotion, facilitation and cooperation):
   - Australia–India Economic Cooperation and Trade Agreement
   - India–United Arab Emirates Comprehensive Economic Partnership Agreement
   - Indonesia–United Arab Emirates Comprehensive Economic Partnership Agreement

IIAs signed since 2020 feature many reformed provisions aimed at safeguarding States' right to regulate and reforming ISDS (figure II.10). In light of emerging interpretations of reformed provisions in investment treaty arbitration cases, it remains to be seen whether they are sufficiently robust to support and not hinder countries' implementation of legitimate measures and their efforts towards achieving the SDGs. In addition, hortatory references to the protection of broader policy goals or sustainable development in the treaty preamble continue to be the most common reform feature (96 per cent of surveyed IIAs), despite their limited effect. Only a minority of new-generation IIAs address other important areas of IIA reform. Less than half of the IIAs reviewed contain proactive provisions that promote and facilitate investment and only 13 per cent include investor obligations.

The problems arising from the limited depth of these reforms are compounded by the fact that most recent IIAs continue to bind countries for long periods, with an initial period of validity of 10 years or more, automatic renewal and a survival clause. This can limit countries' ability to adapt to changing economic realities and new regulatory imperatives, such as the urgency of addressing climate change and other global challenges.

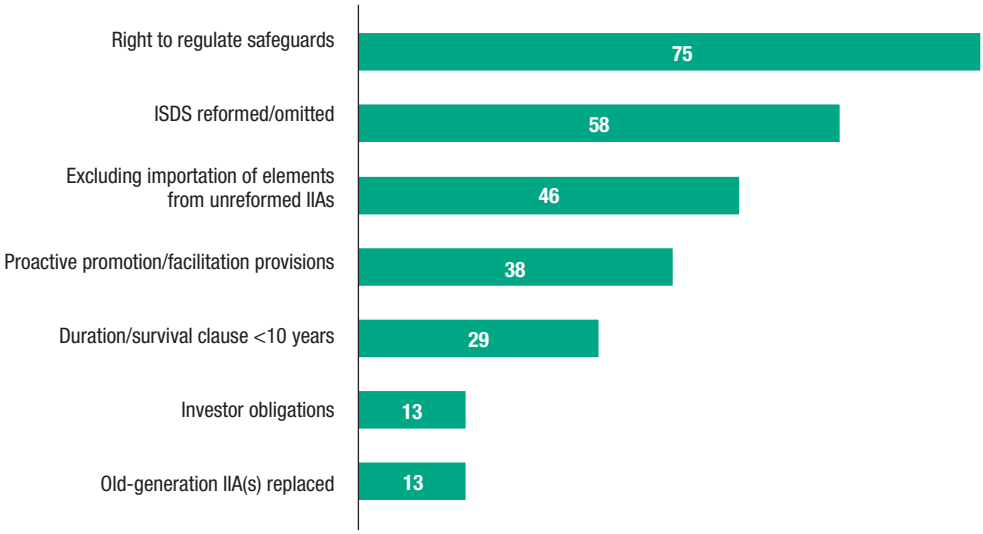
Figure II.9. **Number of terminated IIAs, 1993–2022** (By date of effective termination)



Source: UNCTAD, IIA Navigator.

New-generation IIAs also continue to exist in parallel with older IIAs (see figure II.8), highlighting the importance of expediting the modernization and consolidation of the existing stock of treaties through amendment, replacement or termination. Few of the IIAs signed since 2020 replace an earlier treaty or ensure that the reformed provisions they contain would be effectively applied (where parallel old-generation IIAs exist).

Figure II.10. Prevalence of selected reform features in recent IIAs, 2020–2023 (Per cent of IIAs)



Selected features of IIAs

Right to regulate safeguards. Reforms language of the majority of key substantive IIA provisions, as defined in UNCTAD's IIA Reform Accelerator, including those most often invoked in ISDS.[a]

Duration/survival clause <10 years. Provides for initial duration of validity and survival clause of fewer than 10 years or omits them.

ISDS reformed. Contains procedural improvements or limits the access to ISDS for certain types of claims or omits ISDS altogether.

Investor obligations. Contains obligations applicable to investors, such as responsible business behaviour, avoiding corruption, environmental management and the like.

Excluding importation of elements from unreformed IIAs. Excludes application of most-favoured-nation and non-derogation provisions to obligations in other IIAs.

Old-generation IIA(s) replaced. Provides for the termination or suspension of at least one IIA upon entry into force.

Proactive promotion/facilitation provisions. Includes specific commitments such as transparency and regulatory coherence.

Source: UNCTAD.
Note: Based on 24 IIAs concluded in 2020–2023 for which texts are available, not including "framework agreements" that lack substantive investment provisions or agreements with limited investment-related provisions.
[a] For this category, IIAs are counted that contain reform language for at least five key substantive IIA provisions, including at least a circumscribed fair and equitable treatment standard and a clarified indirect expropriation clause, or a general exceptions clause alongside other reformed clauses, in line with UNCTAD's IIA Reform Accelerator (UNCTAD, 2020).

b. Other developments relating to investment rulemaking

Other notable developments continued the trend towards reforming the international investment regime and highlighted the growing need for its adaptation to meet emerging global objectives and challenges. These include greater attention to investment facilitation and climate change.

The year was marked by the conclusion of negotiations of several investment governance instruments that contain proactive investment facilitation features and pay greater attention to responsible investment and to the right of host States to regulate in the public interest. African Heads of State and Government adopted the African Continental Free Trade Area (AfCFTA) Investment Protocol, recognizing UNCTAD's work on IIA reform in its preamble. At the same time, plurilateral efforts to amend the ECT appeared to reach a stalemate, highlighting the difficulty of reforming the existing stock of IIAs (table II.3).

Table II.3. IIA negotiations and new investment-related instruments

IIA negotiations and amendments	
AfCFTA Investment Protocol[a]	• The draft Investment Protocol was adopted by the Heads of State and Government during the Assembly of the African Union in February 2023. Negotiations on the Investment Dispute Settlement Annex to the Protocol are ongoing. • The Investment Protocol - Contains reformed provisions aimed at promoting, facilitating and protecting intra-African investment that fosters sustainable development while safeguarding the State Parties' right to regulate. - Recognizes UNCTAD's work on IIA reform in its preamble. • UNCTAD is a member of the task force assisting the AfCFTA Secretariat in the negotiations of the Investment Protocol and the Investment Dispute Settlement Annex.
Angola–EU Sustainable Investment Facilitation Agreement[b]	• Negotiations concluded in November 2022. • The agreement aims at rendering investment - Easier (e.g. by simplifying investment authorization procedures, fostering e-government and establishing focal points and stakeholder consultations). - More sustainable (e.g. by implementing international labour and environmental agreements and strengthening bilateral cooperation on investment-related aspects of climate change and gender equality policies).
ECT developments[c]	• The Contracting Parties' vote on adopting the agreement on the modernization of the ECT (agreed upon in principle on 24 June 2022) was postponed to 2023. • In November 2022, the European Parliament adopted a resolution calling for a coordinated withdrawal from the ECT by the European Union and its member States. • In December 2022, France, Germany and Poland formally notified their withdrawal from the ECT.[d]
New investment-related instruments	
Australia–Singapore Green Economy Agreement[e]	• The agreement was signed on 18 October 2022. • The agreement - Is a non-binding flexible instrument that excludes dispute settlement. - Seeks to foster common rules and standards specific to trade and investment in green goods, services and technologies. - Comprises Government-to-Government commitments and cooperative projects across a broad range of policy areas.
MERCOSUR Agreement on the Prevention and Fight of Corruption in International Trade and Investment[f]	• The agreement was signed on 6 July 2022. • The agreement - Affirms the contracting States' commitments to prevent and combat corruption in international trade and investment. - Provides for the adoption of legislative and other measures as may be necessary.

Source: UNCTAD, based on various sources.
AfCFTA = African Continental Free Trade Area, ECT = Energy Charter Treaty, MERCOSUR = Southern Common Market.
[a] African Union, "Opening of the 36th Ordinary Session of The Assembly of the African Union", 18 February 2023, https://au.int/en/summit/36. For more information, see resolutions at https://au.int/en/decisions/decisions-declarations-and-resolution-thirty-six-ordinary-session-assembly-union.
[b] For more information on this agreement, see https://ec.europa.eu/commission/presscorner/detail/en/IP_22_6136.
[c] See also https://www.energychartertreaty.org/modernisation-of-the-treaty.
[d] Energy Charter Treaty, "Written notifications of withdrawal from the Energy Charter Treaty", 22 March 2023, https://www.energycharter.org/media/all-news.
[e] For more information on this agreement, see https://www.dfat.gov.au/geo/singapore/singapore-australia-green-economy-agreement.
[f] For more information on this agreement, see https://www.mercosur.int/firma-de-acuerdos-en-materia-de-reconocimiento-de-titulos-lucha-contra-la-corrupcion-y-comercio.

Several investment policy guidance documents were launched in 2022 that built on UNCTAD's Core Investment Principles and its Investment Policy Framework for Sustainable Development. They provide overarching principles for countries in their efforts to reform their IIA networks in line with sustainable development and climate action objectives, taking into account countries' national development objectives (table II.4).

International organizations' work continued on diverse aspects of international investment governance, with advances in negotiations on investment facilitation and first outputs agreed upon for the reform of ISDS (table II.5). All these developments and their implications for the IIA regime and climate change will be discussed at the IIA Conference, an inclusive, multi-stakeholder dialogue platform on IIAs and ISDS, during the 2023 UNCTAD World Investment Forum.

Table II.4. Investment policy guidance

27th Conference of the Parties of the UNFCCC (COP27)[a] Sharm El Sheikh (Egypt), 6–18 November 2022	• The Sharm El Sheikh Guidebook for Just Financing (2022)[b] was launched through the coordination of the Government of Egypt in partnership with a broad range of stakeholders, including UNCTAD. The Guidebook highlights the need to minimize the risk of climate-action-related ISDS cases and suggests options for IIAs to proactively promote and facilitate investments that are conducive to climate change objectives. • The High-Level Forum on Global Investment and Trade for Climate Transformation (co-organized by UNCTAD and the World Trade Organization) discussed how the international investment and trade regimes can align with the Paris Agreement and how they can facilitate the achievement of climate goals.
IsDB–UNCTAD Non-Binding Guiding Principles for Investment Policies (2022)[c]	• The Islamic Development Bank (IsDB) Group and UNCTAD jointly developed a set of Non-Binding Guiding Principles for Investment Policymaking to support improvement of the investment climate in the IsDB member countries. • The Principles aim at - Promoting inclusive economic growth and sustainable development. - Enhancing coherence in national and international investment policymaking. - Fostering an open, transparent and conducive global policy environment for investment. - Aligning investment promotion and facilitation policies with the Sustainable Development Goals.

Source: UNCTAD, based on various sources.
[a] UNFCCC, https://unfccc.int/fr/cop27?gclid=EAIaIQobChMI3J26gIqE_gIVrI1oCR20qQJwEAAYASAAEgI0fPD_BwE#events.
[b] See Sharm El Sheikh Guidebook for Just Financing, https://guidebookforjustfinancing.com.
[c] See Islamic Development Bank–UNCTAD Guiding Principles for Investment Policies, https://investmentpolicy.unctad.org/publications/1276/islamic-development-bank---unctad-guiding-principles-for-investment-policies.

Table II.5. Work relating to investment rulemaking at international organizations, 2022–2023

Organization/project	Work progress
Expert Mechanism on the Right to Development, Office of the United Nations High Commissioner for Human Rights[a]	• The fifth and sixth session of the Expert Mechanism took place in 2022; the seventh session took place in April 2023. • Delegates discussed the ongoing study on the "Right to development in international investment law".
International Centre for Settlement of Investment Disputes[b]	• The amended ICSID Arbitration Rules came into effect on 1 July 2022. • The amended rules - Incorporate greater transparency in the conduct and outcome of proceedings. - Contain expedited arbitration rules for parties wishing to shorten further the procedural calendar. - Broaden access to ICSID's procedural rules and administrative services.
Investment Facilitation for Development, World Trade Organization[c]	• On 16 December 2022, the draft Investment Facilitation for Development Agreement was circulated to all participating members. A finalized text is expected to be reached by mid-2023. • In February 2023, Türkiye announced it is taking a "reflection pause" from the process, while continuing to observe the negotiations at the World Trade Organization. • A Working Group of international organizations that work on investment facilitation, including UNCTAD, was established in February 2022 to develop a Self-Assessment Guide to help developing and least developed countries assess their needs in terms of implementing the future agreement.

/…

Table II.5.	Work relating to investment rulemaking at international organizations, 2022–2023 (Concluded)
OECD Work Programme on the Future of Investment Treaties[d]	• Track 1 of the programme, considering challenges facing future IIAs and changes to the current treaty regime, in particular in relation to climate change, advanced through two conferences held in May 2022 and April 2023. • Track 2 of the programme, discussing the possible modernization of provisions found in old-generation IIAs, advanced through meetings held in April and November 2022.
Open-Ended Intergovernmental Working Group on Transnational Corporations and Other Business Enterprises with Respect to Human Rights[e]	• Two sessions were convened in 2022 to discuss the third revised draft of the legally binding instrument, which aims to ensure that - New investment agreements be compatible with countries' human rights obligations. - Existing investment agreements be interpreted and implemented in a manner that does not affect countries' ability to fulfil their human rights obligations.
Organization of Islamic Cooperation Intergovernmental Experts Group on ISDS[f]	• The first Organization of Islamic Cooperation intergovernmental expert meeting on the establishment of a permanent mechanism for the settlement of investment disputes (under Article 17 of the OIC Agreement) took place in October 2022 in Casablanca, Morocco. • Delegates benefited from inputs from member countries, UNCTAD and external experts.
UNCITRAL Working Group III[g]	• UNCITRAL Working Group III held four sessions on investor–State dispute settlement reform in the reporting period. • At the 45th Session held in March 2023, delegates agreed on draft provisions on mediation and on a draft code of conduct for arbitrators and judges. • The 46th Session is scheduled for October 2023.
UNCTAD	• Developed guiding principles on investment policymaking for sustainable development that benefit 57 countries. • Delivered technical assistance and capacity building to 159 countries and advisory services to 88 countries. • Provided backstopping support and technical assistance as part of the task force working with the AfCFTA Secretariat on the Investment Protocol. • At the 8th World Investment Forum, scheduled for 16–20 October 2023 (Abu Dhabi, United Arab Emirates), the IIA High-Level Conference will - Discuss the implications of the IIA regime for climate change action. - Offer a global multi-stakeholder platform for high-level discussions and action on investment policymaking.

Source: UNCTAD, based on various sources.
[a] Office of the United Nations High Commissioner for Human Rights, https://www.ohchr.org/en/hrc-subsidiaries/expert-mechanism-on-right-to-development.
[b] International Centre for Settlement of Investment Disputes, https://icsid.worldbank.org/resources/rules-amendments.
[c] World Trade Organization, https://www.wto.org/english/tratop_e/invfac_public_e/invfac_e.htm.
[d] Organisation for Economic Co-operation and Development, https://www.oecd.org/investment/investment-policy/investment-treaties.htm.
[e] Office of the United Nations High Commissioner for Human Rights, https://www.ohchr.org/en/hr-bodies/hrc/wg-trans-corp/igwg-on-tnc.
[f] Islamic Center for Development of Trade, https://icdt-cidc.org/meeting-the-oic-intergovernmental-experts-group-on-the-establishment-of-a-permanent-organ-mechanism-for-the-settlement-on-investment-disputes.
[g] United Nations Commission on International Trade Law, https://uncitral.un.org/en/working_groups/3/investor-state.

2. Trends in ISDS: new cases and outcomes

The total ISDS case count reached 1,257 by the end of 2022, with 46 new arbitrations initiated that year. The ECT continued to be the most frequently invoked IIA.

As of 1 January 2023, the total number of publicly known ISDS claims had reached 1,257. To date, 132 countries and one economic grouping are known to have been respondents to one or more ISDS claims.

a. New cases initiated in 2022

In 2022, 46 known treaty-based ISDS cases were initiated, constituting the lowest annual case number since 2010 and significantly lower than the average of the last decade of 75 cases per year (2012–2021).

In 2022 claimants filed 46 new publicly known ISDS cases under IIAs (figure II.11), the lowest annual number of known cases since 2010 and significantly below the 10-year average of 75 cases per year (2012–2021). As some arbitrations can be kept confidential, the actual number of disputes filed in 2022 (and previous years) is likely higher.[9]

(i) Respondent States

The new ISDS cases in 2022 were initiated against 32 countries. Mexico, Romania, Slovenia and the Bolivarian Republic of Venezuela were the most frequent respondents, with three new known cases each. Two countries – Portugal and Sweden – faced their first known ISDS claims. As in previous years, the majority of new cases (about 65 per cent) were brought against developing countries.

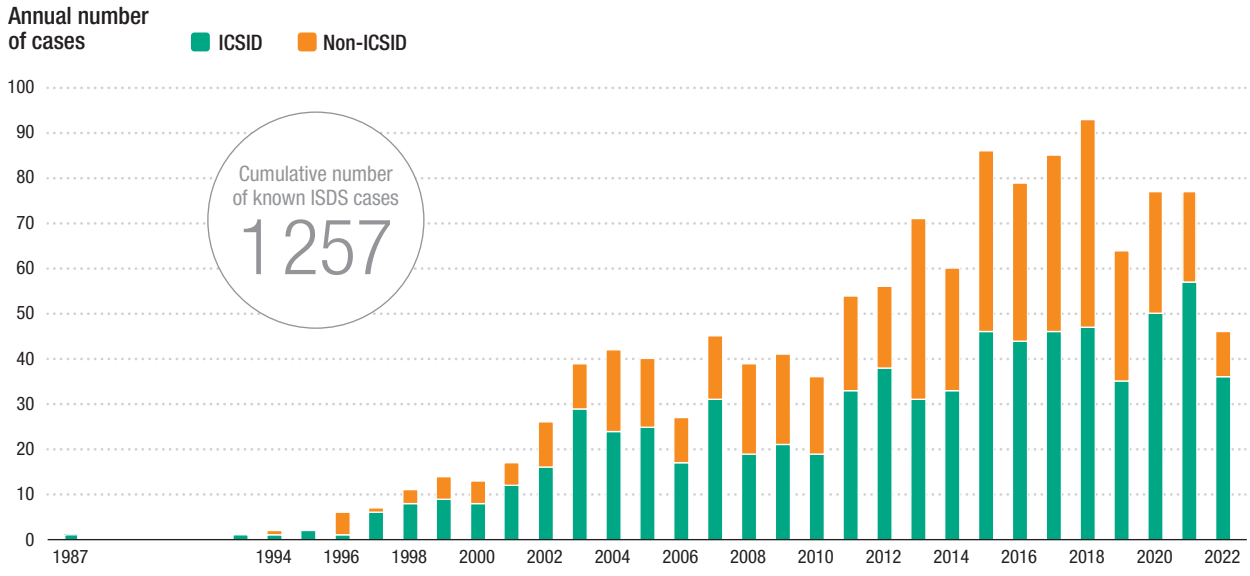
(ii) Claimant home States

Developed-country claimants brought most – about 65 per cent – of the 46 known cases in 2022. The highest numbers of cases were brought by developed-country claimants from the United States (eight), the Netherlands (five) and the United Kingdom (four). Four cases were brought by claimants from China. Between 1987 and 2022, claimants from five countries – Germany, the Netherlands, Spain, the United Kingdom and the United States – initiated about 45 per cent of the 1,257 known ISDS cases.

(iii) Applicable investment treaties

About 80 per cent of investment arbitrations in 2022 were brought under BITs and TIPs signed in the 1990s or earlier. The ECT (1994) was the IIA invoked most frequently in 2022, with 10 cases, followed by NAFTA (1992), the Netherlands–Bolivarian Republic of Venezuela BIT (1992) and the Panama–United States BIT (1982) with two cases each.[10] Between 1987 and 2022, about 20 per cent of the 1,257 known ISDS cases invoked either the ECT (157 cases) or NAFTA (79 cases).

Figure II.11. Trends in known treaty-based ISDS cases, 1987–2022



Source: UNCTAD, ISDS Navigator.
Note: Information has been compiled from public sources, including specialized reporting services. UNCTAD statistics do not cover investor–State cases that are based exclusively on investment contracts (State contracts) or national investment laws, or cases in which a party has signalled its intention to submit a claim to ISDS but has not commenced the arbitration. Annual and cumulative case numbers are continually adjusted as a result of verification processes and may not match exactly case numbers reported in previous years.

b. ISDS outcomes

(i) Decisions and outcomes in 2022

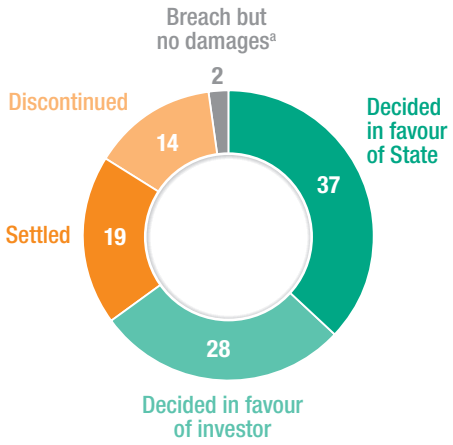
In 2022, ISDS tribunals rendered at least 44 substantive decisions in investor–State disputes, 25 of which were in the public domain at the time of writing. Ten of the public decisions principally addressed jurisdictional issues (including preliminary objections), and the tribunals declined jurisdiction in all of them. The remaining 15 public decisions were rendered on the merits, with 12 holding the State liable for IIA breaches and 3 dismissing all investor claims.

In addition, eight publicly known decisions were rendered in annulment proceedings at the International Centre for Settlement of Investment Disputes (ICSID). Ad hoc committees of the ICSID rejected the applications for annulment in all of them.

(ii) Overall outcomes

By the end of 2022, at least 890 ISDS proceedings had been concluded. The relative share of case outcomes changed only slightly from that in previous years (figure II.12).

Figure II.12. Results of concluded ISDS cases, 1987–2022 (Per cent)



Source: UNCTAD, ISDS Navigator.
[a] Decided in favour of neither party (liability found but no damages awarded).

C. SUSTAINABLE ENERGY-RELATED INVESTMENT POLICIES

The energy system are at the centre of the policy response to climate change, and national policies are crucial for driving the shift towards clean energy. While recognizing that a well-designed regulatory framework that comprehensively addresses the legal, regulatory and institutional aspects is a key determinant of investment in the clean energy transition (chapter IV), section 1 focuses on some of the main incentives and disincentives to clean energy investment. First, it reviews and analyses renewable energy policies around the world and identifies the key policy tools utilized by countries in different regions and at different levels of development to promote investment in renewables (section 1.a). Second, it highlights trends in the evolution of fossil fuel subsidies around the world, which represent a disincentive to the promotion of investment in clean electricity generation (section 1.b). The key findings are presented in section 1.c, and the policy implications are discussed in chapter IV.

At the international level, the urgency of an effective energy transition highlights the need to reform international investment governance (section 2). Existing IIAs do not include proactive investment provisions for promotion and facilitation that support low-carbon energy investment (section 2.a). Although notable exceptions exist, much more work is needed. This challenge is compounded by treaty-based ISDS cases in both the fossil fuel and renewable energy sectors (section 2.b). UNCTAD has developed a toolbox with a focus on four connected action areas. They relate to the promotion and facilitation of sustainable energy investments, technology transfer, the right to regulate for climate action and the energy transition, as well as corporate social responsibility. For each action area, different policy options are indicated (section 2.c).

1. Renewable energy policies – a review of key investment incentives

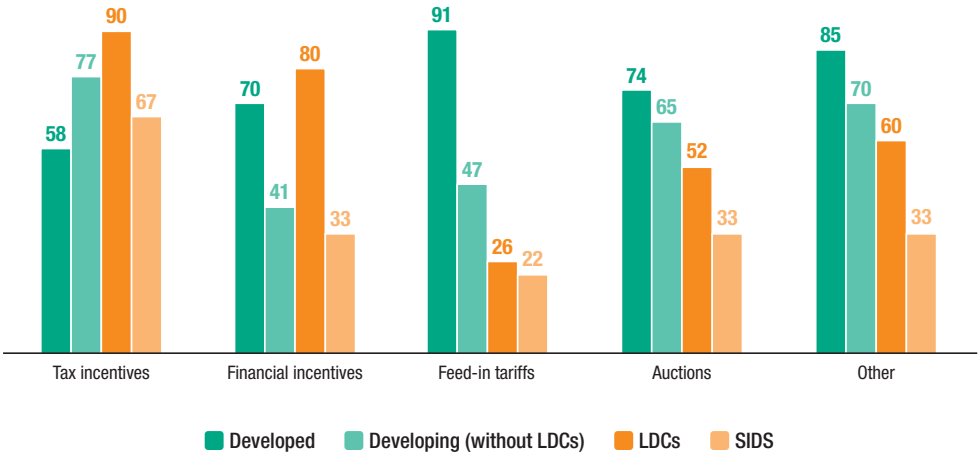
a. Policy tools for the promotion of renewable energy investment

Countries at different levels of development adopt different policy tools to promote renewable energy investment. Developing economies, including LDCs and SIDS, mainly use tax incentives as a policy tool for promoting renewable energy investment, whereas developed economies favour financial incentives as well as targeted and more complex instruments such as feed-in tariffs (FITs). Auctions and tenders for renewable energy projects have gained momentum across all country groups in the last decade to become one of the instruments most used to attract renewable energy investment.

Based on the review and mapping of 212 laws and policies,[11] covering 94 developing and developed economies (49 and 51 per cent respectively), this section analyses the investment promotion instruments and incentives used around the world to foster private investment in renewable energy. Countries have adopted various types of incentives (table II.6). Among these, tax incentives are the instrument most often used for promoting renewable energy investment in developing countries (77 per cent), LDCs (90 per cent) and SIDS (67 per cent).

In contrast, developed countries favour more targeted and complex policy instruments, with FITs, auctions and financial incentives adopted by 91 per cent, 74 per cent and 70 per cent respectively (figure II.13).

Figure II.13. Prevalence of private investment promotion instruments, by type
(Per cent of countries)



Source: UNCTAD and Climate Change Laws of the World database.
Note: The graph covers laws adopted during the period 2000–2022, as well as amendments of some laws that were adopted before 2000. Feed-in tariff and auction data are based on other sources, covering 193 countries. "Other" includes quota-based instruments, guarantee schemes and business facilitation.

Table II.6. Investment promotion instruments for the renewable energy sector

Fiscal incentives	
Profit-based	Reduction of the standard corporate income tax rate or profit tax rate, tax holiday, loss carry-forward
Expenditure-based	Accelerated depreciation, investment and reinvestment allowances, R&D tax incentives, tax credits
Indirect taxes and duties	Exemption or reduction of value added tax on capital material, exemption on import taxes and duties
Production-based	Production-based tax credits
Financial incentives	
Grants and subsidies	Direct subsidies to cover (part of) capital, production or marketing costs
Loans	Subsidized loans
Other tools	
Auctions	Stimulate investment through government calls for tenders to install a certain capacity of renewable energy-sourced electricity, with the best bidder typically winning a long-term power purchase agreement that guarantees sales and prices and the auctions structured as packages that include additional incentives such as access to land or low-cost grid connections
Feed-in tariffs	Incentivize the deployment of renewable energy by offering long-term contracts to producers with a guaranteed above-market price tariff, in a triple guarantee – certainty of sale, price and duration – that reduces project risk and encourages investment

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Table II.6.	Investment promotion instruments for the renewable energy sector (Concluded)
Renewable portfolio standards or quotas, and renewable energy certificates	Renewable portfolio standards or quotas: define the share of renewable energy that must be present in the electricity mix of targeted entities, typically utility suppliers, companies or consumers Renewable energy certificates: represent the environmental benefits of 1 MWh of renewable energy generation, which can be bought and sold separately from the electricity itself Usually introduced together
Other guarantee schemes	Financial guarantees, including guarantees covering geological risks or other non-financial elements
Business facilitation	A range of measures aimed at facilitating the implementation of and investment in renewable energy companies, which may include dedicated single windows, facilitated access to land and simplified permitting and licensing, as well as access to information related to the renewable energy potential and needs of the country

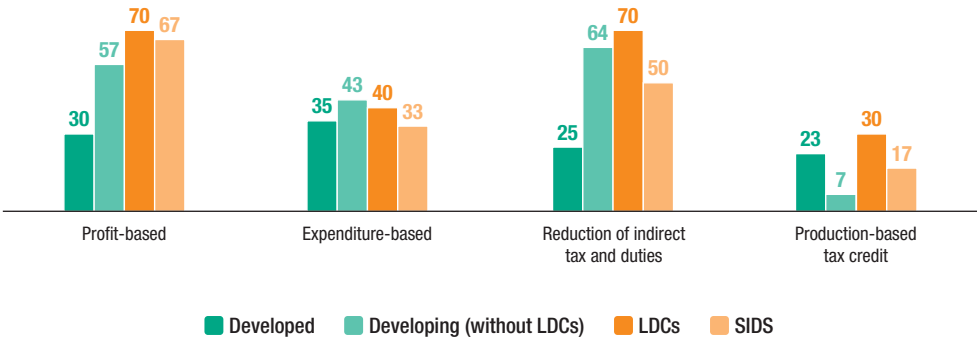
Source: UNCTAD.

(i) Tax incentives

Tax incentives are well-established and well-known tools used by countries around the world to promote investment. The literature on their pros and cons is extensive. UNCTAD recently carried out a detailed mapping of their use across the globe (*WIR22*). Tax incentives can be customized to achieve certain policy objectives, and although they require governments to forgo tax revenue that could be used for other purposes, they do not typically require direct public spending. However, tax incentives may not directly address the main barriers to investment in renewable energy such as access to finance, market and infrastructure risks, and high upfront capital (chapter IV).

Nonetheless, tax incentives are a common policy tool for promoting renewable energy investment, particularly in developing economies and LDCs (figure II.14). Profit-based tax incentives such as corporate income tax reductions and tax holidays are particularly popular among developing countries (57 per cent of countries) and LDCs (70 per cent). The reduction or exemption of VAT and import duties is also very common in developing countries, as they often import most of the required capital goods and inputs. This instrument is used by 64 per cent of developing countries and 70 per cent of LDCs. In contrast, developed countries tend to favour the use of expenditure-based incentives and production-based tax credits. These findings are consistent with the broader analysis on the use of tax incentives for investment in developed and developing countries carried out by UNCTAD in the *World Investment Report 2022*.

Figure II.14. **Tax incentives in renewable energy policies, by type and country group** (Per cent of countries)



Source: UNCTAD, based on Climate Change Laws of the World database.
Note: Covers laws adopted during the period 2000–2022, as well as amendments of laws that were adopted before 2000.

(ii) Non-fiscal incentives

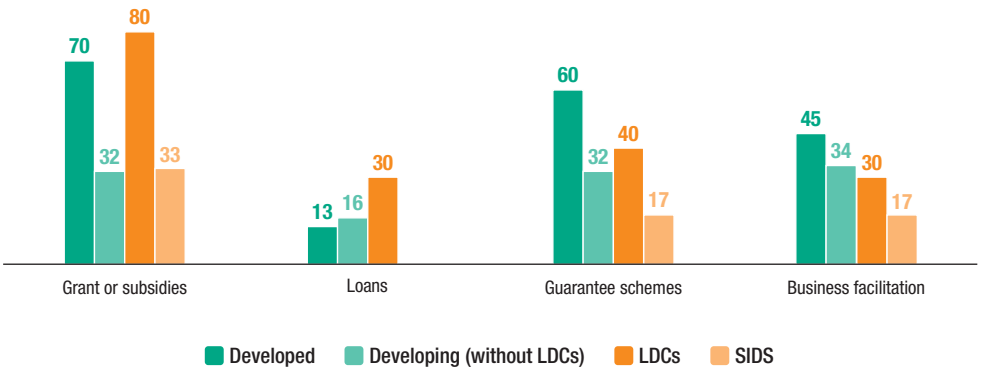
Non-fiscal incentives to encourage investment in renewable energy include traditional policy instruments already used in the promotion of investment in other sectors, such as financial incentives (e.g. loans at preferred rates and traditional grants and subsidies), risk reduction mechanisms (e.g. guarantee schemes) and business facilitation measures. In addition, the unique specificities of the low-carbon transition have led to the development of more targeted, more complex policy instruments designed specifically to facilitate the deployment of renewable energy technologies. These new investment promotion tools include tariff-based instruments, auctions and quota-based instruments (discussed later).

Grants and subsidies are the most common investment promotion instrument among traditional investment incentives. They can partially address the issue of high upfront cost associated with renewable energy projects. They are particularly favoured by developed countries. They are mentioned in the majority of the renewable energy policies that include investment promotion provisions in LDCs (figure II.15). Loans, however, are not commonly used in investment promotion policies for renewable energy. In fact, only 16 per cent of developing countries and 13 per cent of developed countries use them.

Guarantee schemes include financial guarantee schemes and other "in kind" types of guarantees, such as priority access to the grid, or industrial guarantees on the availability of network or spare parts for the renewable energy sector. Due to the intermittency of renewable energy sources such as solar and wind, priority access to the grid, in particular, is a key element to foster investment in the deployment of such technologies. Guarantee schemes are popular among developed countries (60 per cent of them have adopted at least one such scheme), but less utilized in developing countries (32 per cent) and LDCs (40 per cent).

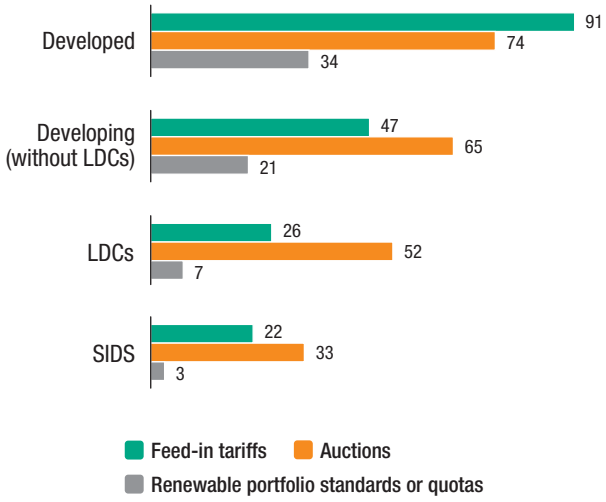
Business facilitation of renewable energy projects encompasses measures such as simplifying registration and licensing processes, providing easier access to land, and streamlining town planning authorizations. In addition to these measures, business facilitation may also involve the creation of specific tools to support renewable energy projects such as national-level solar, wind or geothermal resource maps. Business facilitation instruments are employed in developed (45 per cent) and developing countries (34 per cent), but their use is slightly less prevalent in LDCs, where only 30 per cent of LDCs included them in their promotion policies for renewable energy (see figure II.15).

Figure II.15. **Non-fiscal incentives in renewable energy policies, by type and country group** (Per cent of countries)



Source: UNCTAD, based on Climate Change Laws of the World database.
Note: The graph covers laws adopted during the period 2000–2022, as well as amendments of laws that were adopted before 2000.

Figure II.16. **Use of feed-in tariffs, auctions and quota-based instruments, by country group, 2005–2022**
(Per cent of countries)



Source: UNCTAD.

FITs were the first targeted incentive developed specifically to promote investment in renewable energy (see table II.6). They offer guaranteed payments and have a longer-term perspective, which significantly reduces uncertainty about the return on renewable energy investments. They have led to the establishment of hundreds of MWh from renewable sources across the world. Policymakers have reformed FITs over the years to make them more efficient and more responsive to technology changes and market prices, and to decrease their impact on public finance. While the success of these instruments varies from country to country and on policy design (box II.1), they have been widely implemented (in at least 106 countries) as a means of promoting adoption of renewable energy. FITs have been particularly popular among developed countries, featuring in over 90 per cent of them. Yet, tariff-based instruments do not address the challenge of the high upfront costs associated with renewable energy projects and, depending on their features, can be relatively expensive for countries that have limited fiscal space, which explains why developing countries use FITs less frequently. Less than 50 per cent of developing countries, only 26 per cent of LDCs and only 22 per cent of SIDS have put FITs in place (figure II.16).

Box II.1. Feed-in tariffs: policy examples and key lessons

In 2000, *Germany* introduced the Renewable Energy Act, a FIT policy offering all producers of renewable energy an above-market fixed price for a 20-year period that ended in 2021. The impact on renewable energy production was important: between 2000 and 2021, the share of renewable energy in electricity consumption rose by 35 per cent (ZSW, 2022). But in the late 2000s, as the production costs of photovoltaic systems decreased, the policy started to appear particularly expensive. Germany decided to reform the Renewable Energy Act and, since 2017, only small facilities under 100 kW have kept on benefiting from this FIT, while large renewable energy producers are subject to auctions (Sutton, 2021).

In 2009, *South Africa* established a renewable energy FIT scheme. Initially, the National Energy Regulator of South Africa developed a sector-specific project that ensured rates for 15 years, with tariffs that would decrease annually. To determine the project's feasibility, public hearings were held with prospective investors, who indicated that the incentives were insufficient, resulting in an increase in the tariffs and a lengthening of the guaranteed period to 20 years. Despite these adjustments, the FIT scheme was never put into effect and was replaced by auctions after two years. According to critics, tariff rate uncertainty, bureaucratic delays and conflicting messages from various government bodies resulted in an atmosphere of policy uncertainty that led to the scheme's demise (Pegels, 2011).

Despite a decreasing interest for FITs in the 2010s, several countries continued using them.

The Philippines, for instance, adopted FITs in 2012 with impressive results. Five years after the start of the programme, the country's capacity in solar, biomass and wind energy had been multiplied by eight. This success shows that policy design and implementation are as crucial as rates. Indeed, project developers give a lot of importance to factors such as administrative processing times, grid access and legal security (Lüthi and Prässler, 2011; Lüthi and Wüstenhagen, 2012). The Government of the Philippines followed a list of best practices, by adopting a long-term framework and associating FITs with financial incentives. The extra cost implied by FITs was put on the consumers (Guild, 2019).

Source: UNCTAD.

Another policy tool designed specifically to foster investment in the deployment of renewable energy is the renewable energy auction (see table II.6). Since the 2010s, auctions have boomed in popularity because they are both cost-efficient and adaptable to different economic contexts. They are used in all continents, independently of countries' development levels, and have helped to lower renewable energy prices.

The purchase power agreement and other non-financial incentives resulting from auctions offer a long-term guarantee on price and sales that incentivizes investors to participate. For policymakers, however, the complexity of auctions lies in their design and organization, which are crucial to their success. The design should include factors such as the auctioned volume, qualification requirements for bidders, auction format and site selection. These factors will depend on a government's policy goals and on country characteristics. It is not uncommon for countries to require multiple auction rounds to achieve an optimal design, as policymakers must bypass several pitfalls when designing an auction, such as undersubscription, underbidding, delays and underbuilding (box II.2).

Auctions have become the main mechanism for increasing renewable energy capacity worldwide, with at least 125 countries holding auctions over the last decade. Three quarters of developed countries and two thirds of developing countries have held renewable energy auctions; the shares are lower for LDCs (52 per cent) and SIDS (33 per cent) (see figure II.16). The complexity of designing and holding auctions may explain the lower prevalence in these countries.

Box II.2. Examples of renewable energy auctions in SIDS and LDCs

Maldives has held several auctions between 2014 and 2022, managing to convince project developers over time. In 2014, an auction aiming to create 1.5 MW of solar capacity attracted only four bidders, resulting in high electricity prices. Six years later, an auction for a 5 MW project attracted 25 project developers, leading to a drop in the price by 50 per cent. In 2022, an 11 MW solar project attracted 63 investors and resulted in one of the lowest tariffs ever achieved in SIDS. Investors have been convinced by the risk mitigation package supported by the World Bank, which includes guarantees, a currency convertibility clause and payment security (Chen, Jain and Stolp, 2023).

Uganda launched its first solar photovoltaic auction in 2014, for a total capacity of four 5 MW facilities. Based on qualification requirements, 7 of the 23 companies that expressed interest were allowed to submit bids. Site selection was left to project developers, with the condition that the power stations would be within 3 km of the grid. Moreover, if the project was located in a set of predefined priority zones, the application would be granted more points in the evaluation. Different penalties were defined for cases of delays and underperformance. This sealed-bid auction was supported by international development partners, which committed to paying part of the electricity price. Consequently, the four winners of the auction had two contracts: a power purchase agreement of 20 years in dollars with the State-owned utility company and a premium payment contract in euros signed with the German Development Bank. Uganda also benefited from European Union support, from the development of standardized documents to the payment of the tender agent that conducted the auction (IRENA, 2018). The winning bid was $163.7/MWh – lower than the average retail tariff in 2013, but more than double the results achieved in Ethiopia, Namibia, South Africa or Zambia (Kruger, Eberhard and Swartz, 2018).

Zambia was the first African country to take part in the Scaling Solar Programme, which includes multiple guarantees and technical support. Led by the World Bank, this programme aims to develop large solar power plants through auctions. In 2015, the country signed off on two projects representing a total capacity of 88 MW generated through solar photovoltaic power (IRENA, 2019). The Scaling Solar Programme has benefited other countries in Central Asia and sub-Saharan Africa, such as Ethiopia, Madagascar and Senegal. In 2019, Zambia awarded 120 MW of capacity for a solar photovoltaic project. This tender achieved a low-price record for Sub-Saharan Africa. It is worth noting that the auction did not define the location of the operating site, nor did it finance the connection to the grid (Parnell, 2019).

Source: UNCTAD.

A third policy instrument specifically designed to foster investment in renewable energy is the combined use of quotas, also referred to as renewable portfolio standards or renewable purchase obligations, and renewable energy certificates, which are mechanisms to certify the origin of the renewable energy. Companies can then sell these certificates, which should, in theory, provide a bonus in revenue to renewable energy producers. Renewable portfolio standards policies are typically complex to administer. Although they are used by one third of developed countries, their adoption has been more limited in developing countries (21 per cent), LDCs (7 per cent) and SIDS (3 per cent) (see figure II.16).

b. Fossil fuel subsidies: a disincentive to clean energy investment

Fossil fuel subsidies represent a disincentive to clean energy investment. Despite countries' pledges to reduce the use of such subsidies, they have reached a record $1 trillion, eight times the level of subsidies for renewable energy.

Countries adopt fossil fuel subsidies for a variety of reasons, including job creation, economic growth, energy security, consumer benefits, and political and strategic interests. By artificially lowering the cost of producing and consuming fossil fuels, subsidies make such fuels more appealing to consumers and investors. This, in turn, makes it more challenging for renewable energy sources to compete to attract investment, particularly when they do not receive the same level of support.

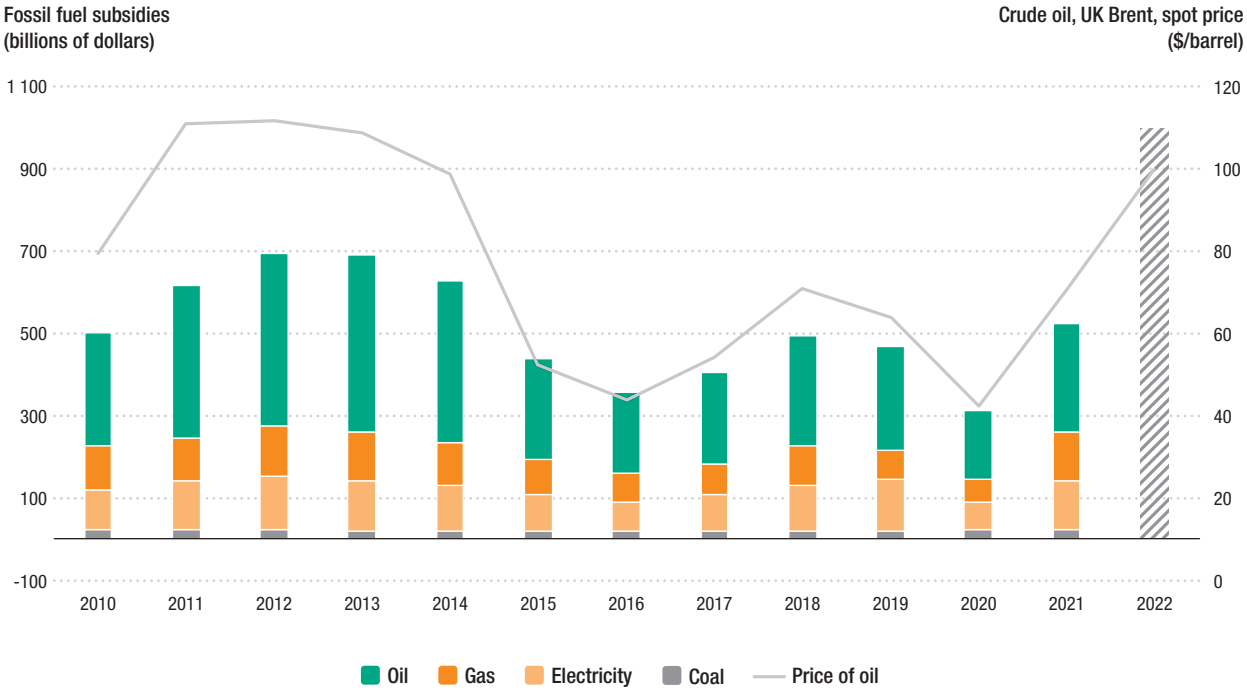
Fossil fuel subsidies also create an incumbent advantage, reinforcing the position of fossil fuels in the electricity system (IISD, 2014). While recognizing the economic, social and political complexity of such reform, phasing out these subsidies can help increase investment in renewable energy. In recent years, fossil fuel subsidies represented on average about 0.5 per cent of world GDP, and up to 1 per cent of GDP in developing countries (for some countries, up to 7 per cent of GDP).[12] Phasing them out and redirecting those funds to support renewable energy can therefore make clean energy a more viable option. Finally, reducing these subsidies can also send a clear signal to the market that governments are committed to transitioning to a low-carbon economy and to attracting investment in the renewable energy sector.

Despite reiterated commitments on major international forums to discontinue these inefficient subsidies (including through the SDGs, the G20 and the G7), the global level of support in 2021 remained similar to that of 2010, totaling over $500 billion.[13] In 2022, according to IEA estimates, global fossil fuel subsidies doubled from the previous year to an all-time high of $1 trillion (IEA, 2023a). This is almost eight times the amount of global subsidies granted to renewable power generation technologies in 2017, as estimated by the International Renewable Energy Agency (IRENA) (Taylor, 2020).

Data on fossil fuel subsidies at the global level show that they are closely tied to the evolution of oil prices, rather than to deliberate policy decisions aimed at their reduction. The correlation is particularly strong for oil, electricity and gas subsidies, but less so for coal subsidies, which have remained stable throughout the period, hovering around $20 billion per year (see figure II.17).

Global trends mask the differences in the evolution of subsidies offered by developed and developing regions, and by type of fuel. On average, developing countries account for over three quarters of world subsidies on oil, gas and electricity for end-user consumption of fossil fuel origin. In addition, while the correlation with oil prices is strong for developing countries for all types of fuels except coal, it is weak in developed countries, where subsidies on electricity and gas have remained relatively stable during the period, and subsidies on oil have increased over time, almost doubling in volume between 2010 and 2021. Coal

Figure II.17. Global fossil fuel subsidies by type and the price of oil, 2010–2022 (Billions of dollars and dollars per barrel)



Source: UNCTAD, based on FossilFuelSubsidytracker.org.
Note: Data for 2022 estimated from IEA (2023).

subsidies have declined steadily over the past decade in developed regions, dropping from $18.5 billion in 2010 to $9.8 billion in 2021, but more than doubled in developing regions, increasing from $5.6 billion in 2010 to $13.3 billion in 2021.

Data collected by the Fossil Fuel Subsidy Tracker initiative indicate that such subsidies also increasingly benefit producers rather than consumers. Consumers remain the key beneficiaries, but their share in total subsidies declined by 10 per cent between 2010 and 2020, while the share of producer subsidies doubled (from 7 to 14 per cent). Again, global trends mask significant differences between countries at different levels of development. Notably, in developing countries, consumer subsidies decreased from 97 to 87 per cent of the total between 2010 and 2020, while producer subsidies increased from 3 to 10 per cent in the same period. Conversely, in developed countries, consumer subsidies slightly increased their share of total fossil fuel subsidies from 2010 to 2020 (from 64 to 68 per cent), while producer subsidies remained stable at about 25 per cent.

Although there is universal agreement on the need to reduce or remove fossil fuel subsidies, it remains a complex policy issue, particularly in developing countries, which must overcome multiple competing interests and challenges:

- Dependence on fossil fuels: Many developing countries rely heavily on fossil fuels, both as a source of energy and as a revenue stream. Reducing or removing subsidies could result in a gap in energy supply as well as higher energy costs and a loss of export revenue, which may be difficult for governments to manage.
- Energy for all: Although studies show that fossil fuel subsidies are regressive by nature and benefit the wealthiest the most,[14] subsidies can help make energy more affordable for low-income households. Removing them could lead to an increase in energy poverty, which is a major concern for many developing countries.

- Short-term economic impacts: The International Labour Organization estimates that the transition to net zero brings substantial new opportunities for employment, but the new jobs may be in different locations or require different skill sets, thus calling for policies to minimize hardship and promote skills upgrading. Reducing or removing subsidies may also result in short-term economic impacts, such as job losses in the fossil fuel industry and higher energy costs for consumers and businesses. These impacts may be difficult for governments to manage and may lead to resistance to change.
- Political interests: The removal of subsidies may face opposition from large corporations, which may have significant political influence, as well as a vested interest in maintaining the status quo.

Nonetheless, according to IEA, achieving net zero by 2050 will require the elimination of all fossil fuel subsidies in the coming years (IEA, 2021). Hence, governments must navigate these challenges carefully and develop a well-thought-out plan for phasing out subsidies in a manner that minimizes negative impacts, is inclusive and supports the transition to a low-carbon economy in a just and cost-effective manner (chapter IV).

c. Summary of key findings

Policies and regulations have a key role to play in de-risking as well as incentivizing investment in the clean energy transition.

Countries that have adopted instruments to promote private investment in the renewable energy sector have used a wide range of tools. Developing countries and LDCs tend to favour traditional promotion instruments, such as tax incentives. In contrast, developed economies tend to use financial incentives as well as more complex and targeted mechanisms to promote investment in renewables (e.g. FITs and green certificates). Auctions have been adopted by countries at all levels of development. These policy tools, summarized in table II.7, present advantages and challenges, and can be adopted and adapted with consideration for the unique challenges faced by each country. Finally, despite reiterated commitments to discontinue inefficient fossil fuel subsidies, the global level of support for fossil fuel has reached record levels and increasingly benefits producers. Fossil fuel subsidies represent a disincentive to investment in renewable and clean energy. The policy implications and recommendations stemming from this analysis are discussed in chapter IV.

Table II.7. Investment promotion instruments for renewable energy investment: pros and cons

Policy instrument	Use by developed economies	Use by developing economies	Main pros	Main cons
Tax incentives	oo	ooo	• Can be tailored to meet specific policy goals • Familiar to private companies, who know how they work and are used to them	• Foregone tax revenue • Can be difficult to administer and keep track of • Limited effectiveness if other factors such as regulatory uncertainty persist
Feed-in tariffs	ooo	o	• Reduce risks by ensuring revenue stream to investors • Encourage deployment of not yet mature technologies by providing guaranteed payments • Can promote large and small renewable energy power plants, targeting both large companies and households	• Limits incentives for producers to compete on cost • Can lack flexibility to adapt to changes in technology • Can be a burden for public finance if the State supports the cost and can increase electricity cost if consumers support the cost • Administrative burden in the long run • Limited control over the quantity of energy produced

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Table II.7.	Investment promotion instruments for renewable energy investment: pros and cons (Concluded)			
Auctions	ooo	oo	• Cost-effective: help reveal the real price of renewable energy • Transparency: reduce the risk of corruption in selecting projects • Provide a predictable and stable contracted environment for investors • Allow control over the quantity of electricity produced	• Risk of undersubscription: need a minimum number of bidders to be efficient • Participation by smaller companies limited by complex bidding process and qualification requirements • Risk of overbidding and delays that may prevent partial or full realization of the project • Complex to design and conduct
Subsidies or grants	oo	oo	• Address the high upfront cost of renewable energy projects • Easier to administer than feed-in tariffs	• Burden on public finances • Resource allocation: risk of inefficient use of funds and risk of political interference in resource allocation
Loans	o	o	• Can help address the financing issue	• High cost and risk of default: can be a burden on public finances • Risk of political interference in resource allocation
Quota-based instruments and renewable energy certificates	oo	o	• Set clear targets and send a clear message to investors • Create demand and financial incentives for renewable energy producers	• Market-like mechanism: fluctuating price of green certificates offers fewer guarantees to renewable energy producers • Administrative burden: resource-intensive regulation of the market for green certificates • Complexity of green certificates: challenging for smaller companies • Market: need a sufficient size and time to function properly

o Rare oo Occasional ooo Common

Source: UNCTAD.

2. International investment agreements and sustainable energy investment

The energy transition adds to the urgency of reform of international investment governance. Most IIAs do not include proactive investment promotion and facilitation provisions that support low-carbon investment. UNCTAD has developed a toolbox for transforming IIAs into instruments that are conducive to the energy transition.

a. The IIA regime and sustainable energy investment

Existing old-generation IIAs are insufficiently attuned to ensure an effective energy transition from high- to low-carbon economies. New IIAs fare relatively better by safeguarding States' right to regulate but remain weak in incorporating specific provisions relevant to sustainable energy investment and the energy transition.

(i) Taking stock of IIAs

Some 3,400 IIAs were concluded between 1959 and 2011, representing over 85 per cent of all IIAs ever signed; about 2,300 of these old-generation IIAs are still in force. Typically, they do not contain explicit provisions to preserve States' regulatory space for a sustainable energy transition. Their substantive treatment standards are formulated in broad and vague ways, with few exceptions or safeguards. Such old-generation IIAs serve as the basis for virtually all existing ISDS claims. As old IIAs significantly outnumber more recent ones, it is critical to address the problems and risks they pose (UNCTAD, 2018). The urgency of making an effective energy transition has generated more attention to the need to reform the IIA regime.

In addition to old-generation BITs, the IIAs regime includes plurilateral investment treaties such as ECT, which governs energy-related investment, trade and transit. The ECT is the most frequently invoked IIA in ISDS cases. It can amplify existing burdens on countries that are trying to shift from traditional fossil fuel projects to renewable energies. A sustainable energy transition requires a deep and comprehensive reform of the ECT. The investment protection chapter is undergoing a modernization process that was formally initiated in 2020.

IIAs concluded in the last decade fare slightly better with respect to promoting and facilitating renewable energy investment. They more regularly safeguard States' right to regulate and incorporate specific provisions on the protection of the environment, climate action and sustainable development. They generally contain more circumscribed and clarified substantive provisions, often accompanied by narrower access to ISDS (*WIR20*).

Yet, even in recent IIAs, provisions that effectively safeguard regulatory space are still relatively rare (figure II.18). It remains to be seen whether more refined provisions in newer IIAs will significantly shield energy transition measures from ISDS claims or prevent investors with high-carbon investment from invoking ISDS to claim compensation.

Much more remains to be done. The reform of existing IIAs is essential to ensure that they do not prevent States from implementing measures aimed at promoting and facilitating sustainable energy investment, including the transition to low-carbon economies. The reform should minimize States' risk of facing ISDS claims related to phasing out investment that is not aligned with sustainable energy production. It should also recognize the rapidly shifting landscape, which requires flexibility in policymakers seeking to attract renewable energy investment.

Figure II.18. Prevalence of IIA provisions relevant to the energy transition and climate action, 2012–2022 (Per cent of IIAs)

Source: UNCTAD.
Note: The survey covered 284 IIAs concluded between 2012 and 2022 for which texts are available. It updates data originally published in UNCTAD (2022b).
[a] The percentage concerns only IIAs that include performance requirements provisions, i.e. 94 of the 284 IIAs analysed.

(ii) Proactive policy measures in IIAs in support of sustainable energy investment

Few new-generation IIAs (mostly broader economic agreements with investment provisions) include matters of relevance to the sustainable energy transition. These matters include general provisions on promoting and facilitating sustainable investment, cooperation on climate action, express recognition of the right to regulate for climate change and implementation of climate action treaties. Such provisions can come in the form of broad preambular references or be more specific in supporting the energy transition.

Old-generation IIAs and even most newer ones continue to lack detailed binding provisions for proactively promoting and facilitating investment and for encouraging the technology transfer needed to switch from high- to low-carbon energy production. Some notable exceptions exist: The AfCFTA Investment Protocol explicitly includes provisions for promoting and facilitating renewable energy investment. The Japan–United Kingdom Comprehensive Economic Partnership Agreement includes provisions facilitating investment of particular relevance to climate change mitigation, such as investment related to renewable energy and energy-efficient goods and services. The Republic of Moldova–United Kingdom Trade and Cooperation Agreement is an example that includes provisions promoting the diffusion of safe and sustainable low-carbon and adaptation technologies.

Similarly, the Investment Cooperation and Facilitation Agreements spearheaded by Brazil as well as the recent Angola–European Union Sustainable Investment Facilitation Agreement fare much better in supporting the energy transition. They do not refer to energy investment as such but contain clauses relating to sustainable development, environmental protection, investment promotion and facilitation, as well as corporate social responsibility.

Some new-generation IIAs also include specific procedures and mechanisms to implement States' climate action policies through inter-State cooperation. For example, they establish joint committees, joint dialogues, climate action consultations and panels of experts. The United States–Mexico–Canada Agreement is a case in point.

If IIAs are to be an effective tool to aid countries in the sustainable energy transition, far more is needed. Reliance on the nascent approach of including proactive promotion and facilitation elements for sustainable investment in IIAs needs to be significantly expanded. The same is needed with regard to provisions on corporate social responsibility and technology transfer, including associated know-how that is crucial to supporting a sustainable energy transition.

b. Energy-related ISDS

Many ISDS cases have related to measures or sectors of direct relevance to climate action. Investors in the fossil fuel sector have been frequent claimants, initiating at least 219 ISDS cases against different types of State conduct. The last decade has also seen the emergence and proliferation of ISDS cases brought by investors in the renewable energy sector, with 119 known cases. Many of these cases challenged Governments' legislative changes involving reductions in feed-in-tariffs for renewable energy production.

The 2022 Intergovernmental Panel on Climate Change (IPCC) report highlighted the risks of ISDS being used to challenge climate policies (IPCC, 2022). At this point, it is clear that these risks do not exist only in the abstract. Many IIA-based ISDS cases have related to the energy sector (UNCTAD, 2022d). ISDS cases in two areas are particularly relevant to the sustainable energy transition: (i) fossil fuels and (ii) renewable energy.

Energy-related ISDS cases show that IIAs may raise the costs of adapting energy-related regulatory frameworks in host States. States need flexibility for the necessary regulatory

experiments that support the transition to low-carbon economies. While investors seek stability and guarantee of returns, States should not be unduly hindered in phasing out unsustainable investment and experimenting with incentive schemes in the renewable energy sector, including by adopting and later changing or abrogating such schemes.

Fossil fuel investors have been frequent ISDS claimants, initiating over 15 per cent (219) of all known treaty-based cases against different types of State conduct (box II.3).

In addition to fossil fuel cases, at least 119 ISDS proceedings arose in relation to the renewable energy sector. Many of these cases challenged legislative initiatives involving reductions in feed-in-tariffs for renewable energy production (box II.4).

Box II.3. Fossil fuel-related ISDS cases based on IIAs

At least 219 IIA-based ISDS cases have been brought in relation to fossil fuels. These arbitral proceedings involve investment in the following economic activities:[a]

- Mining of coal and lignite
- Extraction of crude petroleum and natural gas
- Power generation from coal, oil and gas
- Transportation and storage of fossil fuels

Not all these underlying disputes involved challenges of measures that were related to climate action or the protection of the environment. For example, fossil fuel investors alleged the violation of IIAs with respect to changes in regulatory frameworks applicable to the investment and the denial or revocation of permits on other than environmental grounds. Nonetheless, as fossil fuel investors have frequently resorted to ISDS, they can also be expected to use existing arbitral mechanisms to challenge climate action measures aimed at restricting or phasing out fossil fuels.

A recent high-profile example is the *RWE v.* case. The case resulted from the Dutch Government's decision to ban the burning of coal for electricity generation by 2030 in compliance with the country's Paris Agreement commitments. The case is currently pending, with the proceedings being suspended since October 2022. It nevertheless demonstrates the risks that States face when implementing regulations for phasing out fossil fuels.

Source: UNCTAD.

[a] Building on the definition used in IISD (2021), fossil fuel ISDS cases relate to investment activities in the extraction, processing, distribution, supply, transportation and storage of coal, oil and gas, as well as the power generation from these fuels.

Box II.4. Renewable energy–related ISDS cases based on IIAs

During the last decade, ISDS cases brought by investors in the renewable energy sector have proliferated, totaling at least 119. Many of these cases challenged legislative changes involving reductions in feed-in-tariffs for renewable energy production. The cases primarily concerned investment in solar photovoltaic power generation. A small number related to wind and hydroelectric power. Spain was the respondent State in about 45 per cent of cases, which typically related to the same set of legislative and regulatory measures.

The proceedings mainly concern evolving incentives to promote investment in renewable energy. Unsustainable State expenditures and budget deficits, as well as advances in technology for renewable energy, generally meant that incentives were lowered, prompting challenges by investors.

The vast majority of these cases were initiated on basis of the Energy Charter Treaty (1994) by claimants from developed regions against other developed countries. About 40 per cent of the ISDS cases are currently pending. Among those concluded, about 45 per cent were decided in favour of the investor (with damages awarded), and 35 per cent were decided in favour of the State. The remaining cases have been discontinued, settled or decided in favour of neither party, or the outcome is unknown. Investors in renewable energy cases have, thus, been more successful than the global average for investors in all ISDS cases (28 per cent of all cases have been decided in favour of the investor).

Source: UNCTAD.

Past ISDS cases related to the sustainable energy transition provide some insights. Investors in both fossil fuels and renewable energy frequently rely on investment arbitration, together accounting for about 25 per cent of total ISDS cases. Moreover, challenges to government conduct take aim at measures undertaken by both developed and developing countries. As in other sectors, the overwhelming majority of energy-related ISDS cases relied on old-generation IIAs.

ISDS is costly. In general, the disputing parties – including the respondent States – incur significant expenditures for the arbitrators' work, the administration of proceedings and legal representation, all of which usually amount to several million dollars or more per case. Spain, for example, the major respondent in the renewable energy cases, is reported to owe €1.2 billion in damages and €101 million in legal and arbitration fees (Mehranvar and Sasmal, 2022). In addition, claimants and respondent States face several years of uncertainty while ISDS proceedings concerning the challenged measures continue.

c. IIA toolbox for promoting sustainable energy investment

UNCTAD has developed a toolbox to ensure that IIAs actively support and do not impede the energy transition.

Various options exist to transform IIAs into tools that promote and facilitate sustainable energy investment and climate objectives more generally. IIA reform actions should pursue a dual goal: (i) ensure that all provisions in IIAs appropriately safeguard the right and duty of States to regulate in the public interest, including in areas where frequent regulatory change is necessary such as energy investment, and (ii) enhance the ability of IIAs to positively contribute to the sustainable energy transition. The first goal secures that IIAs do not impede the transition to low-carbon economies. The second goal ensures that they effectively accelerate the transition. In implementing this second goal, attention should be paid to the objective of ensuring access to affordable, reliable, sustainable and modern energy for all (SDG 7).

UNCTAD has developed a toolbox with a focus on four related action areas (table II.8). These four areas relate to the promotion and facilitation of sustainable energy investment, technology transfer, the right to regulate for climate action and the energy transition as well as corporate social responsibility. For each action area, different policy options, accompanied by explanations, are indicated. There are synergies between many of these options, and they can all be adopted in IIAs in accordance with national development objectives.

d. Putting into action the IIA toolbox for promoting sustainable energy investment

Renegotiation, amendment and termination of existing treaties are the predominant options for ensuring that international investment obligations contribute positively to the energy transition.

Countries have numerous options for modernizing their stock of IIAs. As old-generation IIAs significantly outnumber new-generation ones, it is critical to address the problems and risks they pose. In 2017, UNCTAD presented countries with 10 IIA reform actions for old-generation IIAs, including joint interpretation, amendment, replacement and termination (*WIR17*).

The new IIA toolbox for promoting sustainable energy investment could primarily be put into place by amending or renegotiating existing treaties. Approaching a treaty afresh enables the parties to achieve a high degree of change and to be rigorous and conceptual in designing an IIA that reflects their contemporary shared vision. When new IIAs are concluded to replace old ones, countries may wish to formulate appropriate transition clauses and will need to be mindful of termination provisions and survival clauses in the earlier treaty (UNCTAD, 2018). The entry into force of new IIAs may take a significant amount of time. It may therefore be preferable to ensure that transitional arrangements are provisionally applied as of the date of signature of the new agreement. These transitional arrangements should (i) unequivocally disable the survival clause in the previous IIA and (ii) explicitly terminate all of its provisions. This can be done, for example, in the treaty text of the new IIA and/or a side letter.

Terminating an IIA is another reform option, including termination on a unilateral basis. The latter can be pursued alongside attempts to renegotiate an old-generation IIA. While the existence of survival clauses may have a deterrent effect on consideration of this option, many terminated BITs have or will in the next two to five years reach the end of the period of survival clause application.

The UNCTAD World Investment Forum, to be held from 16 to 20 October 2023, will also present concrete solutions for the reform of the IIA regime to increase investment in sustainable energy and to tackle the global climate crisis. The forum will take place ahead of the annual climate summit (COP28) and as such will enable IIA policymakers and other stakeholders to find solutions and reach consensus on priority issues that could feed into COP28 negotiations.

Table II.8. IIA toolbox for promoting sustainable energy investment

Action area	Policy options	Explanation
Promoting and facilitating sustainable energy investment	Incorporate IIA provisions that aim at actively promoting and facilitating sustainable energy investment.	Climate action policies will require significant new investment from both the public and the private sectors. Promotion and facilitation of sustainable investment appears only in a small number of existing IIAs. Novel IIA clauses can commit parties to promoting and facilitating investment in low-carbon energy production, including through the removal of obstacles that technologies and services such as renewable energy production may face. Such measures can include, for example, requirements to publish laws and regulations. In addition, parties could commit to implementing facilitation measures such as one-stop shops. Such promotion and facilitation measures do not need to be subject to investor–State arbitration to contribute to the Goal of access to energy for all.
	Provide for preferential treatment of sustainable energy investment.	Low-carbon energy investors could benefit from preferential treatment through, for example, the adoption of fast-track procedures for approval of permits or licences. The specific focus on sustainable energy investment lowers the burden on State parties to implement such measures while ensuring an IIA contributes positively to the energy transition. Any preferential treatment granted to sustainable energy investment does not need to be enforceable in investor–State arbitration.
	Establish institutional mechanisms for cooperation on R&D of sustainable technologies.	The transition to a green economy will require investment in R&D, implementation of new technologies and establishment of infrastructure necessary for the sustainable use of such technologies. Treaty parties may want to create mechanisms for continuous cooperation on R&D of sustainable technologies. An IIA could thereby include provisions fostering joint initiatives through, for example, a work programme involving relevant government agencies of the contracting parties and other stakeholders.
	Commit to technical assistance on the adoption of investment facilitation measures for sustainable energy.	In the case of treaty parties that are at different levels of development, one party may want to commit to providing technical assistance in the adoption of investment facilitation measures for sustainable energy production. Home and host States will be the ultimate beneficiaries of such commitments, which aim to ensure access to energy for all.

/…

Table II.8. IIA toolbox for promoting sustainable energy investment (Concluded)

Technology transfer and diffusion	Encourage transfer of low-carbon and sustainable technologies, including related know-how.	Article 4.1(c) of the United Nations Framework Convention on Climate Change requires States to "[p]romote and cooperate in the development, application and diffusion, including transfer, of technologies". Transfer and diffusion of technology is particularly crucial for energy generation, transmission and distribution in developing countries to ensure access to affordable, reliable, sustainable and modern energy for all (SDG 7). IIAs can serve as a tool to implement this commitment. This can be done by explicitly including provisions on the transfer of low-carbon technologies and related know-how.
	Make efforts to create an enabling environment for receiving technology.	Lack of the necessary physical and legal infrastructure can impede the operationalization of new technologies. The receiving State's efforts to create an enabling environment may be combined with commitments by the other treaty party or parties to provide technical assistance, especially where the treaty parties are at different levels of economic development.
	Allow certain kinds of performance requirements relevant to the energy transition.	The transfer of technology may require flexibility to use certain performance requirements, in line with national development strategies, SDG action plans and international obligations. IIAs that prohibit the imposition of performance requirements can constrain the array of measures available to States to create a conducive environment for the transition to low-carbon energy. For IIAs that do not contain any provision on performance requirements, the way forward may be to continue to not include such provisions or, at a minimum, to ensure that appropriate carve-outs relating to climate action exist.
	Ensure that the protection of IP rights does not unduly impede the diffusion of technology.	Protection of IP rights will be conducive to the energy transition only if it facilitates rather than impedes the diffusion of technology. Unduly restrictive protection may limit achievement of this goal. This means that treaty parties should ensure that all TRIPS flexibilities can effectively be relied upon, including under IIAs and in ISDS cases. If necessary, the parties should consider additional flexibilities.
Right to regulate for climate action and the energy transition	Refine the content of investment protection standards and reform ISDS with regard to energy investments.	Refining the content of investment protection standards and reforming ISDS are the most important reform actions States can undertake. The UNCTAD IIA Reform Accelerator provides model language and reform options for eight of the most relevant IIA clauses (UNCTAD, 2020). Reformed provisions should define and circumscribe the specific types of State conduct against which sustainable investors and investments are protected. In addition, States may limit or omit ISDS in their IIAs. Measures related to all or certain types of energy investments can be carved out from the treaty or, alternatively, from being challenged in ISDS proceedings. This can be achieved, for example, through a carve-out for fossil fuels, bearing in mind countries' development objectives.
	Acknowledge the need for regulatory flexibility.	The extensive interpretation of IIA clauses, including the arbitral practice of interpreting the fair and equitable treatment clause to protect investor expectations, has proven to add high costs for governments' modification or withdrawal of renewables incentives and entails high risks for the phasing out of high-carbon energy production. Treaty parties should explicitly acknowledge that climate change mitigation and adaptation, including the energy transition, takes place in a rapidly evolving policymaking environment. This implies a greater need for regulatory flexibility, including adjustments to as well as introduction or abrogation of existing rules, regulations and incentive programmes in all relevant areas.
	Include general exceptions related to climate change and the energy transition.	General exceptions related to the energy transition can be in the style of Article XX on General Exceptions of the WTO General Agreement on Trade and Tariffs, with appropriate refinements given recent arbitral findings with respect to such clauses. Whereas an exception for environmental protection as found in some new-generation IIAs generally covers climate change measures, parties may nevertheless wish to explicitly refer to climate change to avoid misinterpretations by arbitral tribunals.
	Clarify provisions on compensation and damages (where applicable).	If an IIA provides for substantive protection standards enforceable in ISDS proceedings, to ensure that it does not unduly limit the parties' ability to regulate for climate action and the energy transition, provisions on damages could be clarified. For example, States may wish to limit compensation in the rapidly developing energy environment to sunk costs as opposed to valuations based on projected future cash flow.
Corporate social responsibility	Include binding obligations related to corporate social responsibility.	The private sector is vital for innovating, developing, transferring and diffusing technology necessary in the energy transition. As beneficiaries of IIA protection standards, energy investors should concomitantly be required to comply with obligations relating to human rights, labour, environmental and anti-corruption standards. Investment treaties should serve as tools to further compliance with best international practices of corporate social responsibility and good corporate governance.
	Specifically oblige energy investors to comply with requirements for sustainable investment.	This policy option recognizes that for investors that want to avail themselves of IIA benefits, voluntary standards should be turned into mandatory ones (e.g. by requiring environmental impact assessments and maintenance of environmental management systems). In that way, sustainable investment standards can complement efforts to rebalance the rights and obligations of States and investors and ensure that IIAs positively contribute to an enabling environment for the energy transition.

Source: UNCTAD.

NOTES

[1] These countries are Australia, Austria, Canada, China, Czechia, Denmark, Finland, France, Germany, Hungary, Iceland, India, Israel, Italy, Japan, the Lao People's Democratic Republic, Latvia, Lithuania, Malta, Mexico, the Netherlands, New Zealand, Norway, the Philippines, Poland, Portugal, the Republic of Korea, Romania, the Russian Federation, Saudi Arabia, Slovakia, Slovenia, South Africa, Spain, Thailand, the United Kingdom and the United States.

[2] Belgium, Croatia, Estonia, Greece, Ireland, Luxembourg, Sweden and Switzerland.

[3] For details see European Commission (2022). "Communication from the Commission to the European Parliament, the Council, the European Economic and Social committee and the Committee of the regions, Commission work programme 2023". COM (2022) 548 final. Strasbourg and United States, White House (2022). Biden-Harris Administration's National Security Strategy. October 2022. Washington, D.C..

[4] Government of Italy, Decreto-Leggi - Normattiva, n. 21, 21 March 2022.

[5] Government of Spain, Boletín oficial del Estado, No. 311, 28 December 2022.

[6] Government of France, Direction générale du Trésor. https://www.tresor.economie.gouv.fr/Articles/2022/09/08/publication-des-lignes-directrices-relatives-au-controle-des-investissements-etrangers-en-france. September 2022.

[7] The total number of IIAs is revised in an ongoing manner as a result of retroactive adjustments to UNCTAD IIA Navigator.

[8] For more information on this agreement, see https://finance.ec.europa.eu/publications/eu-member-states-sign-agreement-termination-intra-eu-bilateral-investment-treaties_en.

[9] On the basis of newly revealed information, the numbers of known cases for 2020 and 2021 were adjusted to 77 each.

[10] Under Annex 14-C of the United States–Mexico–Canada Agreement, parties consent to the submission of so-called "legacy investment claims" under NAFTA until three years after the termination of NAFTA, i.e. 1 July 2023.

[11] These are based on the review of 798 renewable energy policies and laws, covering 192 economies (see chapter IV). These 212 laws and policies were selected because they include at least one type of investment promotion tool as defined in Table II.6.

[12] UNCTAD computations, based on data from FossilFuelSubsidytracker.org.

[13] According to IMF, this figure rises to almost $6 trillion (or 6.8 per cent of world GDP), if the hidden costs of fossil fuels, including their impact on air pollution and global warming, are taken into account (Parry, Black and Vernon, 2021).

[14] See, for instance, Moayed, Guggenheim and von Chamier (2021) or World Bank (2012).

CHAPTER III

CAPITAL MARKETS AND SUSTAINABLE FINANCE

INTRODUCTION

The sustainable finance market remains an important source of capital for investment in sustainable development and the Sustainable Development Goals (SDGs), as well as a driver of change in business mindsets and investment strategies. The value of the global sustainable finance market (bonds, funds and voluntary carbon markets) reached $5.8 trillion in 2022, despite the turbulent economic environment, including high inflation, rising interest rates, poor market returns and the looming risk of a recession that all affected the financial markets.

Sustainable funds continued to be more attractive to investors than traditional funds. The value of the global sustainable fund market fell from its high of $2.7 trillion in 2021 to $2.5 trillion in 2022. Yet, despite the decline in market valuation, net inflows to the market were positive (section III.A.1), in contrast to net outflows from traditional fund markets. This suggests that investors view sustainable finance as a longer-term strategy and are convinced by the business case for sustainable sectors, such as renewable energy.

Sustainable bond issuance declined but its cumulative value increased. It fell from its highs in 2021, down 11 per cent in 2022, though remaining above pre-pandemic levels. However, the outstanding, cumulative value of the sustainable bond market increased, from $2.5 trillion in 2021 to $3.3 trillion in 2022. Green bond issuance remained relatively resilient, falling just 3 per cent in 2022.

This year, this chapter includes analysis of the rapid evolution of voluntary carbon markets (VCMs). These markets, valued at $2 billion, are a small but rapidly growing element in the finance landscape that provides a cross-border channel for financing renewable energy and other climate-related projects in developing countries.

Institutional investors, such as public pension funds (PPFs) and sovereign wealth funds (SWFs), are in a pivotal position to effect change on sustainability-related challenges, and to finance investment in sustainable energy. The capital-intensive and long-term nature of renewables investment corresponds to the maturity profiles of pension fund liabilities and is a good match for sovereign demand for infrastructure investment. UNCTAD's monitoring reveals that, in 2022, more institutional investors disclosed their actions on climate, including investment in sustainable energy and divestment from fossil fuels. Over two thirds of reporting funds have now committed to achieving net zero in their investment portfolios by 2050.

Capital market infrastructure, such as stock exchanges and derivatives exchanges, are at a pressure point in the investment chain and can exert influence on entities, issuers, index providers and other investment stakeholders. In 2022, the number of exchanges with mandatory sustainability reporting increased, as did the number of exchanges providing training to listed companies on sustainability disclosure, including on climate-related matters.

As the sustainable finance market moves from a voluntary to a mandatory governance architecture (section III.D), the number of national, regional and international policies and regulations is increasing. According to UNCTAD's monitoring, at the end of 2022, 35 developed and developing economies and country groupings – accounting for 93 per cent of global GDP – had 388 sustainable finance-dedicated measures in force, with at least 50 introduced in 2022 and more than 50 in development. This underscores the importance that policymakers now attach to the sustainable finance market and their recognition that it plays a crucial role in achieving net zero and increasing investment in sustainable energy.

As the recent 6th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) showed (IPCC, 2023), the world has all but run out of time to achieve net zero by

2050 along a warming pathway of 1.5°C. Even talk of transition is almost now anachronistic, with investment in sustainable energy (renewables, efficiency measures, and the like) falling short of requirements – despite, for example, investment in wind and solar power being the cheapest and most effective way to reduce carbon emissions (IPCC, 2023).

Progress is being made along the entirety of the investment chain, but a new approach is now needed to move up a gear in the collective climate response and accelerate the energy transition. The first era of sustainability integration, the pioneering era of niche sustainable finance activities, roughly from the 1990s to 2005, gave way to the mainstreaming era, roughly from 2005 to the adoption of the SDGs and the Paris Agreement in 2015, after which many big players, such as exchanges, fund issuers and institutional investors, realized the materiality of sustainability risks and opportunities. Since then, the world has entered the third era of sustainability integration, characterized by standardization and increasing codification, with the development, for example, of the European Union taxonomy and the standards of the International Sustainability Standards Board (ISSB). The next step requires rapid education and support for investors and other market players, especially in developing countries, before time truly runs out.

UNCTAD's suite of programmes and products on climate and sustainable finance, and the Global Sustainable Finance Observatory (GSFO) it coordinates, aim to accelerate the educational process and support investment stakeholders in taking action on sustainability, climate and the energy transition. At UNCTAD's 8th World Investment Forum in October 2023, the global investment for sustainable development community will convene to identify ways and means to leverage capital markets for sustainable development and the climate transition.

A. SUSTAINABILITY-THEMED CAPITAL MARKET PRODUCTS

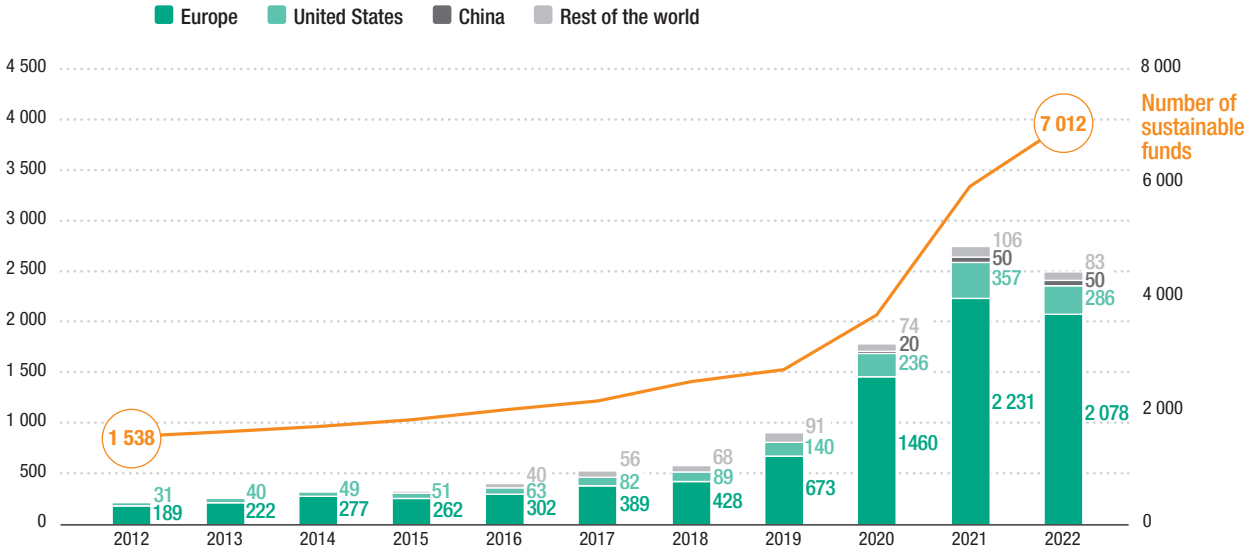
In 2022, the sustainable finance market (funds, bonds and voluntary carbon markets) grew to $5.8 trillion, up 12 per cent from 2021. This was primarily due to the increase in the outstanding issuance of sustainable bonds, which have grown fivefold between 2017 and 2022. The sustainable fund market experienced a retrenchment in 2022, in common with other financial markets, but remained relatively more resilient. Net inflows to sustainable funds were positive, in contrast to net outflows from traditional funds. Nevertheless, a significant proportion of funds may not meet their sustainability credentials, and their performance requires careful examination. Carbon markets saw record prices for the cost per ton of carbon dioxide equivalent (tCO_2e) in 2022. Although the picture is nuanced, the overall positive trend in the sustainable finance market points to continued investor confidence and the resilience of sustainable investment strategies.

1. Sustainable funds

a. Market trends

In 2022, the total number of sustainability-themed funds worldwide increased, although the rate of growth slowed from 2021. The total now stands at 7,012, up 18 per cent from 2021 (figure III.1). The sustainable fund market in Europe continues to be dominant, with over 5,300 sustainable funds or 76 per cent of the sustainable fund universe. The United States and China accounted for 9 per cent and 4 per cent of sustainable funds, respectively. In 2022, more than 900 sustainable funds were launched, representing a 10 per cent decline from 2021, with a slowdown seen across all major markets.

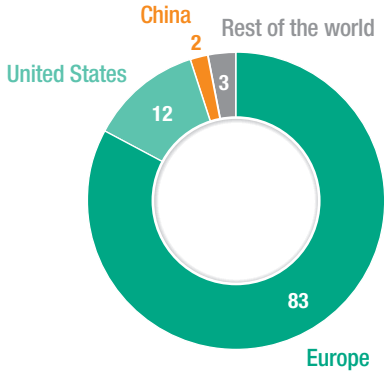
Figure III.1. **Sustainable funds and assets under management, 2012–2022**
(Billions of dollars and number)



Source: UNCTAD, based on Morningstar data.

Despite the increase in the total number of sustainable funds, the total value of sustainable fund assets experienced a 7 per cent drop, from $2.7 trillion in 2021 to $2.5 trillion, in 2022 (see figure III.1). This was primarily a result of falling share prices in leading stock markets, especially in the first three quarters of the year. Europe continued to dominate as the largest sustainable fund market, with assets of $2.1 trillion as of December 2022. That represented 83 per cent of global sustainable fund assets, up 2 per cent from the 2021 market share. As a share of the total European fund market, sustainable funds expanded from 16 per cent to 20 per cent in 2022. In contrast, the value of sustainable fund assets in the United States decreased, from $357 billion in 2021 to $286 billion in 2022, and now accounts for 12 per cent of the global market. China is the world's third largest sustainable fund market, hosting 279 sustainable funds with assets under management of roughly $50 billion at the end of 2022. The assets of sustainable funds in the rest of the world declined from $106 billion in 2021 to $83 billion in 2022, or 3 per cent of the global market (figure III.2).

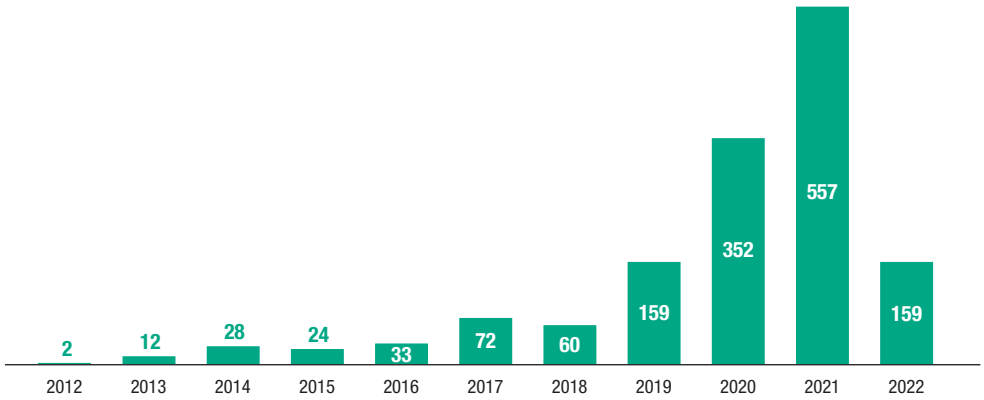
Figure III.2. Distribution of the global sustainable fund market, 2022
(Per cent of assets under management)



Source: UNCTAD, based on Morningstar data.

Global net investment flows to sustainable funds decreased significantly in 2022, to $159 billion from $557 billion in 2021 (figure III.3). This decline was a result of depressed asset values and investor withdrawals amid persistent market uncertainties, including high inflation, rising interest rates, poor market returns and the looming risk of a recession. Net investment flows to sustainable funds in Europe, the largest sustainable fund market, dropped from $472 billion in 2021 to $141 billion in 2022. Investment flows to sustainable funds in the United States remained positive but decreased to $3 billion, the lowest level in seven years. Nevertheless, sustainable funds fared much better than the overall global fund market, which experienced net outflows of $819 billion in 2022, or nearly 3 per cent of total global fund assets at the start of the year. The relative resilience of investment in sustainable funds reflects the continuing confidence of investors in sustainable investment and their long-term positions in the market.

Figure III.3. Net flows to sustainable funds, 2012–2022 (Billions of dollars)



Source: UNCTAD, based on Morningstar data.

In a turbulent market environment where nearly all sectors and asset classes experienced losses, global sustainable funds slightly underperformed traditional funds for the first time since 2018, averaging returns of -19 per cent versus -16 per cent for traditional funds. Several factors contributed to this underperformance, including the rebound of fossil fuel asset values, the underperformance of growth stocks – to which sustainable funds tend to have more exposure than their traditional peers – and the negative impact of the inverted yield curve associated with interest rate hikes on the returns of longer-duration fixed-income investments (Morgan Stanley, 2023).

Despite the efforts of regulators to provide greater transparency in the sustainable fund market, concerns about sustainability-washing have not been completely assuaged. Europe, a frontrunner in sustainable finance regulation, introduced the Sustainable Finance Disclosure Regulation (SFDR) in 2021. Starting from January 2023, issuers of sustainability-themed products are required to disclose more detailed information to support their sustainability claims. However, in the lead-up to the application of the new requirements, the market has seen a wave of products being downgraded or reclassified by issuers from Article 9, the highest sustainability rating, to Article 8, a more broadly defined sustainable product category (Furness and Wilkes, 2023). This reclassification may not improve the clarity and credibility of the sustainable fund market. According to Morningstar, about a quarter of SFDR Article 8 funds may not meet environmental, social and governance (ESG) criteria (Andrew, 2022), which aligns roughly with UNCTAD's assessment of the sustainability of a sample of more than 2,800 sustainable equity funds (see the subsection below). Addressing sustainability-washing issues effectively will require more specific product standards, better disclosure and enhanced third-party ratings.

Another persistent feature of sustainable finance is the relative absence of developing economies in the global sustainable fund market. UNCTAD estimates that sustainable funds domiciled in developing economies account for less than 3 per cent of global sustainable fund assets, and most of these funds are concentrated in China. The lack of standards and sustainability data, as well as the limited size of capital markets in many developing economies, have prevented developing countries from fostering their own market or benefiting further from the international market. To address these issues, developing economies need to establish necessary policy and regulatory frameworks and create an enabling ecosystem for sustainable finance – critical to leveraging the potential of sustainable investment to finance economic and social development.

b. Sustainability performance

To address the sustainability concerns and assess the impact of sustainable funds on sustainable development, the GSFO, coordinated by UNCTAD, has been monitoring the sustainability profiles of these funds.

(i) Overall sustainability performance

The Observatory significantly expanded the scope of its assessment in 2022, from fewer than 800 funds in 2021 to more than 2,800 funds, covering 40 per cent of the global sustainable fund market. Of these, 344 funds (12 per cent) claim to be Article 9-compatible products as defined by the SFDR standards of the European Union, which require systematic integration of sustainability into asset allocation. Another 1,739 funds (61 per cent) claim to be Article 8-compatible products, indicating that they take sustainability into consideration in their investment decisions or asset allocation.

Table III.1. Sustainability score by fund strategy, 2022, average sustainability rating

Strategy	Number of funds	Average rating	Average rating by percentile			
			0–25	25–50	50–75	75–100
Overall	2 843	6.9	3.9	6.3	7.4	9.3
Article 9	344	8.3	6.2	7.9	9.0	10.0
Article 8	1 793	6.6	4.9	6.1	6.3	8.8
Other products	756	6.3	3.2	5.9	7.1	9.1

Source: UNCTAD, based on Conser data.
Note: The distribution of fund sustainability ratings by strategy is broken into quartiles, with percentile 0-25 representing the funds that have the lowest sustainability ratings. Article 8 and 9 refer to the Sustainable Finance Disclosure Regulation rules of the European Union, which aim to make the sustainability profile of funds more comparable and better understood by end investors.

Overall, the assessment found that sustainable funds tend to outperform their conventional peers in terms of sustainability, regardless of their choice of sustainability integration strategies, which aligns with UNCTAD findings in previous years (*WIR22*). As a group, the funds in the sample have an average rating of 6.9,[1] compared with an average sustainability rating of 4.0 for the benchmark MSCI global equity index (the MSCI ACWI).[2] However, it is important to note that a quarter of these funds had an average rating of only 3.9, i.e. below the benchmark average (table III.1), raising concerns about their qualification as sustainable investment products.

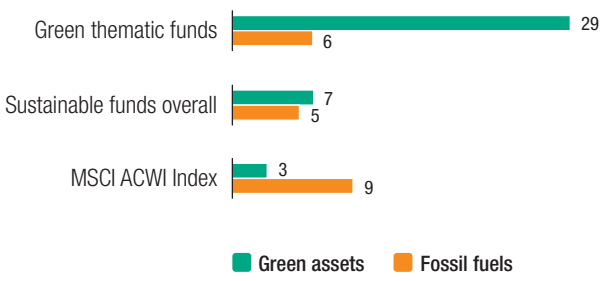
The assessment found that SFDR Article 9 products had an average sustainability rating of 8.3, significantly higher than the average rating of the entire sample. Yet, Article 8 products had an average sustainability rating of 6.6, slightly lower than the overall average. It is noteworthy that the quartile of funds with the lowest scores for Article 8 products had an average sustainability rating below 5, indicating that a significant proportion of these products may not meet their sustainability credentials. As such, their sustainability integration practices and performance require careful examination, and external auditing may be necessary. In this regard, the requirements for qualification as Article 8 products may need to be strengthened to ensure the necessary quality in terms of sustainability.

The assessment also found that, as a group, self-claimed sustainable funds in the sample that did not refer to any standards (756 funds) had the lowest rating. Approximately half of the funds in this group had a score below 6, owing to their limited integration of sustainability elements in product construction, or exposure to ESG risks or sensitive sectors such as fossil fuels, tobacco and alcohol, and weapons.

(ii) Climate impact

Thematic funds with a green investment focus, and sustainable funds in general, tend to outperform the overall fund market in terms of their impact on climate sustainability (figure III.4). However, because of the rising value of fossil fuel-related assets, the overall "greenness" of sustainable funds deteriorated slightly from 2021 to 2022, as exposure to fossil fuels increased from 3 per cent to 5 per cent, while exposure to low-carbon assets decreased from 8 per cent to 7 per cent. This shift was caused by a surge in returns on fossil fuel-related assets associated with the impact of the war in Ukraine on the global energy market.

Figure III.4. Exposure of sustainable fund holdings to climate-positive and climate-negative assets, 2022 (Per cent)



Source: UNCTAD.

The climate performance of the 227 self-declared green funds in the sample, measured by their net exposure to climate-positive assets (low-carbon assets minus fossil fuels), remained at 23 per cent in 2022. However, it is important to note that about 15 per cent of these "green funds" had fossil fuel exposures of over 10 per cent (including investment in fossil fuel companies in transition, in some cases), which may call their self-labelled green credentials into question. In addition, some of the largest green funds had significant investments in large-cap high-tech companies, which have a high carbon intensity because of the energy consumption of their data centres and other operations.

(iii) SDG alignment

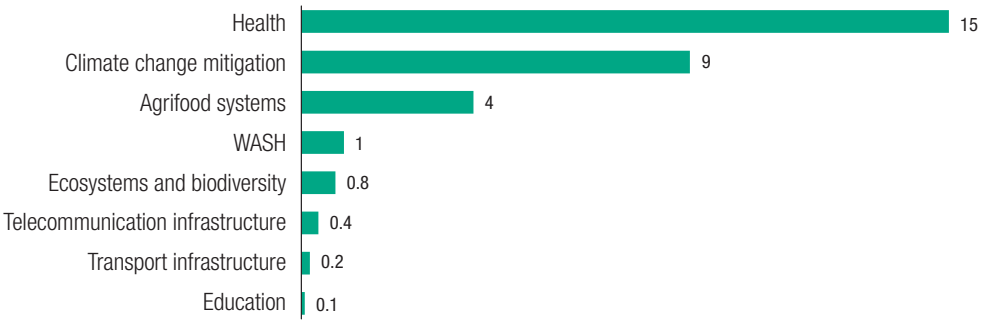
Sustainability-themed products have a critical role to play in financing sustainable development, as defined by the SDGs. In addition to the responsible investment dimension, these financial instruments should be constructed to channel much-needed investment for sustainable development. Indeed, the SDGs have become an important framework for institutional investors to use to define their sustainable investment strategies, and more investors are incorporating an SDG perspective in their investment decisions (section III.B).

To evaluate the contribution of sustainable funds to sustainable development, UNCTAD has been monitoring fund alignment with the SDGs by measuring how much of a fund's portfolio is invested in eight sectors key to the SDGs: transport infrastructure, telecommunication infrastructure, WASH (water, sanitation and hygiene), agrifood systems, climate change mitigation (renewable energy and cleantech), health, education and ecosystem diversity (figure III.5). These sectors are critical in the attainment of the SDGs and represent the largest investment needs and opportunities in terms of SDG financing.

As of the end of 2022, the 2,843 sustainable funds covered by the assessment had committed $537 billion (30 per cent of their holdings) to the eight SDG sectors, up from 26 per cent in 2021. Four sectors – health, renewable energy, agrifood systems, and WASH – remain the largest recipients of funding, accounting for 95 per cent of the assets committed to these SDG sectors. The single largest sector for fund investment remains health, which covers health infrastructure, medical services, pharmaceuticals and medical devices. It is followed by climate change mitigation (including renewable energy).

Yet investment in sustainable infrastructure and education, two critical sectors for achieving the SDGs, remains extremely low. Innovative product development may be needed to attract more investment to these sectors. Increased securitization and privatization of assets in these sectors could also help create more investment opportunities for investors via capital markets.

Figure III.5. **Share of sustainable fund assets invested in SDG sectors, 2022**
(Per cent)



Source: UNCTAD.

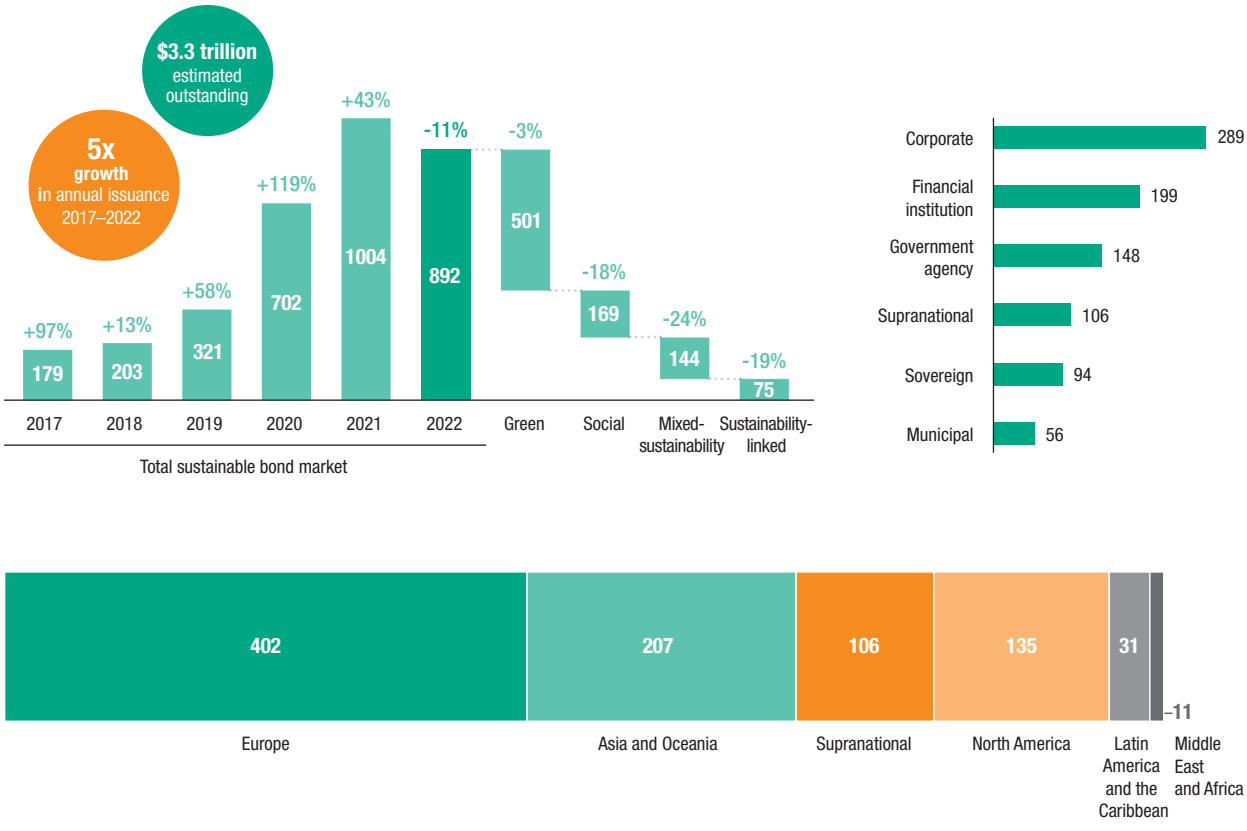
2. Sustainable bond markets

After a record-setting year in 2021, issuance of new sustainable bonds[3] declined in 2022, shrinking 11 per cent to $892 billion, from the all-time high of $1.04 trillion (figure III.6). This decline nevertheless outperformed the estimated 19 per cent decline in issuance of new bonds in the broader global bond market (S&P, 2022). Challenges related to geopolitical tensions and inflation brought to an end a decade of continuous growth, but longer-term trends persist with sustainable bonds annual issuance growing fivefold between 2017 and 2022.

Social and mixed-sustainability bonds saw sharp declines of 18 and 24 per cent. Green bonds, the oldest market for sustainable bonds, exhibited resilience with only a 3 per cent decrease. While sustainable bond issuance shrank in all other regions, Asia and Oceania bucked the trend and reported a 17 per cent increase.

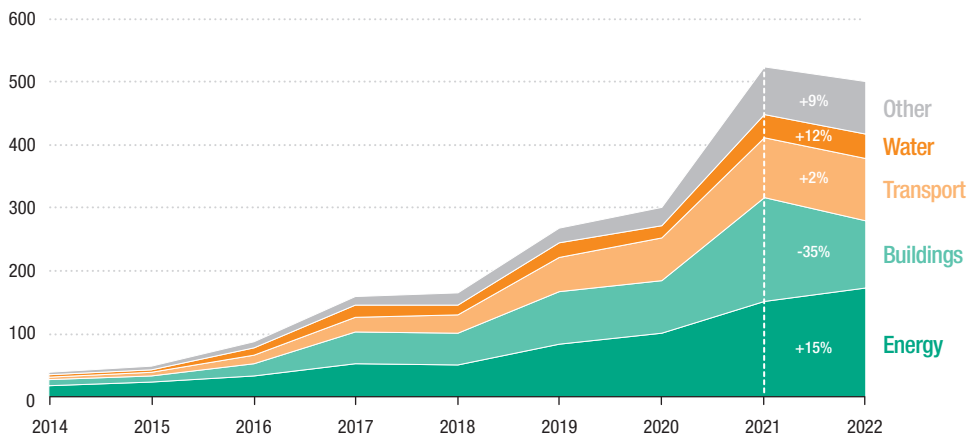
Despite the overall weakness of the bond market in 2022, green bonds continued to be a growing source of finance across the key sustainable development sectors of energy and water, which both saw double-digit percentage increases between 2021 and 2022 (figure III.7). A large drop in the use of green bonds to finance buildings led the overall decline in 2022. Corporate, government agency and municipal issuers all saw steep declines in the value of bonds issued. Nevertheless, financial institutions and supranational entities saw big gains in 2022, which helped to prop up the overall green bond market (figure III.8).

Figure III.6. **Global sustainable bond issuance, 2017–2022, and by category, issuer type and region, 2022**
(Billions of dollars and year-on-year growth)



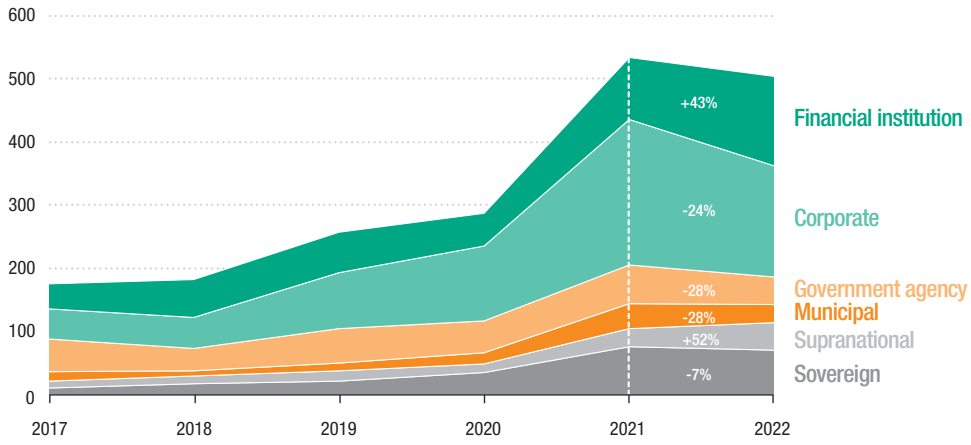
Source: UNCTAD, based on information from Environmental Finance.

Figure III.7. **Green bond market size by industries financed, 2014–2022**
(Billions of dollars and per cent change 2021–2022)



Source: UNCTAD, based on information from Climate Bonds Initiative.

Figure III.8. **Green bond market size by issuer type, 2017–2022**
(Billions of dollars and per cent change 2021–2022)



Source: UNCTAD, based on information from Environmental Finance.

a. Green bonds

Key elements of basic infrastructure such as energy, buildings, transport, and water continue to receive the largest investment through green bonds. While the transport and water sectors maintained their momentum with moderate growth in 2022, funding for low-carbon buildings noticeably decreased. The energy industry, whose share of total investment has shrunk in recent years (from 50 per cent of the total market in 2014 to 35 per cent in 2021), re-emerged in 2022 as the recipient of the highest volume of green bond financing with a 15 per cent year-on-year increase. The resilience and resurgence of the renewable energy sector reflects the continued focus on low-carbon energy to achieve emission reduction goals as well as the need for energy security and independence, made urgent by the war in Ukraine.

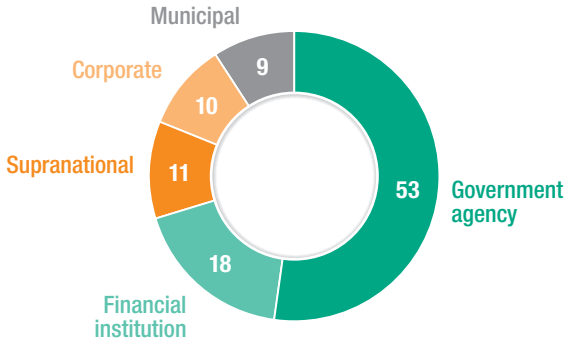
Despite a contraction in aggregate volume, policies such as the NextGenerationEU Green Bond framework continued to fuel expansion in Europe, which remains a clear leader in the green bond market. In 2022, three countries in the eurozone – France, the Netherlands, and Germany – were among the five largest issuing countries while the European Union itself was the largest single issuer of green bonds. Pending policy measures such as the European Green Bond Standard (accompanying the broader NextGenerationEU programme), which is currently under negotiations at the European Commission, can further drive this momentum. Similar developments such as the launch of Green Bond Principles of China and passage of the Inflation Reduction Act in the United States can potentially replicate this growth in other regions as well.

Even as the total green bond market shrank by 6 per cent in 2022, supranational funds and financial institutions continued to exhibit strong year-on-year growth, with increases of 52 per cent and 43 per cent respectively.

b. Social bonds

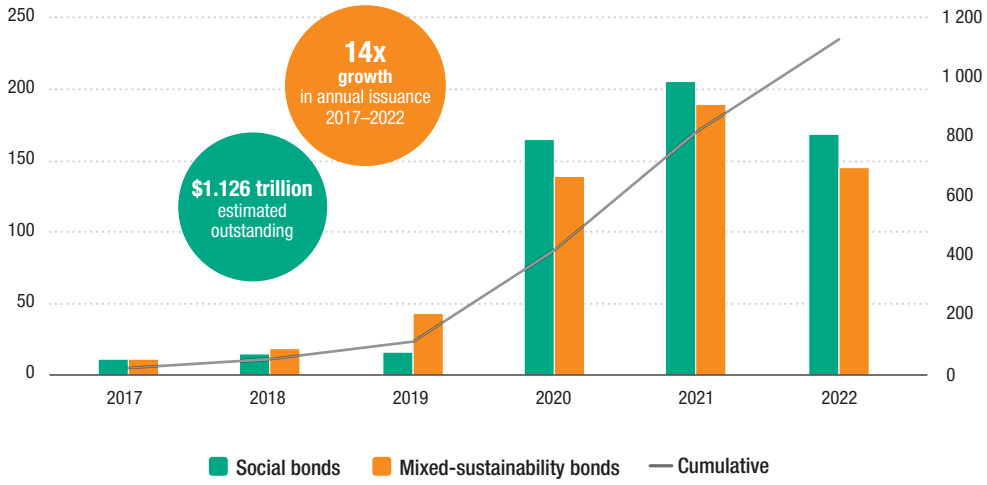
Despite declines in 2022 in line with that of the broader bond market, social and mixed-sustainability bonds remained on a long-term growth trajectory, with a nearly 14-fold increase in annual issuance from 2017 to 2022 (figure III.9). The efforts to remedy the fallout of the pandemic turbocharged the growth of the social bonds market, but even as the immediate effects of the pandemic subside social bonds will likely continue to make up a prominent share of the sustainable bond market. Although government agencies continued to be responsible for the bulk of the market in 2022, there was significant growth in the issuance of social bonds by corporate and financial institutions (figure III.10).

Figure III.10. **Social bond issuance by issuer type, 2022** (Per cent)



Source: UNCTAD, based on information from Environmental Finance.

Figure III.9. **Social and mixed-sustainability bond issuance, 2017–2022**
(Billions of dollars)



Source: UNCTAD, based on information from Environmental Finance.

Lingering effects of the pandemic coupled with a growing focus on the SDGs, the 2030 Agenda and diversity, equity and inclusion have been driving investor demand to socially minded investments. As institutional investors put more emphasis on the social element of ESG metrics, financial and corporate entities are likely to keep innovating and drive the issuance of private sector social bonds. Looking ahead, small and medium-sized enterprises, affordable housing, health care and regional resilience are areas that will receive more focus.

3. Voluntary carbon markets

Carbon markets today are primarily either compliance markets or voluntary markets (box III.1). Compliance carbon markets (CCMs), with an estimated value of issued credits between $700 billion and $800 billion per year, are much larger than voluntary carbon markets (VCMs), at only about $2 billion per year. VCMs nevertheless provide a unique feature that most CCMs do not: the ability to channel investment capital across borders to finance new projects aimed at emissions reduction or avoidance. Most VCM credits are being issued for projects in developing countries and sold to buyers in developed countries (primarily European countries and the United States). In this way, the nascent VCM market holds great potential as a new channel for sustainable finance in climate sectors, such as renewable energy and reforestation.

Box III.1. Introduction to carbon markets

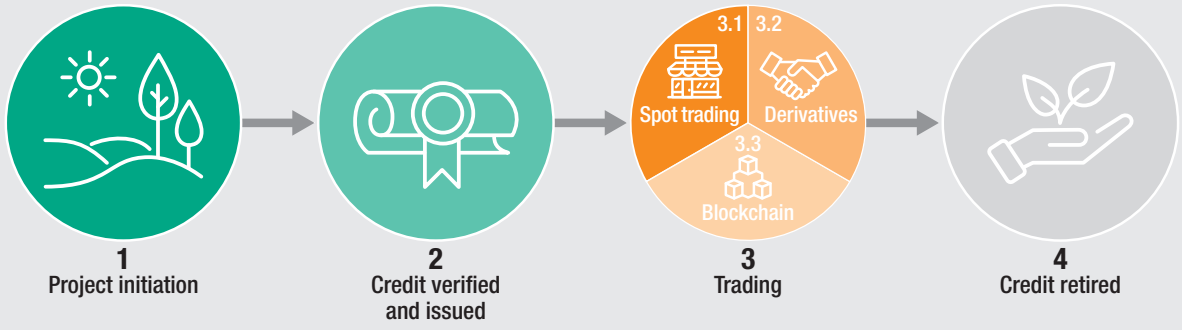
Carbon markets are facilities where emission allowances, credits and financial instruments based on such credits are bought and sold. Carbon credits represent a reduction, sequestration or avoidance of the emission of a set amount of carbon dioxide or other greenhouse gas (typically, one credit is equal to 1 tCO_2e. A buyer of such a credit is buying the allowance to emit this set amount of greenhouse gas, which is offset against the credit amount.

Article 6 of the Paris Agreement opens the door to countries to use international carbon markets to meet their nationally determined contributions. More than two thirds of countries intend to use carbon markets to meet their contributions, and a number of countries are investing in state-of-the-art digital infrastructure to enable participation in international carbon markets. The World Bank estimates that trading in carbon credits could reduce the cost of implementing nationally determined contributions by more than half (World Bank, 2022b). Replacing the Kyoto Protocol's international carbon credit programmes, the mechanisms under Article 6 are intended to intensify and accelerate action by creating new markets.

Carbon markets are of two main types: compliance carbon markets (CCMs) or voluntary carbon markets (VCMs). CCMs are jurisdiction specific and mandatory and create a price on carbon that is intended to incentivize lower emissions. VCMs serve the demand for credits outside of regulated schemes and enable the buying and selling of emission credits that are issued under projects that achieve emission reductions. Participants in the voluntary market range across companies, governments and private individuals aiming to reduce their carbon footprint.

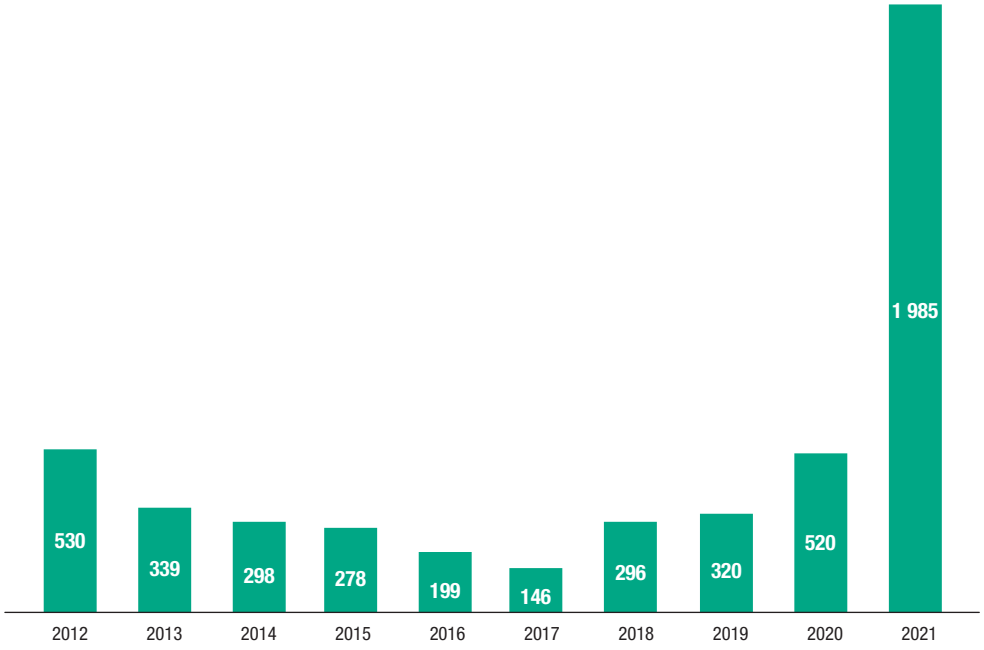
Voluntary markets rely on verification or certification of projects to provide prospective buyers with confidence about the claimed amount of carbon emissions to be avoided, decreased or removed. The value chain of a VCM is typically made up four elements: project initiation, project verification and credit issuance, trading and finally retirement of the credit when the emissions offsets are claimed (box figure III.1.1).

Box figure III.1.1. Typical structure of a VCM



Source: SSE (2022).

Figure III.11. **Voluntary carbon market size by value of traded carbon credits, 2012–2021** (Millions of dollars)



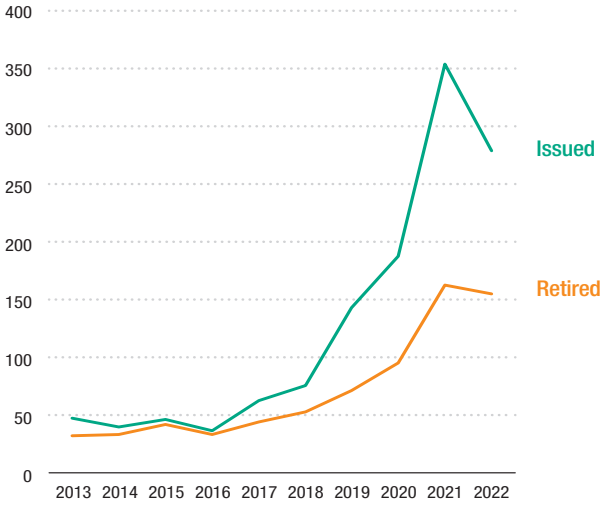
Source: UNCTAD, adapted from Ecosystem Marketplace (2022).

Globally, the dollar value of credits issued on VCMs has nearly quadrupled between 2020 and 2021, the latest year for which data are available (figure III.11), with huge growth in the number of carbon credits issued (figure III.12). Although issuance of VCM credit dropped in 2022 because of uncertainty in the global economic outlook resulting from the war in Ukraine and fears of a global recession, it was still higher than in 2020. Demand for renewable energy projects remained high, despite experiencing a slight decline from 2021.

Because the energy sector is a leading contributor to emissions, decarbonizing this sector remains essential in combating climate change. Financing renewable energy solutions has therefore been a priority in emission avoidance activities. Renewable energy projects make up about 37 per cent of all projects that issue VCM credits (Climate Focus, 2022), making renewable energy credits the most abundant credits in VCMs, and available at some of the lowest prices (World Bank, 2022). Renewable energy projects typically cover the following subcategories (both large- and small-scale): wind, solar, hydro, renewable biomass and mixed-source. In 2022, 93 per cent of renewable energy carbon credits issued related to just three technologies: large-scale wind, hydropower and solar projects (figure III.13).

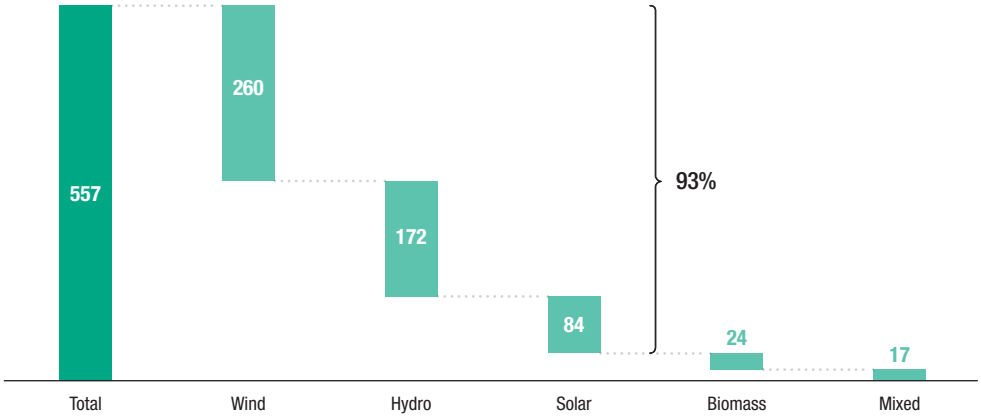
Historically, renewable energy credits have prompted large issuances to overcome the challenge that renewable energy solutions were generally cost-prohibitive, particularly in developing countries (Sylvera, 2022). Recently, declining costs

Figure III.12. **Growth of voluntary carbon market issuance and retirement, 2013–2022** (Millions of tons of CO_2 equivalent)



Source: UNCTAD, adapted from Climate Focus (2022).

Figure III.13. **Voluntary carbon credits issued for renewable energy projects, 2022** (Millions of credits)



Source: UNCTAD, adapted from Climate Focus (2022), Voluntary Carbon Market Dashboard.
Note: One credit equals one ton CO_2 equivalent.

driven by technological innovation and greater adoption of renewable energy, have made grid-connected renewable projects more viable and financially attractive. As a result of this mainstreaming of renewable energy, the risk has arisen that renewable energy credits may not meet the *additionality* criteria of a high-quality carbon credit.[4] Some carbon-credit certifying bodies no longer issue credits from renewable energy projects unless they originate from a least developed country. Yet, renewable energy projects can still be certified to issue renewable energy certificates. Different from a carbon credit, a renewable energy certificate enables a buyer to report electricity from a renewable energy source as a reduction in Scope 2 emissions (Bjørn et al., 2022).

Carbon credits that focus on renewable energy projects are likely to continue to form part of the VCM ecosystem. They can make clean energy alternatives more affordable,[5] and in an environment where carbon credits are increasingly subject to requirements for co-benefits, they also play a role in financing the achievement of other SDGs.

Some civil society critics of VCMs argue that measures of the size of such markets are misleading because they do not clearly indicate how much money ultimately reaches a project after expenditures related to intermediary and other fees. Efforts to improve transparency are critical to overcome this challenge.

Through VCMs, CCMs or other compliance mechanisms such as carbon taxes, approximately 23 per cent of global emissions are now covered by some form of carbon pricing (UNDP, 2022). While the market value of VCMs is currently relatively small, policymakers and private sector actors are looking to VCMs as part of the answer to finance the transition to net-zero emission economies, including the financing of renewable energy. VCMs are growing rapidly and have the potential to provide a new source of international investment for developing countries' climate mitigation efforts. VCMs should be considered in combination with other policy instruments designed to attract private investment flows to help finance developing countries' climate mitigation efforts as part of a just transition to net-zero emission economies. In 2022, the Sustainable Stock Exchange (SSE) initiative launched a new workstream to explore the role of exchanges in relation to carbon markets. At COP27, it released a Market Monitor for VCMs (SSE, 2022) and announced the formation of an SSE Advisory Group to develop guidance for exchanges that are engaging with carbon markets. That guidance is set for release in Q3 of 2023

at the UNCTAD World Investment Forum. More work will also be needed from market regulators to further ensure the integrity and transparency of carbon markets (box III.2).

Box III.2. Carbon market regulation

IOSCO began work in 2022 on promoting the understanding and sound functioning of both CCMs and VCMs, mindful of the prospect that cross-border trading of carbon credits may expand. The underlying objective was to better understand the set-up and potential vulnerabilities of these markets, with the aim of fostering market integrity. During COP27, IOSCO announced consultations on the development of sound and well-functioning carbon markets, and the publication of a Consultation Report on recommendations for establishing sound CCMs and of a Discussion Paper on key considerations for enhancing the resilience and integrity of VCMs. The discussion paper identifies key considerations for regulators contemplating frameworks to promote market integrity in VCMs and to help overcome some of the present limits in these markets. It proposed a series of toolkits with suggested ways to address each of the key considerations. IOSCO's work builds on the lessons learned from traditional finance and market structures (transparency, access, integrity, data reporting). The focus of IOSCO for the remainder of 2023 will be to finalize its recommendations for CCMs, develop a consultation paper setting out proposed recommendations for VCMs and collaborate with the UN SSE on related capacity-building programmes.

Source: IOSCO.

B. INSTITUTIONAL INVESTORS

Institutional investors continued to integrate sustainability performance and climate risk management into their investment strategies, in 2022, as well as commit to net zero in their portfolios through fossil fuel divestment and sustainable energy allocation. SWFs and PPFs, with their long-term investment horizons, significantly increased their investment in renewable energy as an important part of their strategies to decarbonize and diversify their portfolios. Nevertheless, a significant number of funds still do not disclose any information on their sustainability performance and a majority of funds still do not disclose or have not committed to net zero in their investment strategies, putting at risk the long-term financial health of millions of beneficiaries.

In 2022, volatile financial markets, reflecting geopolitical tensions and policy changes in the macroeconomic environment, negatively affected the financial positions of institutional investors. Global public pension fund assets, for example, dropped 4.5 per cent, from $22.3 trillion in 2021 to $21.3 trillion.[6] The sustainable investment strategies of funds were challenged by the rising returns for oil and gas companies and the downward pressure on returns for investment in renewable energy (section III.A). Fixed-income products, which usually provide the fiduciary bedrock of low-risk, long-term income streams for institutional investors, became less predictable in the past year, with inflationary risks potentially discounting the value of longer dated bonds.

Despite this, institutional investors continue to make progress on incorporating sustainability criteria into their investment strategies and asset allocation. UNCTAD monitoring shows that institutional investors, such as PPFs and SWFs, are becoming more active in assessing and responding to sustainability risks, in particular those related to climate change. (UNCTAD, 2023).

This section examines the sustainability integration activities of the world's 100 largest PPFs and SWFs, by assets under management, and the actions they are taking on climate and sustainable energy investment. More than half of these funds disclosed information on their sustainability practices and performance in 2022. The rapidly evolving regulatory environment, including the rollout of more widely adopted standards of sustainability reporting, is having an impact on fund disclosure and investment decisions. More funds are employing climate-risk analysis in their investment strategies and increasing engagement with investees.

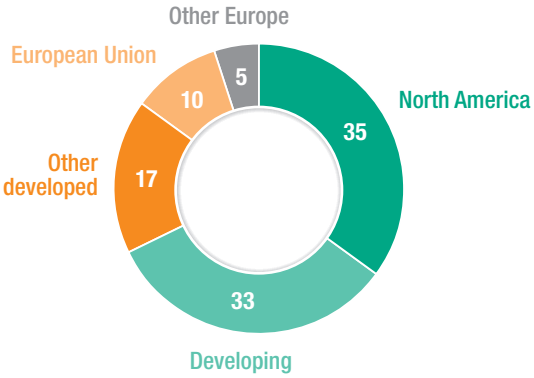
However, many investors in UNCTAD's top 100 still fail to disclose or report on sustainability-related risks and are not moving quickly enough to reorient portfolios, especially with regard to climate-related action. Among those that do report, the quality and scope of reporting is often not consistent or comparable, and there is often a lack of specific key performance indicators or targets.

1. Top 100 pension and sovereign wealth funds: latest trends in ESG integration

UNCTAD's analysis of the sustainability integration practices of the world's top 100 PPFs and SWFs includes the top 70 PPFs, accounting for $12.2 trillion of assets under management – or more than 50 per cent of the PPF total – and the top 30 SWFs, accounting for $9.2 trillion of assets under management – or 79 per cent of the SWF total. Two thirds of funds are from developed economies, with more than a third from North America, and one third from developing economies (figure III.14).

In 2022, 55 of the top 100 funds reported on their sustainability activities, up from 47 that reported on sustainability issues in 2021. This reporting was made either in a specialized responsible investment or ESG report or in significant detail in an annual report. In general, funds from developing countries reported on significantly fewer areas of sustainability performance than did those from developed countries, with the exception of Singapore. Geographical location and governance seem to have the largest influence on whether a fund publishes an ESG report, and both are likely influenced by the strength of regulations within the national framework. It is not surprising therefore that all funds from the European Union report, since the European Union has put in place a relatively comprehensive sustainability disclosure framework in recent years, highlighting the importance of national al regulation for the adoption of sustainable and responsible investment practices (section D).

Figure III.14. **Distribution of the top 100 funds, 2022** (Number of funds)



Source: UNCTAD, based on Global SWF, 2022.

The 45 funds that still do not report on sustainability integration include 30 PPFs and 15 SWFs. SWFs remain relatively less transparent and have farther to go in terms of sustainability disclosure. These funds are based mainly in the United States, Asia and the Middle East. The size of the fund does not have a significant influence on whether it reports, with reporting and non-reporting funds having the same average assets under management: $216 billion.

The great majority of reporting funds have a clear vision for their sustainable investments and have introduced internal policies and guidelines to support the integration of an ESG or SDG perspective in their investment strategy. Two thirds have put in place a dedicated team to coordinate ESG-related investment. However, despite commitment by many funds to sustainable investment, just over half of reporting funds set an overall target or goal for sustainable investment or asset allocation in their portfolios (figure III.15), and even fewer use measurable key performance indicators to monitor and evaluate their sustainability performance.

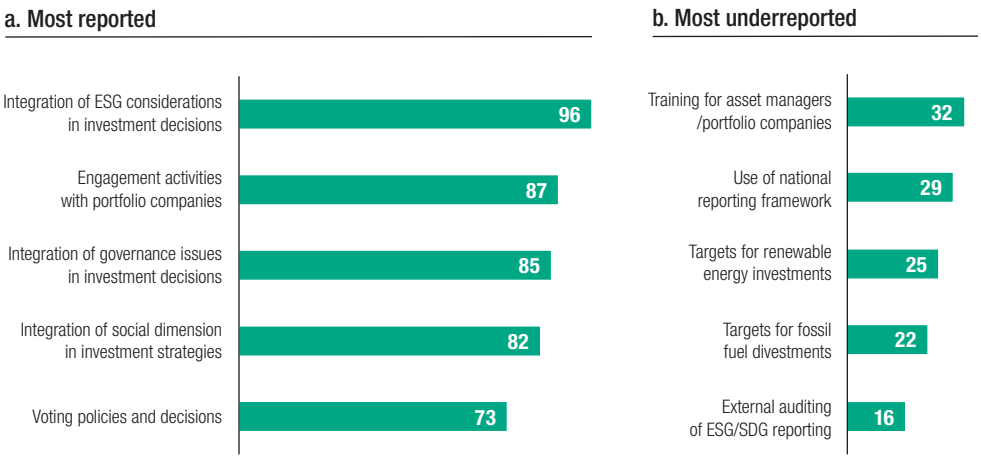
Figure III.15. **Relevant sustainability-related policies of funds, 2022**
(Per cent of reporting funds)

Source: UNCTAD, based on latest fund reporting (2022); some latest reports from 2021.

Reporting funds are doing well in several areas of sustainability integration. Most reporting funds provided useful information on how they integrate general ESG considerations, governance and social dimensions in their investment decisions as well as their policies on investee engagement and voting (figure III.16). Top-performing funds go further, for example outlining criteria for screening for aggressive tax avoidance or gender diversity on company boards when making investment decisions and engaging regularly and comprehensively with investee companies after investing (box III.3).

However, several important topics related to sustainability performance are disclosed by only a small number of funds. For example, the use of external auditing of ESG reporting was reported by only 16 per cent of funds. Despite many reporting funds now targeting net zero by 2050 in their policies, only a third of funds publish information about their specific targets

Figure III.16. **Top five areas: most reported and most underreported, 2022**
(Per cent of reporting funds)



Source: UNCTAD, based on latest fund reporting (2022); some latest reports from 2021.

Box III.3. Integrating sustainability performance in investment decision-making

Canada Pension Plan Investments (CPP) sets itself apart by publishing a detailed sustainable investment report. The report sheds light on CPP's sustainability integration methods, which are incorporated throughout all stages of the investment life cycle. This includes before and during the asset holding period, as well as when CPP's investee companies prepare for listing. CPP's value identification process takes place before investing, identifying sustainability-related risks through comprehensive research reports, industry-specific frameworks, bespoke databases, detailed evaluations, and climate change mitigation and adaptation criteria. After investing, the focus shifts to creating value through constant monitoring of the investees' operations, using a range of tools including benchmarking and abatement capacity assessments. CPP's Integrated Sustainable Investing Framework reflects a multilayered governance approach to its sustainability strategy, from board to unit level.

Among reporting SWFs, Norges Bank Investment Management (NBIM) of Norway – the largest hydrocarbon-resourced fund in the world – has one of the most detailed reports on sustainability integration. NBIM places strong emphasis on active ownership, namely by having regular dialogues with investee companies on sustainability-related issues and consistently reporting on their progress and outcomes. NBIM publishes expectation documents that form the basis for its engagement, covering key sustainability topics and encouraging investees to integrate sustainability considerations in their operations to minimize negative impacts on the environment and society.

Sources: CPP Investments, 2022 Report on Sustainable Investing, and NBIM, 2022 Annual Report.

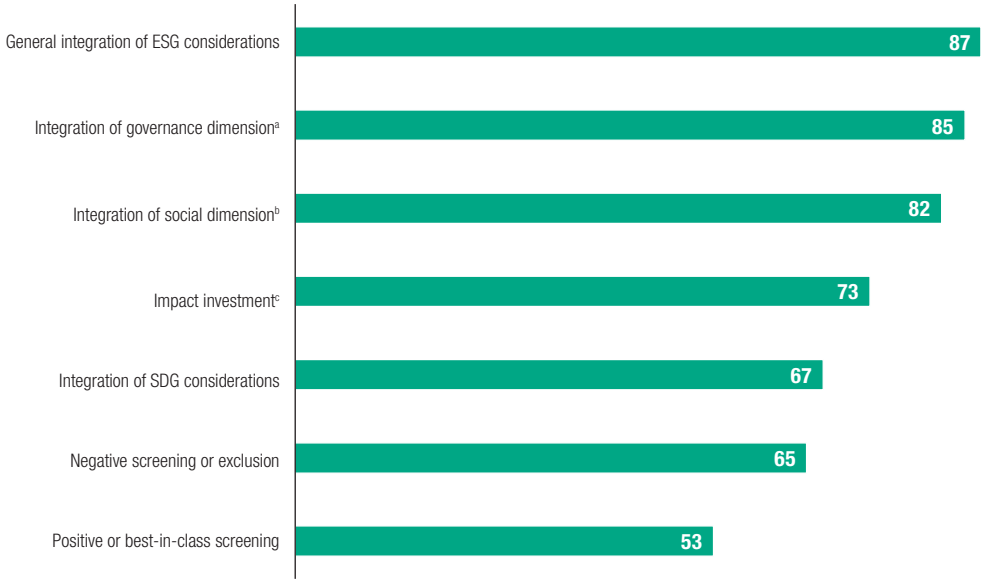
for renewable energy investment and fossil fuel divestment. Among the topics least reported is the provision of training for portfolio companies and asset managers. Lack of disclosure of such topics could create conflicts between the policies and strategies of funds and asset managers, as well as investees, who may be guided by different performance criteria.[7]

With respect to sustainability investment strategies, PPFs and SWFs employ a combination of approaches (figure III.17). The majority integrate a sustainability perspective across their investment activities, including equities, fixed income, alternative assets, and public and private markets, which may also employ negative screening of certain assets (in particular, tobacco, weapons and thermal coal).

It is noteworthy that more funds are taking a thematic approach and are integrating the SDGs in their investment decision-making. Nearly three out of four reporting funds use an impact investment strategy that either targets thematic sectors, such as renewables and climate solutions, or uses a specific ESG-related instrument, such as green bonds. The SDGs are becoming a useful framework for sustainability integration, with 67 per cent of the funds explicitly considering one or more SDGs in their investment decision-making processes or making attempts to align their holdings with the SDGs, up from 48 per cent in 2022.

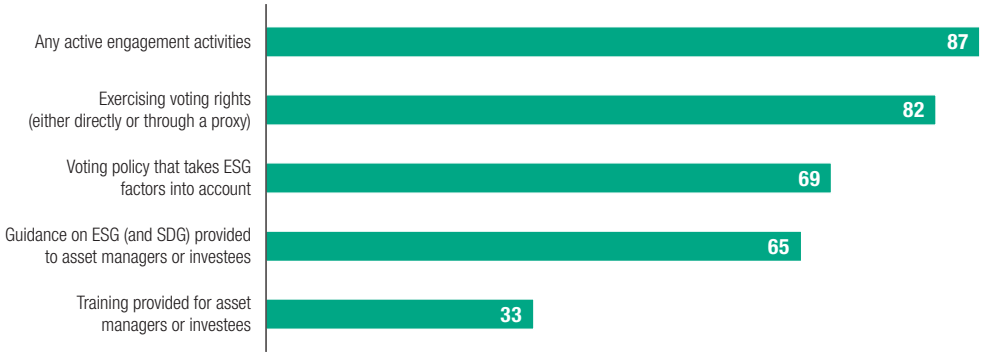
UNCTAD monitoring reveals that institutional investors have increasingly prioritized active engagement as part of their investment strategy. More than four out of five funds declare the use of active engagement activities with issuers and the exercise of their voting rights on sustainability-related issues (figure III.18). Almost two thirds of the funds have voting policies that take sustainability factors into account and provide ESG guidance to asset managers and/or investees.

Figure III.17. **Sustainable investment strategies used by funds, 2022**
(Per cent of reporting funds)



Source: UNCTAD, based on latest fund reporting (2022); some latest reports from 2021.
Note: Funds can report more than one strategy.
[a] ESG-oriented sectors (e.g. renewable energy, green housing) or capital market instruments (e.g. green bonds, ESG funds) or markets (emerging and developing economies) in ESG investment.
[b] For example, child labour, diversity.
[c] For example, executive pay, board diversity, tax.

Figure III.18. **Elements of active ownership by funds, 2022**
(Per cent of funds reporting)

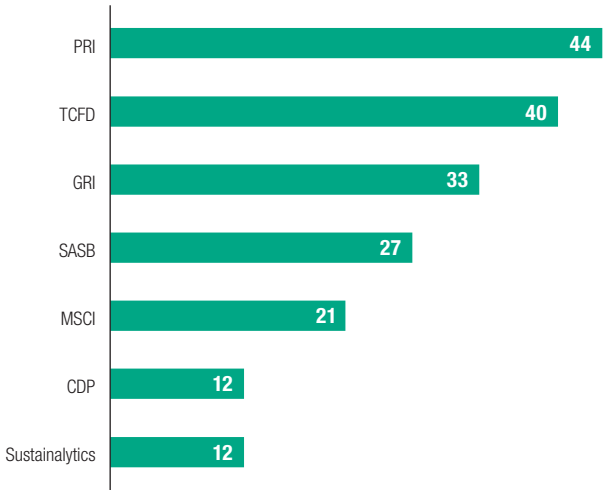


Source: UNCTAD, based on latest fund reporting (2022); some latest reports from 2021.

Despite calls for divestment from conventional energy and the anticipated impact of regulatory changes, funds often choose to engage with investees rather than exclude them. Increasingly, funds view engagement as a more realistic and effective means of acting in accordance with their sustainability goals and stewardship values. By doing so, funds can influence changes in investee companies on issues such as climate action, and can encourage and support other investors to follow suit. Exclusion tends to be the last resort, if engagement fails to deliver the intended outcomes.

PPFs and SWFs show an increasing interest in standardizing sustainability reporting with recognized international standards: most reporting funds use at least one international standard or benchmark as a guiding framework for sustainability reporting (figure III.19). The Principles for Responsible Investment (PRI) and the Task Force on Climate-Related Financial Disclosures (TCFD) are the two most commonly used reporting frameworks, followed by those of the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB). However, the many international standards employed by these institutional investors vary significantly and focus on specific aspects of sustainability integration. Greater convergence in international standards is therefore important and, towards this end, efforts by the ISSB to create a global baseline for sustainability disclosure are a positive move and may help change the situation.

Figure III.19. **Sustainability-related frameworks and reporting standards used by funds, 2022** (Number of reporting funds)



Source: UNCTAD, based on latest fund reporting (2022); some latest reports from 2021.

To establish a universal framework and enhance consistency and comparability in sustainability integration, including sustainability disclosure, UNCTAD and the United Nations Environment Programme (UNEP) have prepared a guide on sustainability integration for institutional investors based on international practices and widely recognized international standards. It will be unveiled during the UNCTAD World Investment Forum 2023.

2. Commitment to net zero and investment in sustainable energy

a. Climate actions by institutional investors

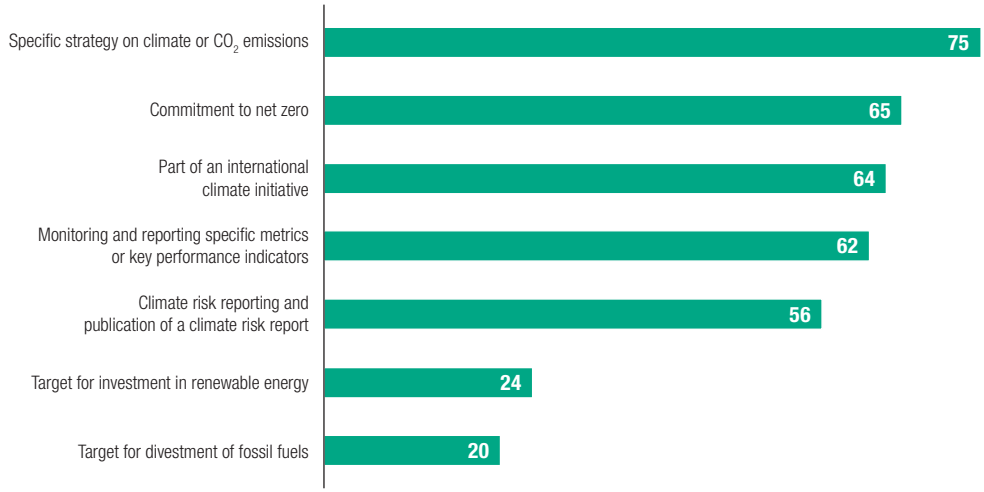
As disclosed by reporting funds, climate action has emerged as the cornerstone of sustainability integration of PPFs and SWFs, with many funds having incorporated climate change factors into their risk management and investment decision-making.

Climate action by institutional investors has, for the most part, focused on CO_2 emissions, commitment to net zero and investment in sustainable energy (figure III.20). In some cases, the absence of material requirements on climate action has led to some institutional investors opting out of global climate initiatives.

Nevertheless, UNCTAD monitoring finds that three out of four reporting funds have developed a specific strategy or action plan on climate and CO_2 emissions, highlighting the importance that funds give to both climate risks and opportunities. Over two thirds of these funds have indicated their commitment to achieve net zero by 2050 in alignment with the Paris Agreement, and almost two thirds of funds have signed up to an international climate response initiative. Over half of funds now publish specific information on climate risks, either in a separate section in their annual reports or in a dedicated report on climate risks. Almost a quarter of funds indicate a target for investment in renewable energy and fossil fuels, although detailed information on investment and divestment within their portfolio management is not consistently disclosed.

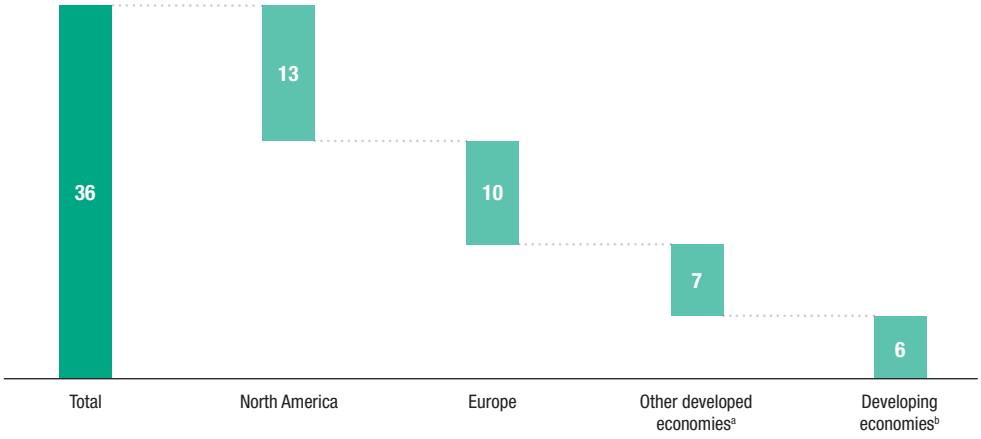
The majority of funds that have made a commitment to net-zero emissions are from North America and Europe (figure III.21). Relatively more robust regulatory environments on climate change matters in Europe and North America have helped push companies and investors to take action to reduce greenhouse gas emissions. Developing economies often have weaker environmental regulations and less developed carbon markets, which may discourage investors from prioritizing climate action.

Figure III.20. Climate-specific actions by funds, 2022



Source: UNCTAD, based on latest fund reporting (2022); some latest reports from 2021.

Figure III.21. Number of funds with a net zero goal, by region, 2022



Source: UNCTAD, based on latest fund reporting (2022); some latest reports from 2021.
[a] Other developed economies includes Australia.
[b] Developing economies include China, Taiwan Province of China, Malaysia, Singapore and South Africa.

UNCTAD monitoring shows that several funds are going further with their investment strategies regarding climate and stating clear, specific goals for investment and divestment. For example, 13 funds have a stated target for investment in renewable energy, and 11 funds have a stated target for divestment from fossil fuels (table III.2). Only five funds have stated targets that relate to both transitioning investment strategies (box III.4).

Table III.2. Funds with targets for renewable energy investment and fossil fuel divestment, 2022

Fund	Country	Assets under management ($ billion)	Investment in renewable energy	Divestment from fossil fuels
NBIM	Norway	1 258	-	
APG	Netherlands	555	-	
ABP	Netherlands	514		-
CalPERS	United States, California	450		-
CPP	Canada	377		-
NYSCRF	United States, New York	208		
MN	Netherlands	208		
OTPP	Canada, Ontario	188		-
AustralianSuper	Australia	178		-
CDC	France	175		
AIMCo	Canada, Alberta	129		-
Aware Super	Australia	100	-	
KLP	Norway	91		

/…

Table III.2.	Funds with targets for renewable energy investment and fossil fuel divestment, 2022 (Concluded)			
PGGM	Netherlands	90		-
CDPQ	Canada, Quebec	76	-	
Temasek	Singapore	71		-
CalSTRS	United States, California	66	-	
IMCO	Canada	57	-	
Bpifrance	France	50		

Source: UNCTAD, based on latest fund reporting (2022); some latest reports from 2021.

Box III.4. Examples of fund target-setting for sustainable energy investment and fossil fuel divestment

The *NYSCRF* Climate Action Plan proposes to increase investment in renewable energy by $20 billion over 10 years and to transition investment away from fossil fuels and towards low-carbon options.

MN aims to divest from all coal mining companies by 2025 and has already divested from most of these companies.

CDC plans to invest €60 billion in the ecological transition by 2024, corresponding to about 15 per cent of National Low-Carbon Strategy of France. The fund has also committed to phasing out by 2030 investment in companies that derive more than 10 per cent of their revenue from coal mining or coal-fired power generation.

KLP has committed to increase substantially the share of renewable energy in its global energy mix under goal 7.2 of the SDG framework.

BPI France, in its Climate Action Plan, has specifically stated its goal to accelerate ecological and energy transition and outlined criteria for excluding thermal coal.

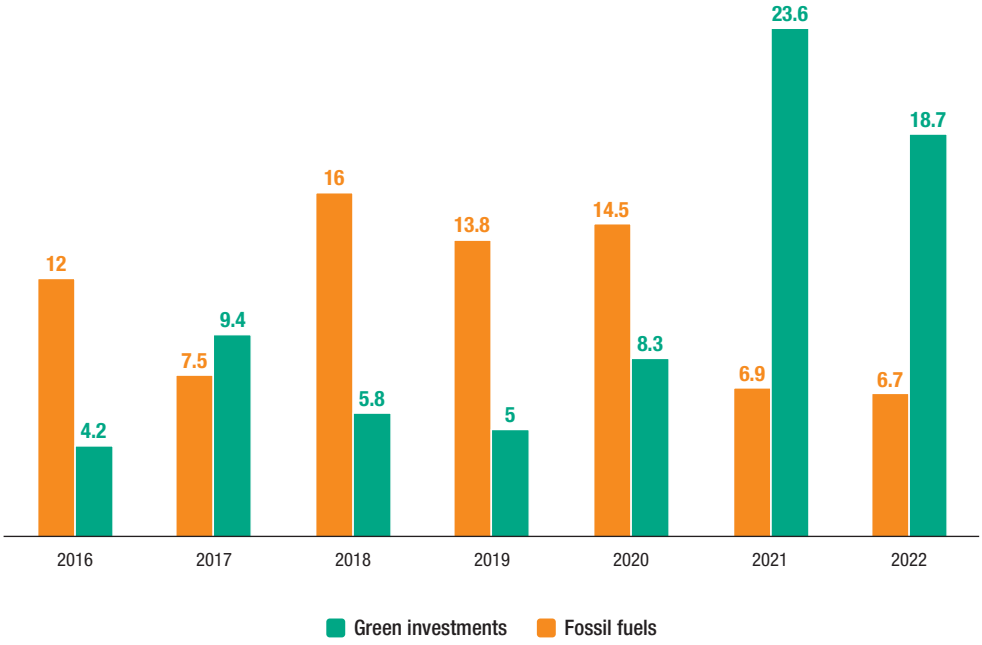
Source: UNCTAD, based on fund reporting.

b. Investing in the energy transition

As part of efforts to mainstream climate issues in their sustainability strategies, PPFs and SWFs have been directing more of their assets towards the energy transition. Renewable energy has become an attractive infrastructure subsegment for these institutional investors, offering the stable, inflation-hedging qualities of infrastructure while supporting net-zero objectives. With a long-term investment horizon, SWFs and PPFs are uniquely positioned for investing in infrastructure and energy, include China, Taiwan Province of China, Malaysia, Singapore and South Africa the renewable energy sector, and have become important investors in the sectors.

Between 2016 and 2022, PPFs and SWFs significantly increased their investment in renewable energy, driven by policy changes aimed at decarbonizing, the continuously decreasing costs of renewables and the need for portfolio diversification. In 2022, these funds invested $18.7 billion in renewable energy projects, which is a 21 per cent decline from 2021 but still almost double the annual average since 2016. In contrast, their annual investment in oil and gas projects has declined from the peak of $16 billion in 2018 to $6.7 billion in 2022 (figure III.22).

Figure III.22. Fossil fuel investments and green investments by sovereign wealth funds, 2016-2022 (Billions of dollars)



Source: UNCTAD, based on Global SWF, January 2023.

Canadian pension funds were the largest source of capital for investing in renewable energy, accounting for 33 per cent of total investment in 2022. Gulf investors contributed 29 per cent, and Singaporean funds accounted for 26 per cent; GIC (Singapore) was the largest single investor, followed by Mubadala (United Arab Emirates). Gulf SWFs are important investors in renewable energy, as they seek to diversify domestic and regional economies and progress towards the Paris Agreement goals.

North America and Europe are the most popular destinations for renewable energy investment, due in part to the level of opportunity and the positive regulatory environment for renewables and in part to FDI attraction efforts in certain countries. Investment in renewables in developing economies, especially in the least developed ones, has been limited, despite the significant need and potential. Several barriers, including the lack of bankable projects and necessary supportive policies, as well as perceptions of high risk, must be overcome in order to unlock long-term institutional investment in renewable energy in developing economies (chapter IV).

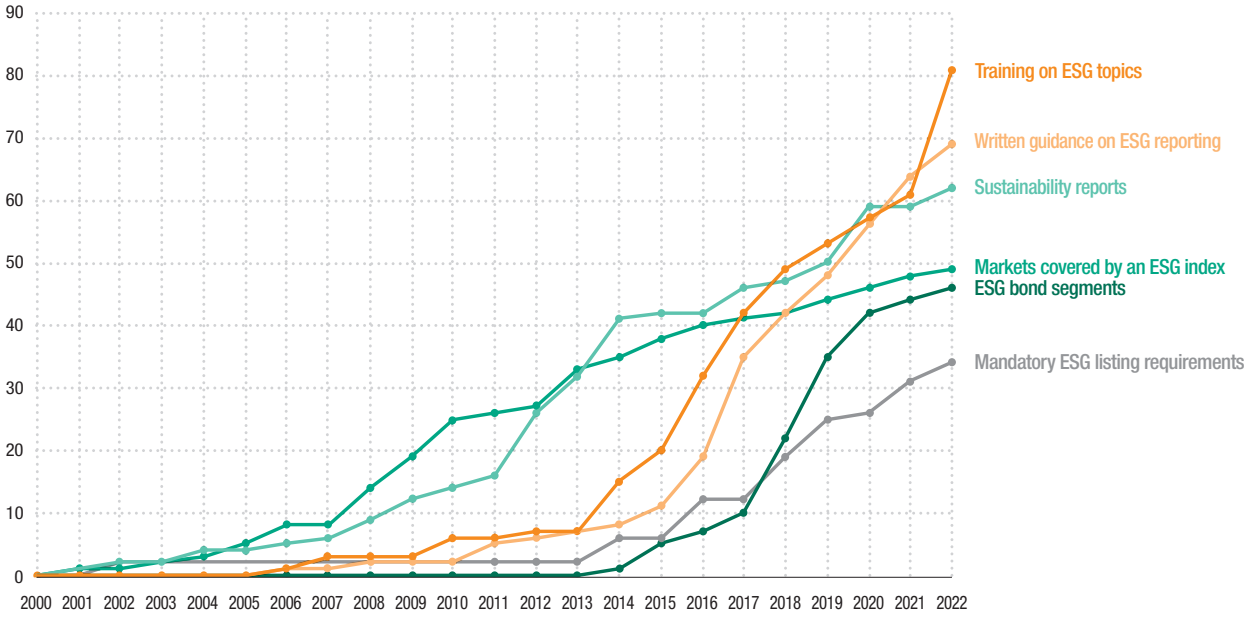
C. STOCK EXCHANGES AND MARKET INFRASTRUCTURE

Stock exchanges continue to provide support for sustainable finance, with increases across the board in the number of exchanges that have written ESG disclosure guidance, mandatory ESG reporting, ESG training, and related bond and equity offerings. As sustainable finance increasingly becomes the subject of regulation and standardization, education for market participants becomes critically necessary so that they can keep up with rules and standards. In 2022, training on ESG topics became the most common sustainability activity of exchanges, fuelled in part by the activities of the UN SSE initiative, which works with development partners and exchanges to train market participants.

1. Stock exchange sustainability trends

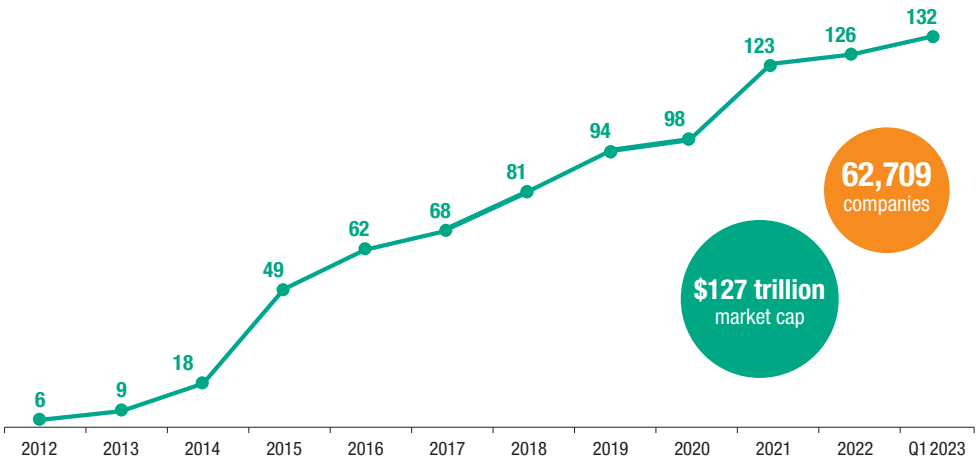
Over the past 20 years, stock exchanges have continued to integrate sustainability-related activities into their operations (figure III.23). The number of exchanges with written guidance on ESG reporting continues to grow, from fewer than 10 a decade ago to 69 – more than half of the world's exchanges – at the end of 2022. Likewise, the number of markets that are subject to mandatory ESG listing requirements has grown from close to zero a decade ago to over a quarter of markets today; the continuation of this trend will support the achievement of SDG 12.6 on the integration of sustainability reporting in annual corporate reporting. The most significant jump in activities in 2022 related to the number of exchanges that provide training on ESG topics to market participants, which rose from 61 in 2021 to 81. Key instruments supporting these trends are analysed in more detail in section III.C.3.

Figure III.23. Stock exchange sustainability trends, 2000–2022 (Number of exchanges)



Source: UNCTAD, SSE database.

Figure III.24. SSE initiative members, 2012–Q1 2023 (Number of exchanges)

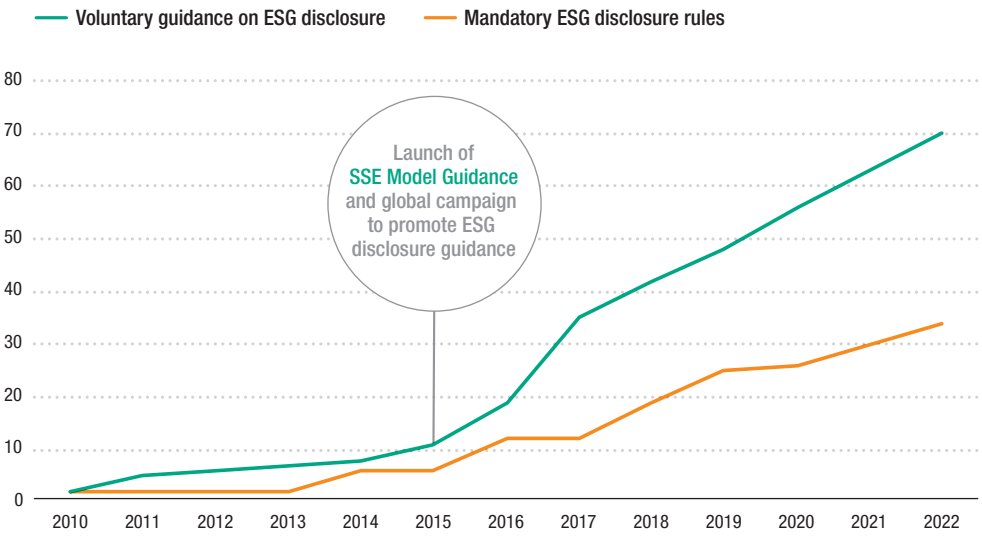


Source: UNCTAD, SSE database.

2. Sustainable Stock Exchanges initiative

When the SSE initiative launched in 2009, it started with five founding signatories. Since then, its network has grown to include most of the stock exchanges (119) and many of the derivatives exchanges (13) around the world. The former collectively list more than 62,709 companies, with a combined market capitalization of more than $127 trillion (figure III.24). The continuous growth of the network indicates the heightened importance of ESG topics for exchanges, their listed issuers and other key stakeholders. The SSE offers its members a platform for learning and collaborating with capital market regulators, investors, issuers and financial service providers to address ESG topics and stay up to date on global best practices related to sustainability goals.

Figure III.25. Global trend in ESG disclosure rules and guidance (Number of exchanges)



Source: UNCTAD, SSE database.

3. ESG disclosure: stock exchange guidance, listing requirements, standards adoption and market education programmes

Stock exchanges play an important role in helping markets navigate ESG disclosure standards. By the end of 2022 the number of exchanges that provide written guidance to issuers on reporting sustainability information had reached 67, up from just 13 in 2015, when the SSE launched its global campaign and model guidance to encourage exchanges to provide guidance on sustainability reporting (figure III.25).

The growth trend in mandatory ESG disclosure rules continued in 2022, with 34 markets now subject to rules on sustainability reporting, up from 30 the year before. Given current trends, SDG 12.6 on sustainability reporting remains on track to be achieved by 2030.

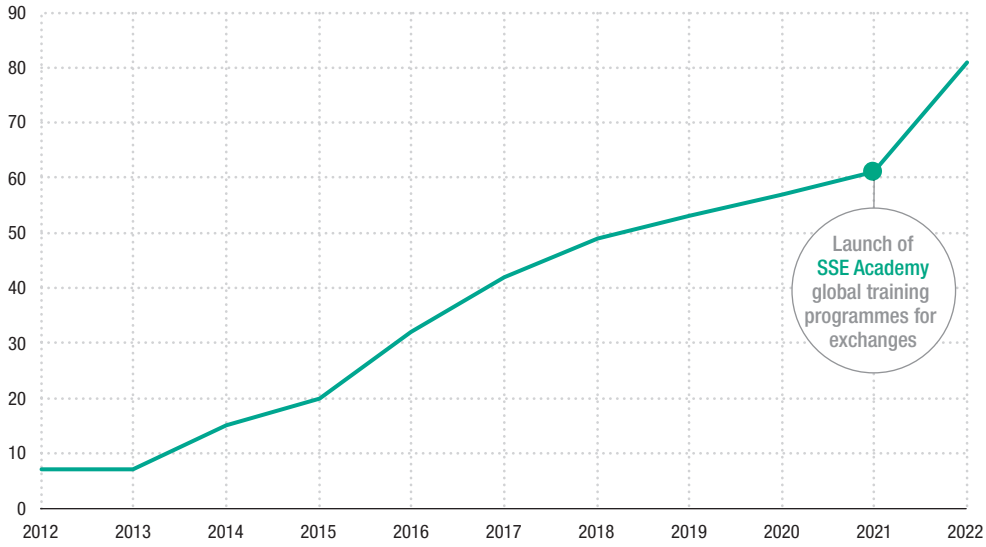
Stock exchanges continue to promote international ESG disclosure instruments (figure III.26). The instrument most commonly referenced is the GRI Standards, followed by standards and guidance produced by the SASB and the International Integrated Reporting Council, which are each referenced in about three quarters of guidance documents. Climate-specific reporting instruments such as the recommendations of the Financial Stability Board's TCFD and the Carbon Disclosure Project are referenced by over half of the guidance, and about a third reference the work of the Carbon Disclosure Standards Board. It is important to note that the SASB, the International Integrated Reporting Council and the Carbon Disclosure Standards Board are all now elements within the new International Sustainability Standards Board (ISSB) of the International Financial Reporting Standards (IFRS) Foundation. The ISSB is also building its climate standard on the basis of the recommendations of the TCFD. Thus, the marketplace continues to evolve towards a more limited and focused number of standards.

As ESG disclosure becomes codified in standards and regulations, market education programmes become critically important to assist preparers of reports with the practical implementation of these standards and regulatory requirements. Exchanges around the world are responding to this situation by expanding their provision of education and training on ESG-related topics. To support exchanges in these activities, the SSE launched the SSE Academy in 2021, to work with development partners in support of stock exchanges' training activities; this resulted in a further acceleration of training activities by exchanges on sustainability topics (figure III.27).

Figure III.26. **ESG reporting instruments referenced in stock exchange guidance, as of Q1 2023** (Per cent of guidance documents referencing the instrument)

Source: UNCTAD, SSE database.
CDP = Carbon Disclosure Project, CDSB = Climate Disclosure Standards Board, GRI = Global Reporting Initiative, IIRC = International Integrated Reporting Council, SASB = Sustainability Accounting Standards Board, TCFD = Task Force on Climate-Related Financial Disclosures.

Figure III.27. **Stock exchanges providing sustainability training, 2012-2022**
(Number of exchanges)



Source: UNCTAD, SSE database.

Thoughout 2021 and 2022, the SSE Academy, working with exchanges, development partners and subject matter experts, facilitated more than 220 hours of training for more than 20,000 participants. By working with key development partners such as the International Finance Corporation and the Carbon Disclosure Project, the SSE Academy has created a global support network for market participants. The main topic of training of the SSE Academy during this period was climate-related financial disclosures, in alignment with the recommendations of the Financial Stability Board's TCFD. Launched in 2017, the TCFD's recommended disclosures have become a globally recognized baseline framework for climate-related financial disclosures and the basis for the IFRS Foundation's climate standards, developed by the ISSB. Given the fast pace of advancements in ESG disclosure, training and education have become essential to achieving widespread adoption and implementation.

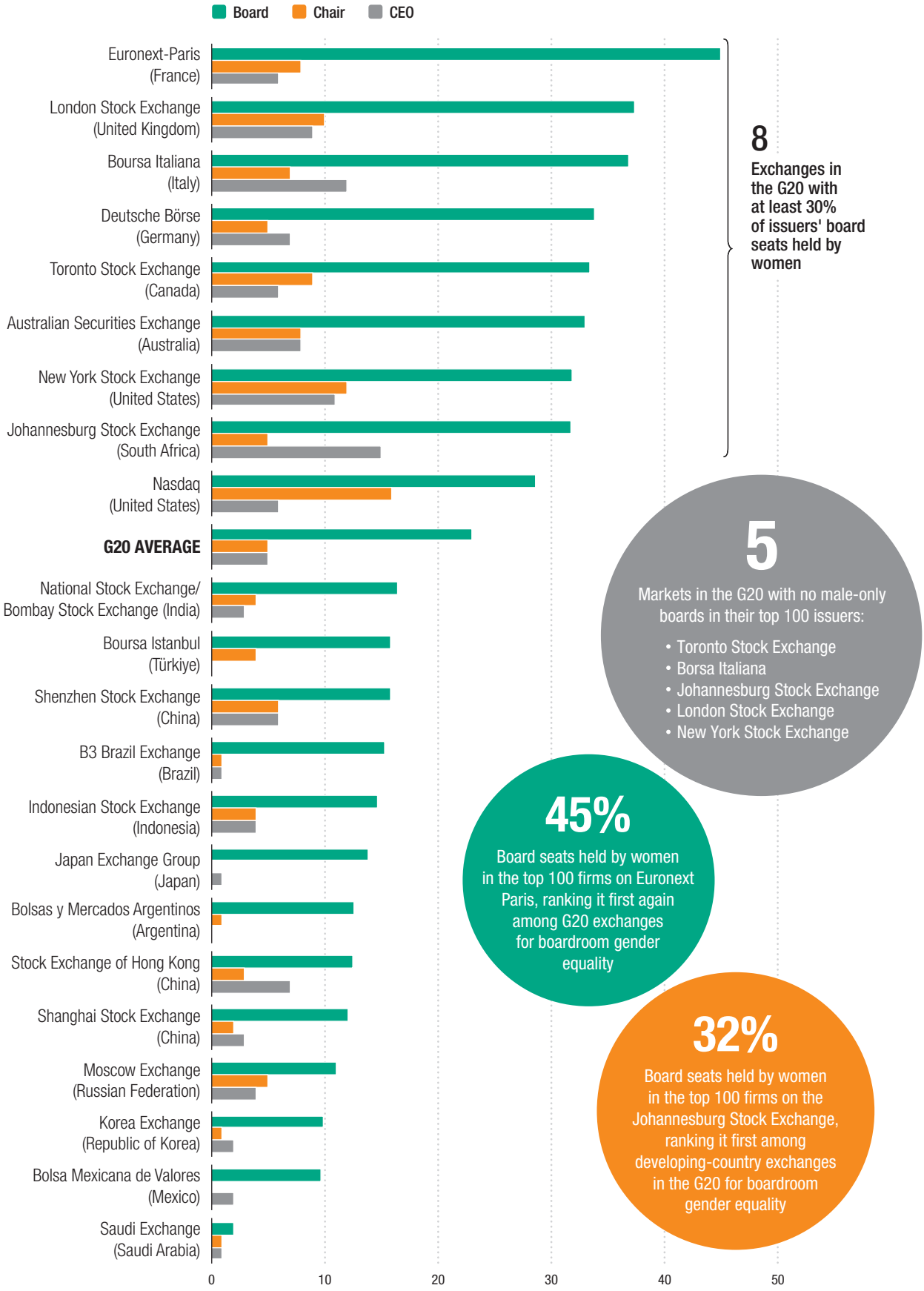
4. Advancing gender equality

a. Gender equality in corporate leadership

Every year, on International Women's Day, more than 100 SSE member exchanges around the world host "Ring the Bell for Gender Equality" events to raise awareness of the pivotal role that the private sector can play in advancing gender equality to achieve SDG 5. Despite the growing number of exchanges that promote gender equality among their listed companies, the number of women in high-level positions within companies remains low in many markets (figure III.28). Women hold 23 per cent of the 21,561 board seats of the top listed companies on 22 major G20 stock exchanges, on the basis of data collected in 2022 (SSE and IFC, 2022). That is a 1.3 percentage point improvement year on year, with 18 exchanges seeing an increase in the number of women on their issuers' boards, and only 4 seeing a decrease. In seven of the G20 markets, policymakers have created mandatory rules regulating the minimum number of women required on boards of listed companies.

Figure III.28. **G20 stock exchanges by gender balance of issuers' boards**

(Per cent of positions held by women among top 100 issuers by market capitalization)



Source: SSE and IFC (2022), Market Monitor: Gender equality in corporate leadership – G20 exchanges.

b. Investing vehicles with a gender lens

Increasingly, investors are utilizing new investment vehicles and mechanisms that apply a gender lens to investment decision-making. These include products such as gender-themed bonds, gender-lens ratings or benchmarks, and gender-themed equity indices that exchange-traded funds, mutual funds or other equity or derivative products can track. Estimates of the quantity of investment that utilizes a gender lens vary, but all show substantial increases in recent years. Investment through structured private equity, venture capital and private debt funds with a labelled gender lens exceeded $6 billion in 2020, according to estimates by Wharton University's Social Impact Initiative and Catalyst at Large (Catalyst at Large, Wharton Social Impact Initiative, 2021). Taking into account public funds in addition to those analysed by Wharton's Project Sage, the magnitude of gender-lens investing was estimated to be in excess of $12 billion in 2020 (Gender Smart, 2021). The 2X Challenge, an initiative launched at the 2018 G7 Summit, committed and mobilized $11 billion in capital for investment in women and called for the G7 and development finance institutions and private sector investors globally to collectively mobilize $15 billion from 2021 to 2022.[8] In other thematic investment vehicles, such as green bonds and carbon credits, gender-lens "co-benefits" are also being integrated. Using 2018 data, SIF (the Forum for Sustainable and Responsible Investment) found that asset owners with approximately $868 billion in assets under management were taking into consideration gender-lens issues in investment decisions (SIF, 2020).

As with estimates of the amount of investment that uses gender-lens considerations, the methodology used to apply a gender lens to investment decisions varies greatly, as most mechanisms incorporate a wide range of considerations into their investment strategies. Whereas the majority of research and dialogue on gender equality in businesses focuses on the leadership level, investors are increasingly looking at additional factors for indicators of a gender-balanced company. For example, the Euronext Gender Equality Indices launched in November 2022 have four categories of evaluation: (i) gender balance in leadership and workforce; (ii) equal compensation and work-life balance; (iii) policies promoting gender equality; and (iv) commitment, transparency and accountability. Although the balance of genders at the top is still a key factor in Euronext's gender equality indices, other factors are evaluated equally, including the gender pay gap, parental leave, flexible work options, education and training opportunities, recruitment strategies, sexual harassment policies, supplier diversity, employee protection and commitment to women's empowerment in the workforce. This is increasingly common for gender-lens investing, where investors are looking beyond the boardroom to identify how companies are creating more equitable workplaces throughout a company's operations. Similarly, the Bloomberg Gender Equality Index, which was launched for financial sector companies in 2016, has broad criteria for evaluation: leadership and talent pipeline, equal pay and gender pay parity, inclusive culture, anti-sexual harassment policies and external brand. The index has grown from 104 companies from 10 sectors headquartered in 24 countries and regions to 484 companies from 45 countries and regions, across 11 sectors and 54 industries.

D. POLICIES, REGULATIONS AND STANDARDS

Countries remained active in regulating sustainable finance in 2022, with the number of regulations increasing to 388 among the 35 economies monitored by UNCTAD, particularly on the topics of taxonomies, sustainability disclosure, sector-specific rules and carbon pricing. This signals the growing importance of the regulatory environment for effecting change on climate and on the sustainable finance market. At the same time, the proliferation of regulations on sustainable disclosure has led to other problems, including a lack of comparability and standardization across markets and sectors. However, those problems are provoking action at the international level, with efforts by IOSCO to align reporting standards through the ISSB as well as widespread mandatory use of TCFD recommendations and the GRI Standards.

1. National and regional sustainable finance policies and regulations

a. Overview

As part of the work of the GSFO, UNCTAD, in partnership with the PRI and the UNEP Finance Initiative (UNEP FI), has been monitoring the latest developments in sustainable finance policies and regulations in 35 economies and country groupings. These include the G20 member states (including the European Union) and Switzerland, as well as 13 developing economies (Bangladesh, Chile, Hong Kong (China), Colombia, Egypt, Kenya, Malaysia, Nigeria, the Philippines, Singapore, Thailand, the United Arab Emirates and Viet Nam) and the Association of Southeast Asian Nations (ASEAN).

The current architecture of sustainable finance policy and regulation is built around seven areas identified by UNCTAD: national strategy, national framework and guidelines, taxonomy, product standards, sustainability disclosure, sector-specific regulations and carbon pricing. Policymaking activities have been observed across all seven areas in the 35 economies. The priority is to improve market clarity and credibility and to address sustainability-washing concerns. This is being achieved primarily through the development of national sustainable finance taxonomies and standards, as well as greater requirements for sustainability disclosure.

In 2022, according to the GSFO's Sustainable Finance Regulation Platform, economies tracked by the platform introduced at least 50 sustainable finance-dedicated measures, including a number of measures adopted by the European Union at the regional level. This brought the total number of regulations and policy measures in force to 388 by the end of 2022 (figure III.29). More than 50 measures are under development in these economies.

The majority of the 35 economies already have in place either a national sustainable finance strategy, framework or guidelines on sustainable finance, or fiscal, financial and administrative measures to support the growth of sustainable finance and the development of relevant products, such as green bonds (*WIR22*). Measures addressing sustainable finance disclosure and sector-specific regulations concerning asset management, sustainable banking and insurance together represent about 70 per cent of all measures. However, policymaking is currently most active in taxonomy and carbon measures, which account for a significant portion of new policies developed.

Figure III.29. **Sustainable finance policy measures and regulations in selected developed and developing economies, 2012–2022** (Number of measures)

Source: Global Sustainable Finance Observatory (GSFO.org), based on UNCTAD, PRI and World Bank data.
Notes: The scope of regulations and policy measures encompasses seven key policy areas for sustainable finance: national strategy, national framework and guidelines, taxonomy, product standards, sustainability disclosure, sector-specific regulations and carbon pricing. Other selected economies and territories include Switzerland, as well as 13 developing economies (Bangladesh, Chile, Hong Kong (China), Colombia, Egypt, Kenya, Malaysia, Nigeria, the Philippines, Singapore, Thailand, the United Arab Emirates and Viet Nam), and ASEAN. Relevant measures of the European Union are included in the number for the G20. The number of policy measures in 2021 was updated to include incentive-related measures.

Broadly, China, the United States and the European Union have taken two different approaches to sustainable finance regulation. The European Union has predominantly adopted a regulatory approach, prioritizing the establishment of a comprehensive regulatory framework for sustainable finance. Its policy measures and frameworks have been used as a reference for sustainable finance policymaking in other countries. For example, the European Union taxonomy, based on the principles of "substantial contribution" (to sustainable objectives) and "do no significant harm", has served as a useful model for other economies, such as ASEAN and South Africa, in developing their taxonomies.

China and the United States have so far pursued a hybrid approach, attaching importance to both regulation and the integration of both climate and sustainable development dimensions into industrial policies. In 2022, the United States passed into law the Inflation Reduction Act, with a focus on green investment.[9]

b. Latest developments in 2022

In 2022, significant progress was made in most policy areas, but most notably in taxonomy development, sustainability disclosure, sector- or product-specific measures, and carbon pricing (table III.3).

Table III.3. Sustainable finance policy measures and regulations introduced in selected economies, 2022

Economy	National strategy or framework	Taxonomy	Sustainability disclosure	Sector-specific measures[a]	Product-specific measures[b]	Carbon pricing
Australia		■	■			
Bangladesh			■	■	■	
Brazil				■		
China			■	■		
Colombia		■	■	■		
Egypt				■		
European Union		■	■	■		■
France			■			
Germany			■			
India			■			
Indonesia		■				
Italy			■			
Japan	■		■			
Malaysia			■	■	■	
Netherlands				■		
Philippines	■				■	
Russian Federation				■	■	
Singapore			■		■	
South Africa		■		■		
Türkiye				■		
United Kingdom			■			
United States			■	■		

Source: GSFO Sustainable Finance Regulations Platform (https://gsfo.org/sustainable-finance-regulations-platform).
Note: Measures under development are not included.
[a] Includes sustainable banking, insurance, investment and credit ratings.
[b] Includes sustainable funds and bonds.

(i) Taxonomies

Countries continued pushing ahead with their sustainability codification efforts by developing taxonomies to define what economic activities are considered environmentally or socially sustainable. In February 2022, the Platform on Sustainable Finance, an expert group advising the European Commission on taxonomies and related policies, produced its final report on the framework of the social taxonomy. Although the final deliberations may be delayed towards 2024, the release of the framework represents a milestone in the sustainable finance strategy of the European Union by laying out the structure of a classification system for socially sustainable economic activities that can contribute to social equality and to the improvement of human rights. Meanwhile, Australia, Colombia, Indonesia and South Africa released or adopted their own sustainable finance taxonomies. By the end of 2022, 10 of the 35 economies monitored by the GSFO platform had adopted a national taxonomy, and 11 others were in the process of developing one.

(ii) Sustainability disclosure

Sustainability disclosure remained the most active area of policymaking in sustainable finance. In 2022, 14 economies covered by the GSFO database introduced 19 such measures, representing 40 per cent of all newly adopted measures. Most notably, the Council of the European Union adopted the Corporate Sustainability Reporting Directive, which entered into force in January 2023 (box III.5). It requires all large companies listed on regulated markets to report on ESG and human rights activities, taking effect in three stages from 2024 to 2026, starting with companies already subject to the Non-Financial Reporting Directive and moving to listed small and medium-sized enterprises (SMEs).

A number of developing economies, including Bangladesh, China, Egypt, India and Malaysia, also introduced measures to require financial institutions and companies to report on sustainability, including carbon emissions. However, disclosure measures at the product level remained rare in 2022. Singapore and the European Union were among the few economies that implemented new regulations on sustainability disclosure for financial products such as sustainable investment funds. In order to enhance the credibility of sustainability-themed financial products and address sustainability-washing concerns, more policymaking efforts on disclosure requirements at the product level are needed.

(iii) Sector- and product-specific measures

In 2022, economies monitored by the GSFO continued rolling out sector- or product-specific measures to support the growth of sustainable banking, insurance, investment and sustainable financial products such as sustainable bonds and green debt. Most of these measures were released by developing economies, including Bangladesh, Brazil, China, Colombia, Egypt, South Africa and Türkiye. This shows the growing interest of these countries in putting in place necessary requirements, standards and incentives to encourage the issuance of sustainability-dedicated products in key sectors that are crucial for sustainable development. Meanwhile, as part of its sustainable finance strategy adopted in 2021, the European Union initiated consultation of ESG ratings and sustainability factors in the assignment of credit ratings. The objectives are to improve the quality of information for investors and other stakeholders and to enhance transparency and standardization in ESG ratings.

Box III.5. European Sustainability Reporting Standards

Pursuant to the European Union's adoption of the Corporate Sustainability Reporting Directive (CSRD) legislation in November 2022, the European Sustainability Reporting Standards (ESRS) were approved by the European Financial Reporting Advisory Group (a private association funded by the European Union). The ESRS had been under development since mid-2021, with draft standards circulated for comment during the second half of 2022.

The CSRD came into force in December 2022. Having the effect of updating the 2014 Non-Financial Reporting Directive, it signifies a substantial shift in the sustainability reporting landscape in the European Union, by expanding the number of companies required to make sustainability disclosures (from approximately 11,000 to nearly 50,000). The requirement applies to all large European Union companies, companies listed on a market regulated by the European Union, parent European Union companies (where the group meets the large company criteria) and certain non–European Union companies. The ESRS will form the common framework according to which disclosure must take place.

Implementation of the ESRS is nearing the final stages, with reporting requirements being phased in over time. The largest companies will have to apply the standards from the 2024 financial year (for reporting in 2025), and small and medium-sized enterprises (SMEs) from 2026.

The ESRS is based on the concept of double materiality, in which a company reports both on how sustainability matters affect the company's financial performance and prospects (inward-looking) as well as how the company's business activities affect society and the environment (outward-looking). The Standards currently cover general principles and topical standards across ESG matters. Sector-specific and proportional standards will follow in due course.

Source: UNCTAD.

(iv) Carbon pricing

Carbon pricing is another important policy area for sustainable finance (section III.A). At the end of 2022, 15 of the 35 economies covered by the GSFO platform had put in place carbon trading schemes or carbon emission taxes. Similar measures are under development in another 11 countries (Brazil, Chile, Colombia, Indonesia, Indonesia, Japan, Malaysia, Nigeria, Thailand, Türkiye and Viet Nam). In December 2022, the European Commission, the European Parliament and the Council of the European Union reached a provisional agreement on the "Fit for 55" package, which includes a significant reform of the Emissions Trading System of the European Union. The deal includes a more ambitious reduction target of 62 per cent for sectors in the system by 2030; the phase-out of free allocation in some sectors, accompanied by the phase-in of the carbon border adjustment mechanism; expansion of the system to cover maritime shipping; creation of a separate system for buildings, road transport and fuel sectors; and the use of ETS revenues to address distributional effects and spur innovation. Under the carbon border adjustment mechanism, importers of goods in certain sectors would pay any price difference between the carbon price paid in the country of production and the price of carbon allowances in the system.

From national and regional policymaking practices, three important trends have emerged that could transform the global landscape of sustainable finance regulation in the coming years.

First, policymakers have realized the importance and urgency of putting together an integrated and coherent national framework for sustainable finance, as exemplified by the large numbers of national strategies, taxonomies and policy frameworks released and under development. These national strategies and frameworks usually require policy changes across financial, fiscal, industry, technology, social and other policies. They usually cover corporate disclosures, investor duties and disclosures, taxonomies, standards and broader sustainable finance measures (e.g. carbon pricing, stewardship regulations) (PRI, 2022).

Second, the move from voluntary to mandatory disclosure is accelerating. In 2022, over 80 per cent of disclosure measures at the national and regional levels imposed mandatory actions. This trend is expected to continue in view of the need to shift the baseline for all market players to report on sustainability with credible and comparable data.

Third, policymakers are shifting focus from risk management to impact generation, with policies giving more emphasis to the sustainable impact or outcome of investment decisions. In this context, many economies have released sector-specific policies to encourage investment in sustainable economic activities through sustainable banking, insurance and investment. In addition to these sector-specific policies, policymakers can also consider encouraging investing in impact through legal reforms (such as reform of investor stewardship and other duties) (PRI, The Generation Foundation and UNEP FI, 2021).

c. Sustainable finance incentives

While making efforts to create a viable regulatory framework for sustainable finance, countries also use incentives as an important policy tool to jump-start the sustainable finance market or to support its growth. Incentives can take different forms, including financial, fiscal and administrative incentives (for example by streamlining administrative procedures and making investing or product issuance easier). The use of sustainable finance incentives is most prevalent in support for the development and issuance of sustainable financial products – in particular green or social bonds but also other financial products (box III.6) – across the 35 economies or country groupings covered by the GSFO platform.

Box III.6. The Netherlands: Green Funds Scheme

Governments can also utilize incentives to encourage investment in sustainable financial instruments. One example is the Green Funds Scheme of the Netherlands, which offers a combination of tax credit and tax exemption to both institutional and individual investors who invest in green funds, as defined by the ministries of Environment, Finance and Agriculture. The interest rate for investors is lower than market rates, enabling banks to offer cheaper loans to green projects. This lower interest rate is then offset by a tax credit and exemption of taxes on dividends and interest payments.

The programme provides secure investments for investors while reducing finance costs for eligible environmentally friendly projects. Since its implementation in 1995, individual investors alone have invested more than €6.8 billion in green funds, funding more than 5,000 projects.

Source: UNCTAD.

In 2022, Brazil released a decree extending tax reduction for investment in social or green bonds in qualified projects to both individual and corporate investors. This policy resulted in a significant increase in the issuance of green and social bonds in the country, with over $11 billion worth issued in the second half of the year.

Hong Kong (China), in its 2021–2022 budget, announced a three-year Green and Sustainable Finance Grant Scheme to provide subsidies for eligible bond issuers and loan borrowers to cover part of their expenses for bond issuance and external review services. In addition, in a further effort to support the industry, the Government will lower the minimum loan size required to benefit from the subsidies offered under the scheme.

Malaysia has extended its Sustainable and Responsible Investment (SRI) Sukuk and Bond Grant Scheme – one of the first incentive structures to support green bond issuance – until the end of 2025. The scheme provides tax exemption for sukuk issuers under the SRI Sukuk Framework of the Securities Commission Malaysia. It also provides tax exemption for bonds issued in accordance with the ASEAN Green, Social and Sustainability Bond Standards. With this financial support, the scheme has encouraged more companies to finance green and sustainable social projects by issuing SRI sukuk and bonds.

In 2022, the Government of the United States introduced Clean Renewable Energy Bonds and Qualified Energy Conservation Bonds to support the issuance of taxable bonds by municipalities for clean energy conservation. Under these programmes, 70 per cent of the coupon from municipal bonds is provided through a tax credit or subsidy to bondholders, providing an incentive for investment in clean and renewable energy.

In the field of sustainable banking, incentives are being provided to encourage sustainable loans with a climate or social focus. For instance, the Government of China offers interest rate subsidies and preferential tax treatment to banks or borrowers to incentivize more lending for green projects, as proposed in its *Guidelines for Establishing the Green Financial System*. Similarly, Singapore provides grants to enhance the capability of corporations to obtain green and sustainability-linked loans, while also reducing expenses of sustainable loans through simplified procedures.

2. International regulations and standard setting

a. International Organization of Securities Commissions

IOSCO continues to work on advancing sustainability reporting and related areas including assurance and transition planning. In 2021 work began on preparing advice to the IOSCO Board about addressing the need for globally consistent, comparable and reliable standards for sustainability disclosure. The outcome of this work was strong support from IOSCO for the IFRS Foundation's ISSB. When the final IFRS sustainability standards are published, IOSCO plans to assess whether the proposed requirements can serve as an effective global baseline of investor-focused standards, whether they are fit for purpose in helping financial markets accurately assess sustainability risks and opportunities and whether they can form the basis for developing a robust audit and assurance framework.

Assurance standards are a key complement to corporate reporting standards. IOSCO began work in 2022 on assessing whether the existing sustainability assurance ecosystem is fit for purpose or whether further enhancements, including through standard setting, will be required. Strong support exists for IOSCO in coordinating and promoting global consistency for sustainability assurance standards, similarly to what it has done so far with sustainability reporting. IOSCO has engaged key stakeholder groups, including the International Auditing and Assurance Standards Board and the International Ethics Standards Board for Accountants. In the second half of 2022, the two groups indicated that they plan to engage on proposals for extensive and ambitious projects to develop assurance and ethics (including independence) standards related to sustainability reporting. In early 2023, IOSCO published a report on international work to develop a global assurance framework for sustainability reporting.

Also in early 2023, IOSCO proposed the establishment of a workstream on plans for transition to net-zero emissions. Such plans have been receiving a lot of attention globally, including from securities regulators, as they are seen as important in providing material information to investors and financial markets. The Financial Stability Board's Standing Committee on Supervisory and Regulatory Cooperation agreed, as part of its 2023 workplan, to consider ways that authorities could engage with financial institutions on their plans for net-zero transition, to understand the implications from the perspective of financial stability. The Committee decided to create a working group to develop, at a conceptual level, a deeper understanding of the role of transition plans in prudential risk management and financial stability. IOSCO work in this area will be a counterpart to the Committee's working group on transition plans once the Committee turns to policy action (expected in the second half of 2023). IOSCO plans to engage with relevant initiatives, seeking to bring the perspective of market integrity and investor protection to this work.

Capacity-building in sustainable finance is one of IOSCO's key priorities. In 2022, its efforts (delivered in collaboration with the IFRS Foundation) focused on building and launching a programme aimed at assisting regulatory authorities in their efforts to implement future sustainability reporting standards. In 2023, these efforts will continue and build on the initial phase, going beyond the importance of sustainability disclosure standards and focusing on the role of securities regulators in adopting and implementing such standards and on the enabling ecosystem. Going forward, IOSCO will consider further expanding its capacity-building programmes on corporate sustainability reporting and related areas, seeking to partner with other organizations.

b. International Sustainability Standards Board

The ISSB, formed in 2021, develops standards that will form the global baseline for disclosure of sustainability-related risks and opportunities, to meet the needs of investors and other capital market participants. International policymakers, including the members of the G7, the G20 and the Financial Stability Board, as well as capital market participants, supported the IFRS Foundation in establishing the ISSB to develop international sustainability disclosure standards that are cost-effective, market-informed and enable companies to deliver to investors comparable, consistent, disclosures useful for making decisions.

The ISSB Standards draw on a range of voluntary investor-focused standards and frameworks, including the TCFD recommendations, the CDSB Framework, the SASB Standards and the Integrated Reporting Framework. The ISSB's initial standards set out general requirements for sustainability-related financial disclosure (in ISSB Standard S1) and specific requirements on climate-related financial disclosure (in ISSB Standard S2). The Standards require entities to disclose material information about sustainability and climate-related risks and opportunities.

The Standards specify sources of guidance, such as the industry-based SASB Standards for S1 and the structure of TCFD for S2, to help companies identify their risks, opportunities and metrics. Companies are required to make disclosures about their governance and risk management of sustainability and climate-related risks and opportunities, as well as the strategy, metrics and targets used to manage those risks and opportunities.

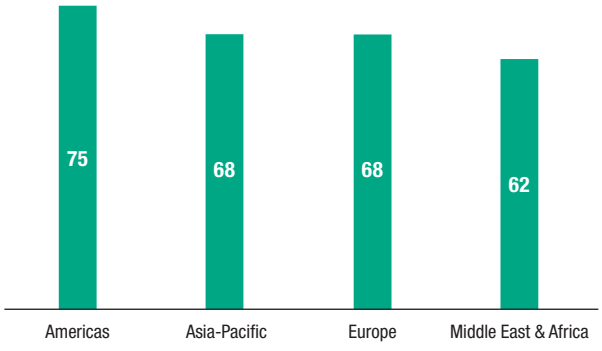
In line with the concept of providing a global baseline, jurisdictions may add building blocks to the ISSB's global baseline standards in order to meet local reporting objectives, provided that local provisions do not obscure information required by the global baseline.

The ISSB coordinates capacity-building initiatives to support adoption and implementation of the standards used by markets globally, including in developing economies, as well as for smaller companies. The ISSB has a two-tier engagement strategy, engaging with

- Market oversight institutions, including policymakers, regulators, stock exchanges and standard setters, to facilitate adoption of the ISSB Standards as the global baseline of sustainability-related financial disclosures.
- Market participants, including reporting entities, investors and professional advisers, to build expertise and practice in applying the ISSB Standards.

In 2023, the ISSB has two major activities planned. First is the launch of the ISSB Standards, S1 and S2, at the end of Q2 2023. Second is conducting public consultations on enhancing the international applicability of the SASB Standards and a Request for Information about future priorities. Responses to the Request for Information will guide the ISSB's future standard-setting agenda and priorities.

Figure III.30. **Adoption of GRI by companies, by region** (Per cent of companies)



Source: KPMG (2022).

c. Global Reporting Initiative

The GRI Standards are widely used for corporate reporting on sustainability impacts (figure III.30) (KPMG, 2022). They are also frequently referenced in stock exchange guidance documents on sustainability reporting. The revised Universal Standards that were approved in 2021 came into

operation in January 2023. To keep the standards relevant and up to date, the GRI's Global Sustainability Standards Board sets out a new work programme every three years. For 2023–2025, the GRI will continue its work to not only review existing standards, but also continue developing new topic and sector standards.

d. Interoperability and consistency in international sustainability reporting standards

Since March 2022, the GRI's Global Sustainability Standards Board and the ISSB have worked together under a memorandum of understanding to coordinate work programmes and standard-setting activities. The GRI has also actively engaged in the development of the ESRS, from the initial phases through collaboration with the European Financial Reporting Advisory Group and the Technical Expert Group. The work targeted the achievement of optimal interoperability between the GRI Standards and the ESRS.

These efforts recognize the benefits of further harmonizing the reporting landscape at the international level. The GRI Standards address an organization's impacts on the economy, environment and people, to meet the information needs of a multi-stakeholder audience, whereas the standards being created by the ISSB focus on the information needs of investors and other capital providers. The IFRS Sustainability Disclosure Standards and the GRI Standards can be viewed as two interconnected reporting approaches that take distinct but complementary perspectives, together forming a comprehensive corporate reporting system for the disclosure of sustainability information. The continued GRI-ISSB collaboration commits both organizations to ensure that their respective standards are compatible. This will give assurance to reporting companies while supporting the transparency that investors and other stakeholders require.

With the proliferation of national regulations and policy measures, the lack of interoperability and consistency in national sustainability reporting requirements remains a challenge. To alleviate this issue, countries could use a building block approach and implement ISSB standards as a baseline (block 1) together with additional national requirements that satisfy local needs (block 2). Or they could use as block 2 one of the existing and accepted standards such as those developed by the GRI to complement disclosure and ensure that companies use a double materiality approach and provide information for a wider set of users and stakeholders (IFRS Foundation, 2022). The United States and the European Union are developing their own sustainability reporting requirements and working with the ISSB to achieve interoperability.

UNCTAD, through its Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting, is supporting countries in reinforcing their regulations and institutions and building human capacity to implement the ISSB standards. For this purpose, UNCTAD continues gathering examples, best practices and lessons learned in sustainability reporting from various countries and regions. UNCTAD and the Intergovernmental Working Group are also identifying the challenges and needs of developing countries to convey them to the ISSB and ensure that those needs are taken into consideration in the development of new standards. To maximize progress in and support for developing countries, UNCTAD created regional partnerships for the promotion of sustainability and SDG reporting in Africa (50 members from 26 countries) and Latin America (29 members from 14 countries) and is working to establish two more partnerships, one in Asia and one in the Gulf region. The partnerships are a vehicle for facilitating the exchange of good practices in the implementation of sustainability reporting standards. They enable consultations among peers, help to identify technical assistance needs and provide a regional voice in interaction with international standards setters.

* * *

In 2022, the sustainable finance market (funds, bonds and VCMs) grew to $5.8 trillion, up 12 per cent from 2021. This growth was driven by a fivefold increase in sustainable bond annual issuance over the past five years, despite a decline in issuance in 2022. The turmoil in bond markets globally and the impact of inflationary expectations on the price of longer-dated products also make the relative resilience of green bond issuance (by its nature long-term) a welcome development.

The sustainable fund market experienced a retrenchment in 2022, in common with other financial markets, but remained relatively more resilient. Net inflows to sustainable funds were positive, in contrast to net outflows from traditional funds. Carbon markets saw record prices for the cost of tCO_2e in 2022, raising hopes that a more realistic price for CO_2 (and other greenhouse gases) can help drive the energy transition. Although the picture is nuanced, the overall positive trend in the sustainable finance market highlights continued investor confidence and the resilience of sustainable investment strategies.

Institutional investors continued to integrate sustainability performance and climate risk management into their investment strategies, as well as commit to net zero in their portfolios through fossil fuel divestment and sustainable energy allocation. Stock markets exerted influence over the disclosure and reporting requirements of listed companies and pushed for important changes in business practices related to the areas of, for example, climate and gender. Countries remained active in sustainable finance regulation in 2022, at the national, regional and international levels, including support for new ISSB standards, signalling the growing importance of the regulatory environment for effecting change on climate and the sustainable finance market.

Nevertheless, despite last year's resilience, the sustainable finance market continues to face a number of challenges. Chief among them is the scale and pace of market growth, which has significant implications for the energy transition. The sustainable finance market still represents a small share of the overall financial market and, despite understanding the material threats posed by climate change, investors still have a long way to go to reorient portfolios or make meaningful commitments to achieving net zero. The exposure of the market to developing countries and the development of sustainable products in these economies remains limited, and primarily concentrated in China.

The second challenge concerns the coherence between policies, standards and carbon emission prices. The proliferation of sustainability-related regulations and standards is positive but has sometimes created confusion for investors and a lack of comparability and interoperability across markets and products. Efforts at the international level, notably by the ISSB and the European Union, are helping to address this problem but developing countries will need support in adapting local frameworks and requirements to international standards. Meanwhile, with regard to carbon pricing, the spread between the price of carbon in voluntary markets and that in compliance markets ranges from near $0 to almost $100, with the depth of both markets similarly polarized. Given that VCMs channel funds to sustainable investment in developing countries, it is important to support their development. The SSE initiative has been coordinating work in this area and could help support the expansion of VCMs.

The third challenge relates to the coverage of sustainability rules and standards, which have so far generally omitted SMEs from their scope. It is foreseeable that governments will extend reporting requirements from large companies to smaller ones (as in the case of the ESRS) and that multinationals will expand their sustainability reporting demands for companies in their supply chains to meet their own reporting needs. As a result, SMEs, particularly in

developing countries, will need technical assistance and support in this area. International institutions can be of help in this respect ; an example is the UNCTAD programme on International Standards of Accounting and Reporting.

A fourth challenge remains the quality assurance of markets and products to minimize greenwashing and any backlash associated with it. UNCTAD's analysis finds that a significant share of sustainable funds' ratings falls short of the benchmark index, while the carbon content of "green funds" can be, at best, confusing for investors and, at worst, misleading. The Correction required GSFO and other international programmes, therefore play an important role in monitoring the market and helping to drive more transparent disclosure and reporting.

With just seven years left for countries to reach a 45 per cent reduction in CO_2 emissions above 1990 levels, in accordance with their obligations under the Paris Agreement, a greater push is needed to change investment patterns and economic development, especially in light of the increase in global energy-related CO_2 emissions in 2022. In this context, the role of education (on sustainability integration and disclosure) and training is critical, including in developing countries. UNCTAD's sustainable finance programmes offer a range of training opportunities and educational tools and resources for investors and policymakers. UNCTAD will also continue to monitor the sustainable finance market, including investment in the energy transition, through its coordination of the Correction required GSFO and the Correction required SSE initiative, as well as mapping the actions of investors and regulators, in order to inform policymaking and discussions on sustainable investment.

NOTES

1 The sustainability rating is based on the average of leading ESG ratings available in the market and in this sense reflects the "consensus" of the market (UNCTAD, 2021). The score is a relative rating, with 10 for the highest rated funds and 1 for the lowest rated ones.

2 The MSCI ACWI covers about 3,000 holdings from 23 developed and 27 emerging markets and approximately 85 per cent of the free float-adjusted market capitalization in these markets. The index is the benchmark against which the relative sustainability performance of sustainable funds is evaluated in this section.

3 The sustainable debt market is primarily composed of use-of-proceeds bonds. They include any type of debt instrument from which the net proceeds are used exclusively to finance, in part or in full, eligible green or social projects. There are three main subcategories: (a) green bonds, which are instruments that raise funds for projects that have environmental benefits in accordance with the SDGs such as climate action (SDG 13), affordable and clean energy (SDG 7), and sustainable cities and communities (SDG 11); (b) social bonds, which are instruments that raise funds for projects that address or mitigate a specific social issue and/or seek to achieve positive social outcomes, such as improving food security and access to education, health care and financing, especially but not exclusively for target populations; (c) mixed-sustainability bonds, which are instruments that raise funds for projects that have both environmental and social benefits. In addition to use-of-proceeds bonds, sustainability-linked bonds are a new and growing product class within the sustainable bond market that can be useful for corporations for funding their sustainability transitions. Unlike established green and social bonds, sustainability-linked bonds come with no constraints on how the proceeds can be used. Instead, they are based on predefined sustainability or ESG objectives set by the issuer, which links this guarantee directly to the coupon paid to investors.

4 Additionality requires that the reductions achieved by a project be "additional" to what would have happened if the project had not been carried out. Only carbon credits from projects that are additional to the business-as-usual scenario represent a net environmental benefit.

5 Amar Inamdar, "Carbon credits and the energy transition: An investor perspective", Climate Champions, 7 November 2022.

6 According to data from Global SWF: https://globalswf.com.

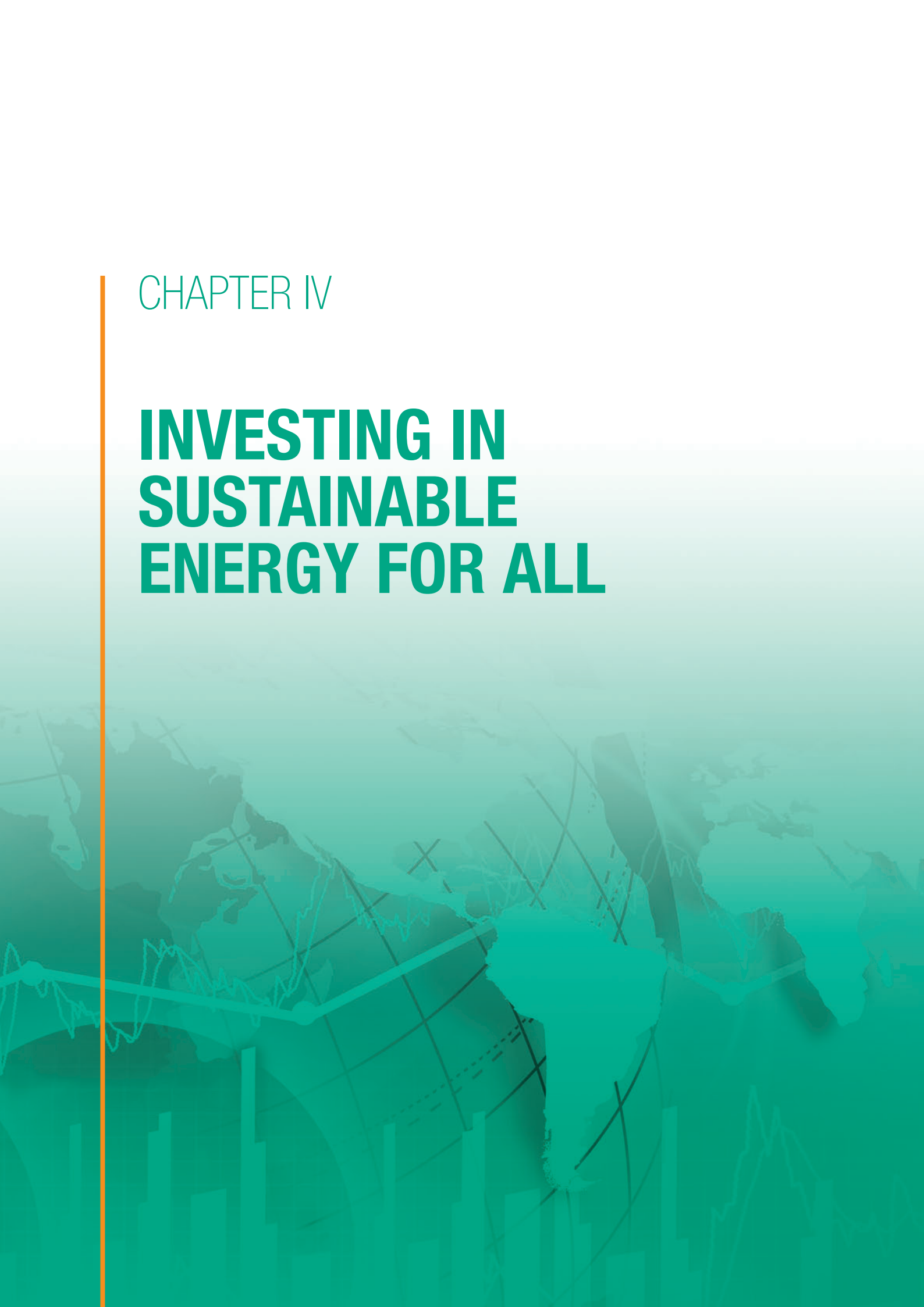
7 "The dangers of asset managers when it comes to long-term infrastructure", *Financial Times,* 17 April 2023.

8 2X Challenge, https://www.2xchallenge.org.

9 The International Platform on Sustainable Finance has conducted a comprehensive assessment of the China and European Union taxonomies and developed a "common ground taxonomy", which identified the commonalities and differences of the two approaches and could serve as a reference for other jurisdictions to consider when developing their own taxonomies. See https://finance.ec.europa.eu/system/files/2022-06/220603-international-platform-sustainable-finance-common-ground-taxonomy-instruction-report_en.pdf.

CHAPTER IV

INVESTING IN SUSTAINABLE ENERGY FOR ALL



INTRODUCTION

Combatting climate change is one of the defining challenges of our time. It hinges to a large extent on making the transition from energy generated by fossil fuels to renewable energy. The energy transition is central to achieving the 2030 Agenda for Sustainable Development, which not only calls for urgent action to combat climate change and its impacts (Sustainable Development Goal (SDG) 13), but also underscores the need to ensure access to affordable, reliable, sustainable and modern energy for all (SDG 7).

The energy transition will take huge amounts of investment, over many years, in renewable energy generation, energy efficiency and energy infrastructure. To keep the world on track to meet the goal set out in the Paris Agreement of limiting global warming to, or close to, 1.5°C above pre-industrial levels will require investing about 1.5 times today's global GDP between now and 2050.

Financing the energy transition has been at the centre of global debate ever since the adoption of the SDGs and the Paris Agreement in 2015. Specialized agencies such as the International Energy Agency and the International Renewable Energy Agency, as well as entities such as the United Nations Framework Convention on Climate Change and United Nations Environment Programme, have made enormous progress in tracking climate finance and investment in green energy assets. Multilateral development banks (MDBs), in addition to providing concrete support to projects on the ground, have developed reams of data and analysis on investment in energy infrastructure. UNCTAD, after being the first to estimate the gap in SDG investment – including climate mitigation investment – in *WIR14*, has continued to focus on sustainable finance and investment in reporting on trends, national policy developments and international investment agreements.

UNCTAD's research and policy analysis in recent years has highlighted several serious challenges to the energy transition. International investment in the infrastructure needed is not growing at the necessary pace. Investment in renewable technologies has increased significantly, but the much-needed acceleration began only in 2021 and much of the growth has been confined to developed countries. Other critical elements of energy infrastructure, such as power grids, have seen much less growth. In global capital markets, large sums are being raised through sustainable financial products such as green bonds and green growth funds, but not enough of those funds find their way to investment projects on the ground in developing countries.

The solutions that have been put forward to tackle these challenges are well known and widely accepted. UNCTAD's own *Investment Policy Framework for Sustainable Development* and its *SDG Investment Action Plan* propose, for example, the development of pipelines of bankable projects that can be marketed to institutional investors and project financiers looking for large investment opportunities with minimal regulatory risk. Investment promotion agencies (IPAs) have been urged to shift part of their traditional focus from labour- or export-intensive industries to green growth investment areas, and to evolve into sustainable investment project development agencies. And development partners have been called to action to increase the use of investment guarantees and blended finance to catalyse private investment in sustainable infrastructure.

The theme chapter of this *WIR* will not cover this well-trodden ground. Instead, it will aim to answer four questions:

- What has been achieved to date in stimulating international investment in sustainable energy for all?

- How do energy investors choose between sources of energy, including fossil fuels and renewables, and between different renewable technologies?
- How do countries, and especially developing countries, approach their decisions on how to finance the energy transition?
- What more can be done to boost international investment in the energy transition and to maximize sustainable development impact?

The overall objective of the chapter is to identify international investment bottlenecks that risk holding back the energy transition and to find the root causes for these bottlenecks in investment decision-making processes, both among investors and among countries.

The chapter is structured as follows:

Section A presents a taxonomy of investment areas relevant for the energy transition, covering not only renewables and energy infrastructure, but also other clean and low-emission technologies. It looks at the role of public, private, domestic and international investment, pinpointing the relevance of foreign direct investment (FDI) for the energy transition. The section presents an assessment of investment needs and shows why many developing countries, including those where energy investment is most critical to improve access to electricity, continue to be unsuccessful in attracting international investment in sustainable energy.

Section B discusses the drivers and determinants of investment in sustainable energy, showing how these affect international private investors specifically. The section looks at how firms approach choices between energy sources and technologies. And it provides a detailed analysis of the impact on the cost of capital – a key investment determinant – of various degrees of participation in projects by different stakeholders.

Section C examines how investment policies connect to nationally determined contributions (NDCs) under the Paris Agreement and country-level energy transition strategies. It analyses the key elements of a comprehensive policy and regulatory framework for promoting energy transition investment and distils key success factors from cases where countries have successfully built investment policies on energy transition plans.

Section D brings together the findings of the overall report and provides policy recommendations based on the analysis of the fundamental investment decision-making processes of both investors and countries. The recommendations are placed in the context of existing policy advice on promoting investment in sustainable energy, drawing in also conclusions from the discussion of national policy trends and developments in international investment agreements in chapter II as well as from the analysis of FDI trends in chapter I and sustainable finance trends in chapter III.

In its concluding section, the chapter presents a Global Action Compact for Investment in Sustainable Energy for All. It includes a set of guiding principles for energy transition investment policymaking and several action packages intended to stimulate debate and inspire concrete initiatives at this year's World Investment Forum, which will take place immediately ahead of COP28, and in the same location.

A. INTERNATIONAL INVESTMENT IN THE ENERGY TRANSITION

This section presents a taxonomy of investment areas relevant for the energy transition, covering not only renewables and energy infrastructure, but also other clean and low-emission technologies. It looks at the roles of public, private, domestic and international investment, pinpointing the relevance of FDI for the energy transition. The section presents an assessment of investment needs and shows how many developing countries, including those where energy investment is most critical to improve access to electricity, continue to be unsuccessful in attracting international investment in sustainable energy.

1. Types of investment and estimated needs

a. Taxonomy of energy transition investments

Investment will be the engine of the energy transition, and it needs substantial cross-sectoral backing. The energy transition requires capital expenditures not only on renewable energy generation and electrification, but also on sustainable infrastructure and energy-efficient buildings, and on decarbonizing industry (table IV.1). In addition, investment in fossil fuel-based power generation will continue in the short to medium term to allow for a scaled cross-over that creates a pathway towards sustainable energy for all, alongside the sustainable phasing-out of fossil fuel-based power. Continued investment in existing infrastructure is critical to deal with capacity and intermittency issues. Innovation also has a crucial role to play on many fronts and itself requires significant investment. Innovative solutions will help manage supply interruptions and ensure new routes for transmission, storage and integration with renewable sources. They will also play a more active role in demand-side sector coupling (i.e. increased integration of energy end-use and supply sectors with one another). These investment requirements extend across the renewables supply chain, including research and development (R&D), supply of critical minerals, component manufacturing and production, and installation and operation of solar panels, wind turbines, batteries and other key technologies (chapter I).

The role of private investors varies for each type of investment. Domestic operations have traditionally been prevalent in investment in power generation and especially transmission and distribution. Public investment has also been important in these areas and remains so in sustainable infrastructure and low-emissions transport, among others. Capital expenditures towards achieving energy-efficient buildings or industry decarbonization affect the greenfield investment plans of both domestic and international investors and lead to brownfield or modification investments, which are crucial for a sustainable transition. Nonetheless, the main renewable energy generation industries and the fossil fuel industry are dominated by large multinational enterprises (MNEs) and international investors. Hence, these industries are the principal focus of the chapter.

Achieving the energy transition requires investment in a number of elements that complement renewable energy generation installations: in the necessary infrastructure (notably grid capacity and flexibility), in the entire renewable energy value chain, in alternative technologies

Table IV.1. Taxonomy of energy transition investments and importance of international investors

Investment	Explanation	Importance of international investors
Renewables		
Power generation	Wind (onshore and offshore), solar photovoltaic, concentrated solar power, hydropower, biomass, geothermal energy and ocean-based (tidal) energy	●
Power grids and storage capacity	Expansion and modernization of grid infrastructure and transmission lines that enable trade of energy across countries	◐
Other clean and low-emission technologies		
Nuclear power	Can complement renewables in cutting power sector emissions while contributing to electricity security as a dispatchable power source	◔
Hydrogen	Clean hydrogen along with synthetic fuels (green ammonia and methanol) and clean hydrogen-based feedstocks; clean hydrogen is green (produced with renewables) and blue (produced using fossil fuels in combination with carbon capture and storage)	◔
Low-emission fuels	Low-emission fuels not derived from hydrogen: biogases, biomasses, synthetic methane, liquid biofuels and synthetic liquid hydrocarbon fuels	◔
Supply chain of renewables		
R&D	Investment in energy R&D (new fuels, new technologies, new materials)	◔
Components	Photovoltaic panels, turbines, batteries	●
Critical minerals	Copper, nickel, lithium, cobalt and rare earth elements for renewable energy installations and storage solutions	●
Energy efficiency, electrification and renewables for end uses	Measures to reduce demand and improve efficiency of energy for end-use applications	
Buildings	Renovation and retrofitting of buildings, direct use of clean electric heat and cooking applications (e.g. heat pumps)	◔
Industry	Investment in initiatives to decarbonize industrial processes and improve energy efficiency	◔
Transport	Direct use of clean electricity in transport (electric vehicles, but also airplanes and shipping), including charging infrastructure, clean mass transit and alternative transport modes	◔
Carbon capture and storage	Carbon captured and stored from point-source fossil fuel-based and other emitting processes	◐
Fossil fuel phase-out	Gradually changing the energy mix in an economy, restructuring oil companies and eventually writing off assets	●

Source: UNCTAD.
Note: Estimations based on the share of international investment in total investment and the share of investment that requires public support.

for lower-emissions energy generation and in energy efficiency measures (IEA, 2022b; IRENA, 2022e). It also requires phasing out investment in fossil fuels. All these elements can attract foreign private investors to varying degrees (see table IV.1), depending on the prospective business case, expected returns and risks involved in the investment. But the opportunity and urgency also call for new investment strategies.

Three primary actors drive investment activity in the energy transition: global MNEs, governments, domestic companies and private households. Global MNEs are significantly involved in deploying new renewable energy projects in many countries. In other industries relevant for the energy transition, governments play an important role with interventions to solve market failures. These include industries that still require relevant R&D (i.e. hydrogen, carbon capture and storage) or infrastructure investment (i.e. power grids, charging infrastructure for electric vehicles). In other areas, such as investment in efficiency, and private households (e.g. heat pumps, residential building renovations).

b. Energy transition investment needs

Investment needs for the energy transition, in particular in infrastructure, R&D and efficiency, are enormous. Estimates by the International Energy Agency (IEA) and the International Renewable Energy Agency (IRENA) put the total capital expenditures associated with the Paris climate goals at more than $125 trillion, and annual investment needs until 2030 at $5.7 trillion.

Beyond renewable energy generation, investment in other energy sectors is needed for the transition. In particular, investment needs for energy efficiency – including in industry, buildings and construction, and electrification of transport – are more than one third higher than those for renewable power generation, power grids and storage capacity combined (table IV.2). Energy efficiency is also the area in which reported financial commitments lag farthest behind. While financial commitments cover more than 40 per cent of projected investment needs for renewables and grids, they cover less than 25 per cent of needs in energy efficiency. Energy efficiency investment for buildings represents more than half of this sector. Households and individuals, often sustained by government incentive schemes, are the main investors in improving the energy performance of new and old buildings. Efficiency improvements in industrial production often imply replacing old assets or machinery, or deploying new production processes, and therefore they typically do not come in the form of dedicated projects. As a consequence, announced international investment projects in energy efficiency are negligible, except in electric vehicle production.

Looking only at renewable power generation, worldwide annual investment needs to 2030 exceed $1 trillion. Annual financial commitments reported for 2021 amounted to $430 billion, suggesting a gap of more than half a trillion dollars. International project

Table IV.2. Energy transition investment needs, by type (Billions of dollars)

	Annual financial commitments, 2021 ($ billion)	Annual investment needed to 2030 ($ billion)	Announced international investment ($ billion)	
			2021	2022
Renewables	**715**	**1 693**	**614**	**544**
Power generation	430	1 046	485	471
Power grids and storage	285	648	129	73
Other low-emission technologies				
Nuclear power	44	100	2	9
Hydrogen	2	133	239	251
Low-emission fuels	16	158[a]	1	2
Energy efficiency, electrification and renewables for end uses				
Buildings	193	1 556	..	..
Industry	37	549	..	..
Transport	64	155	..	..
Electric vehicles	264	..	53	143
Charging infrastructure for electric vehicles	9	86	0.5	1
Carbon capture and storage	**0.1**	**41**	**13**	**24**

Source: IRENA (2022a and b), IEA (2022a), CPI and IRENA (2023) based on BNEF (2023) for financial commitments 2021; UNCTAD for international investment.
[a] Includes needs for bio-based ammonia and methanol, and biofuels.

finance and greenfield investment announced in the sector amounted to more than $470 billion in both 2021 and 2022 (see table IV.2). It is useful to bear in mind the difference between "financial commitments" and "announcements" – i.e. the $430 billion figure is based on projects that reached financial close (money was contractually obligated), whereas the $470 billion figure is based on announcements of new projects (box IV.1). Although project announcements tend to overestimate actual investment flows, the data nevertheless suggest that total investment, including from domestic and public sources, is significantly closer to projected needs. Renewable power generation capacity has shown significant progress over the past decade, reaching 3,372 GW in 2022; however, it will need to triple to 10,772 GW by 2030 to keep the world on track to achieve the energy transition in line with IRENA's 1.5°C pathway (table IV.3) (IRENA, 2022e).

Box IV.1. Annual financial commitments versus announced projects

Some institutions, including IRENA and the Climate Policy Initiative, use the value of financially closed projects (tables IV.2 and IV.3) to collect data on investment in the energy transition. UNCTAD data are based on project announcements.

Using announcement data tends to overestimate the numbers and values of projects, because some projects never reach construction or completion. In contrast, using financial close data leads to underestimation, because many projects have open-ended financing arrangements or financial close data are not reported, even when construction has started or the project is completed. Looking at all project finance (including domestic deals) shows that the degree of underestimation from the use of financial close data is actually larger than the degree of overestimation from the use of announcement data. This is not always the case for international projects, where relatively more projects reach financial close, but the degree of underestimation remains substantial.

Ultimately, both data strategies are more complementary than conflicting. Restricting data collection analysis to deals that reach financial close gives a post-event view rather than a view of intent. Financial close comes at various stages of the project, often only after the start of construction (in 56 per cent of international project finance deals). In contrast, using announced deals to reveal data trends provides an indication of the investment intentions of stakeholders before financial deals close and an indication of policy commitments, with financial intent and opportunity. This provides a broader picture of the current state of play and future dynamics.

Source: Vine et al. (2022).

Table IV.3. Renewable energy: global total installed capacity and investment needs in power generation, by type (Gigawatts and billions of dollars)

Renewable energy type	Total installed capacity, 2022 (GW)	Projected capacity needed by 2030 (GW)	Annual financial commitments in 2021 ($ billion)	Annual investment needed to 2030 ($ billion)	Announced international investment ($ billion)	
					2021	2022
Solar	1 047	5 221	230	338	181	170
Wind	899	3 337	170	413	270	249
Hydropower	1 255	1 465	7	59	7	5
Other	171	749	23	236	27	47
Total	**3 372**	**10 772**	**430**	**1 046**	**485**	**471**

Source: IRENA (2022b and e), IRENA and CPI (2023) based on BNEF (2023) for financial commitments 2021; UNCTAD for international investment.
Note: Data for 1.5°C scenario. Other = geothermal, marine and bioenergy.

Among renewable energy technologies, hydropower was the largest renewable source in terms of installed capacity in 2022, but its requirements in terms of water and land, and the high environmental and social costs implied, limit its future contribution to the transition. For this reason, much of the need for renewable capacity will have to be filled by solar and wind power. Solar capacity will need to increase fivefold by 2030. Cost reductions deriving from technological advancement, high learning rates, policy support and innovative financing models together make solar photovoltaics the leading technology for power generation (IRENA, 2022a). It is worth noting that this is reflected in the fact that solar leads in the addition of renewable energy capacity, whereas hydropower leads in the overall stock of renewable energy capacity. Wind power is also required to grow significantly, with capacity worldwide needing to increase from 899 GW to 3,337 GW. Capacities in other renewable power technologies, including biomass, geothermal, waste-to-energy and marine energy, will also need to increase rapidly. The combined capacity need for these other technologies is 749 GW in 2030.

The required annual investment needs vary by type of source and cost of the technology. The two leading technologies, solar and wind power, need annual investment of more than $330 billion and $400 billion, respectively. Announced international projects in 2021 and 2022 amount to more than half of the need under the current target, but this is not sufficient to reach the targets for the transition.

This potentially encouraging picture at the global level does not look the same in each region (table IV.4). In North America and Asia, announced international investment projects for 2022 add up to less than a quarter of projected needs and in Latin America and Africa to less than a third, implying that a significant share of projected needs is to be covered by domestic or public investment. The largest chunk of renewable energy investment is in fact made through domestic sources – 83 per cent between 2013 and 2020 on the basis of financial close data (IRENA and CPI, 2023). Only in Europe would announced international projects – if fully implemented – approximately cover projected investment needs.

The rates at which the different regions attract international investment in renewables contrast with the different speeds at which investment in each region needs to run. Installed renewable energy capacity needs to triple worldwide between now and 2030. To meet growing local energy needs, it needs to increase by a factor of 10 in the Middle East and Africa.

Table IV.4. Renewable energy: global total installed capacity and investment needs in power generation, by region (Gigawatts and billions of dollars)

Region	Total installed capacity in 2022 (GW)	Projected capacity needed by 2030 (GW)	Annual financial commitments in 2021 ($ billion)	Annual investment needed to 2030 ($ billion)	Announced international investment ($ billion)	
					2021	2022
Global	**3 372**	**10 771**[a]	**430**	**1 045**	**485**	**471**
North America	490	1 882	60	235	57	35
Europe	828	1 573	69	180	175	248
Asia	1 630	5 442	197	545	152	75
Latin America and the Caribbean	283	708	22	120	36	40
Middle East and Africa	87	993	17	170	17	45
Oceania	55	172	65	45	47	27

Source: IRENA (2022b and e), IEA (2022b), IRENA and CPI (2023) based on BNEF (2023) for financial commitments 2021; UNCTAD for international investment.
Note: Data for 1.5°C scenario. Regions as identified by IRENA.
[a] The higher value includes hydrogen capacity already active in the power sector.

2. The role of foreign investment

a. Domestic, international, public and private investment in energy

FDI plays a major role in financing investment in renewables. Project finance data show that worldwide almost half of investments involve a foreign sponsor or equity investor (table IV.5). In value terms, international project finance accounts for 55 per cent of investment in renewables. Most of this investment is purely private sector driven; less than one fifth involves equity stakes by host-country governments, although such projects with government involvement are, on average, larger.

International projects are also on average larger, often requiring a public-private partnership (PPP) or a consortium of sponsors, especially for more expensive types of renewable energy technologies. As the project companies need to be capable of feeding energy into the system, these projects tend to also include other critical and necessary infrastructure, such as transmission lines or battery storage facilities, especially in developing countries.

As a group, developing countries' share of international projects is similar to the global share; however, it varies across regions and economic groupings. In the least developed countries (LDCs), foreign sponsors account for more than three quarters of investment, whereas in East Asia, they account for only a quarter of investment as China, with its large internal market and leadership in renewable technologies (especially solar), dominates investment.

In developing countries, the share of projects with public sector involvement is higher than in developed countries, both for purely domestic projects and for international projects. Government can support a project by owning an equity share in it or retaining final ownership – even indirectly through a State-owned enterprise – of the project company. Government equity participation can be a catalyst for foreign private investors, as it helps reduce the perception of risk associated with a project, especially in countries with high political and economic uncertainty.

The size advantage of projects with public sector involvement is also greater in developing countries. For LDCs, the importance of international project finance is significantly higher because of the lack of domestic funding, but also because of low expertise and limited technologies and base infrastructure. International projects account for more than three quarters of investment values. The need for government involvement in LDCs also increases when compared with developing countries as a group, especially for high-value projects.

Table IV.5. Project finance in renewable energy generation, by investor type and country grouping, 2016–2022 (Per cent)

		Global		Developing		LDCs	
Type of project	**Unit**	**Domestic**	**International**	**Domestic**	**International**	**Domestic**	**International**
Total	**Value**	**45**	**55**	**45**	**55**	**23**	**77**
	Number	**53**	**47**	**56**	**44**	**45**	**55**
Public	Value	14	12	22	20	12	41
	Number	12	7	21	8	18	16
Private	Value	32	43	24	35	11	36
	Number	40	41	35	36	27	39

Source: UNCTAD, based on information from Refinitiv.
Note: A project is defined as public if the ultimate owner of the project company is a government agency, a State-owned enterprise or has an equity participation from the host State. Projects that have foreign State-owned sponsors (e.g. many projects in the Belt and Road Initiative) are not considered public. A project is defined as international if at least one sponsor is foreign.

Table IV.6. Project finance in renewable energy in developing economies, by investor type and technology, 2016–2022 (Per cent)

Type of investor	Unit	Solar		Wind	
		Domestic	International	Domestic	International
Total	**Value**	**59**	**41**	**29**	**71**
	Number	**58**	**42**	**47**	**53**
Public	Value	31	9	11	25
	Number	23	6	11	10
Private	Value	28	33	18	46
	Number	34	36	36	43

Source: UNCTAD, based on information from Refinitiv.

Internationally financed projects with the involvement of the host-country government account for more than 40 per cent of project values, compared with 20 per cent in developing countries as a group and a fraction of that in developed countries.

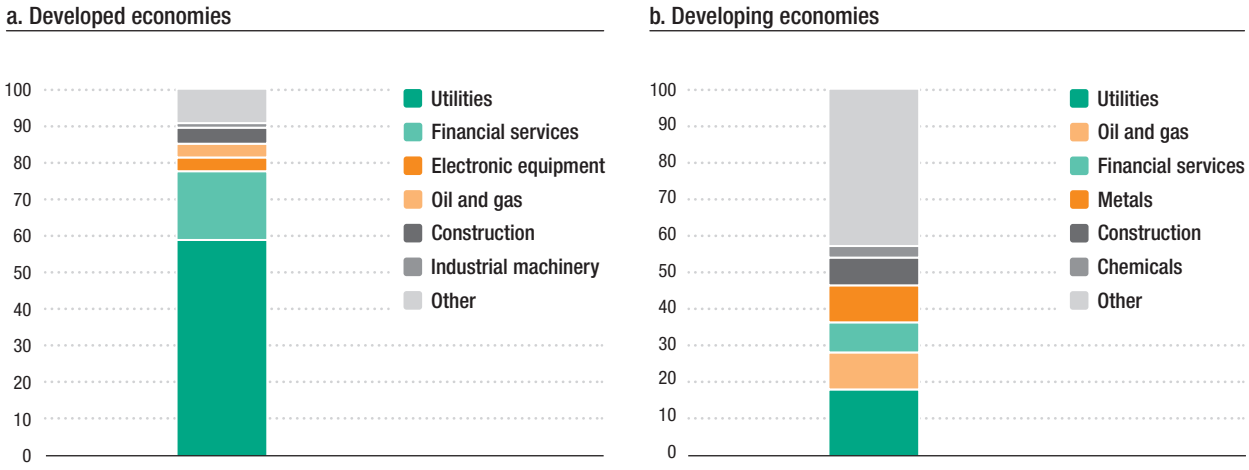
In developing countries, production of solar, hydroelectric and biomass energy all have higher shares of domestic projects. Sources of energy implying the use of complex or costlier technologies, such as geothermal and wind, have higher shares of projects that involve a foreign sponsor (table IV.6).

Project finance, which involves multiple investors and financiers in large infrastructure projects, accounts for about 75 per cent of total cross-border investment in climate change mitigation, especially large, utility-size renewables projects. Greenfield projects by individual MNEs, which constitute almost half of the total number of international projects, tend to be significantly smaller. Because one of the main advantages of the use of international project finance is to mitigate and share risk, the relative importance of greenfield investment, internally financed by individual MNEs, is lower in developing countries and lowest in LDCs. Whereas greenfield projects account for about 25 per cent of international investment values globally, this share shrinks to 15 per cent in developing countries and 10 per cent in LDCs.[1] Typically, most domestic investment is State-owned, developed by State-owned utility companies that finance renewable energy installations from their balance sheet.

b. The international investor landscape

The landscape of private actors in project finance is heterogeneous. It is not just energy companies that are sponsoring investment in renewable energy, although they dominate. In recent years, a much wider range of potential sponsors has been financing such projects. These include firms in industries different from utilities (i.e., manufacturing, mining and finance) that are pursuing clean energy investment and companies in energy-intensive industries (e.g. metals, chemicals, cement and construction, machinery, oil and gas extraction) that aim to secure low-cost energy. They also include technology and electronics companies forced to confront high and growing energy consumption trends, pushing them to become important investors in renewable energy in developed economies (figure IV.1). For example, in October 2022, Amazon announced plans to invest more than €1 billion in the electrification of its infrastructure in Europe through the addition of charging stations and electric vehicles. For financial companies, investing in renewable energy projects helps diversify portfolios, lower

Figure IV.1. International investors in renewable energy, by industry, 2016–2022 (Per cent)



Source: UNCTAD, based on information from Refinitiv.

risk and improve returns (IEA and CCFI, 2022). In developing countries, the high share of investors in industries other than utilities is related to the relevance of off-grid technologies for powering commercial and industrial activities.

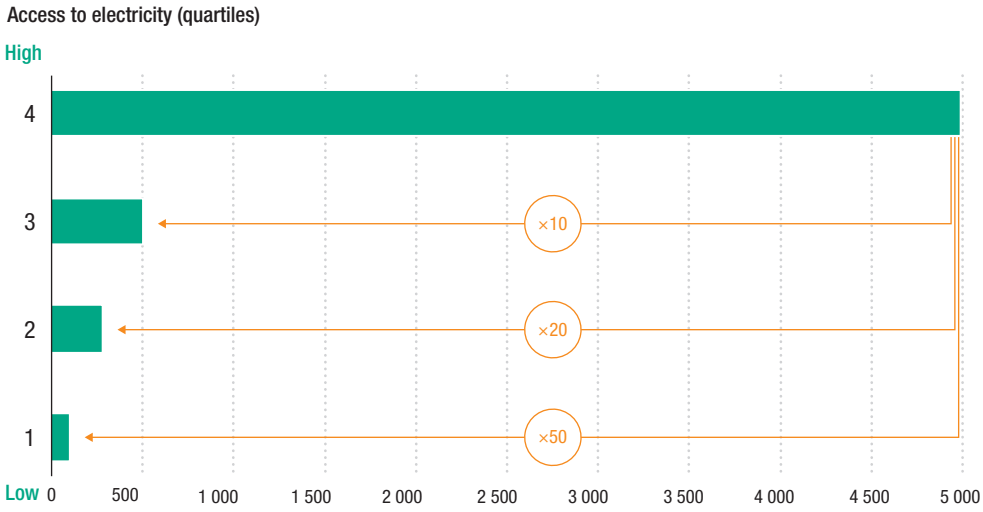
3. Investment needs and international investment potential in developing countries

Countries face different challenges in the energy transition (UNCTAD, 2021). Despite the vast investment needs, attracting investment in the energy transition remains a significant challenge. Limited access to funding and international investment, higher risk profiles, lack of institutional capacity and skills, and a less attractive project finance environment pose greater challenges to developing economies. This is more so for small and vulnerable economies because economic, technical and environmental barriers are higher for them. In addition to access to the finance and technical capacity required, the degree and speed of the transition will depend on factors such as energy security, macroeconomic impacts, access to renewable energy sources (e.g. minerals) that are critical for building supply chains, access to natural resources (e.g. wind and solar) and availability of infrastructure support.

A report by the Independent High-Level Expert Group on Climate Finance (Songwe, Stern and Bhattacharya, 2022) estimates that developing countries need to mobilize more than $2.4 trillion per year by 2030 – of which $1 trillion must come from external sources – to finance a big push to put them on a low-carbon, climate-resilient development trajectory. Moreover, at their current stage of development and with new needs after the pandemic, many developing countries face priorities that compete with the energy transition. Because about 900 million people have no access to electricity, the priority in many countries is to provide them with that access (SDG 7). The large upfront investment needed in the case of renewable energy projects and the complexity of grid connections and storage represent barriers for developing countries, forcing them to rely on fossil fuels.

Notwithstanding the need to expand access to electricity in many developing economies, it is notable that those with low rates of access to electricity are benefitting the least from international investment in renewable energy assets (figure IV.2). Since 2015, the year of the Paris Agreement, developing economies in which the entire population has access to

Figure IV.2. International investment in renewable energy, by access to electricity, developing economies (Dollars per person)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com), and Refinitiv.
Note: Includes international project finance and greenfield investment, per person (cumulative between 2015 and 2022). Quartiles of the population with access to electricity: 1 = less than 53 per cent, 2 = between 53 and 91 per cent, 3 = between 92 and 99.8 per cent, and 4 = almost 100 per cent.

Table IV.7. Developing economies with no international renewable energy projects since 2015

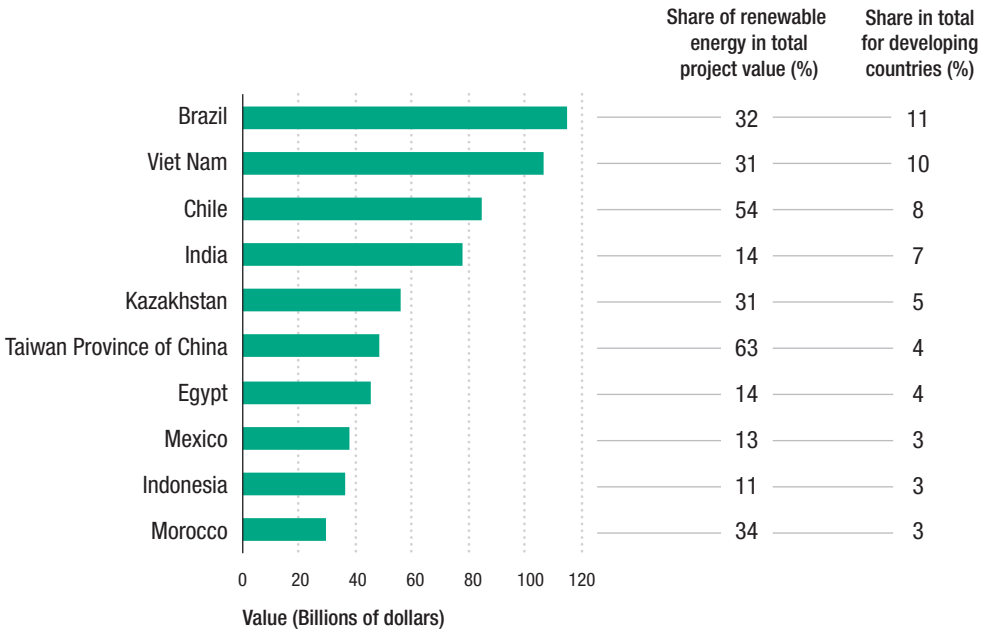
Grouping	Number of economies with no investment	Total number of economies in each grouping
Total	**31**	**149**
LDCs	11	46
SIDS	20	38
LLDCs	2	32
Economies with electricity access < 95%	18	80

Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com) and Refinitiv.

electricity have received 50 times more international investment in renewable energy per capita than those with the lowest shares of the population with access to electricity. From 2015 to date, 31 developing countries – of which 11 are LDCs, 20 SIDS and 2 LLDCs – have registered no international private investment in renewable energy (table IV.7). In 18 of these countries, at least 5 per cent of the population still lacks access to electricity. Only eight of these countries show domestic project finance activity in renewable energy. In countries with low electricity access, building renewable energy installations is especially important, as doing so would allow them not only to leapfrog their current electricity deficit to the post-transition phase, but also to make progress on the goal of access to sustainable energy for all.

In most countries with low rates of international investment in renewable energy, this deficit reflects overall weakness as a destination for FDI. Countries that manage to attract diversified FDI also manage to attract FDI in renewables. In most of the 10 developing countries with the highest levels of international investment in renewable energy, investment in renewables represents between one tenth and one third of total FDI (figure IV.3).

Figure IV.3. **Top 10 developing economies by international investment in renewable energy, 2015–2022** (Billions of dollars and per cent)



Source: UNCTAD, based on information from The Financial Times, fDi Markets (www.fdimarkets.com), and Refinitiv.
Note: Includes international project finance and greenfield investment values.

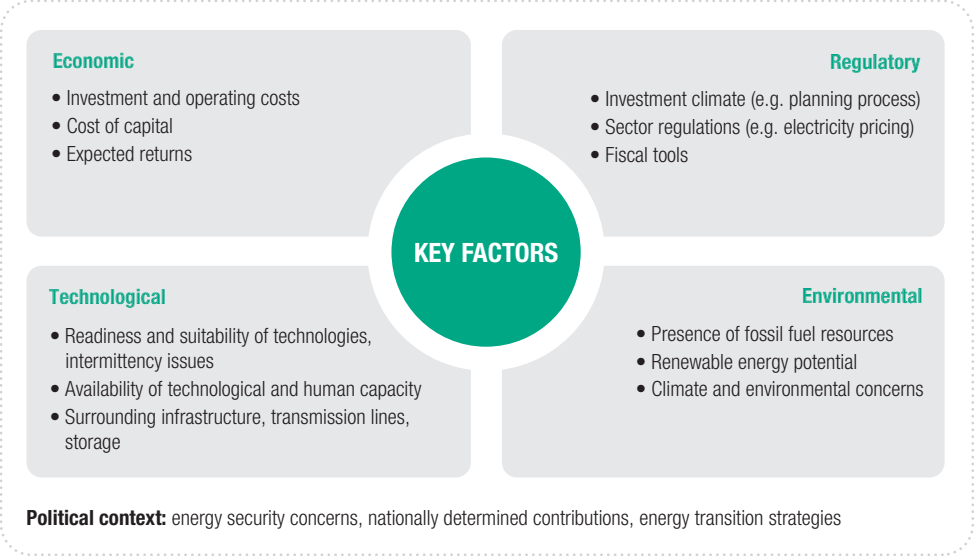
B. FIRM PERSPECTIVE: THE ECONOMICS OF INVESTMENT IN THE ENERGY TRANSITION

1. Investment in the energy transition: FDI determinants

Investment decisions by firms about development of new energy infrastructure are driven by economic, regulatory, technical and environmental factors. Some of these factors affect international investors differently from domestic investors, determining distinct roles and opportunities for FDI.

Investment decisions by firms about developing energy infrastructure and choices between sources of energy are driven by various factors – economic, regulatory, technical and environmental – within the context of the political environment in a given location (figure IV.4). Economic factors include initial investment requirements and operating costs, cost of capital, exchange rates and currency risks, and expected returns and demand factors. Regulatory considerations include the business climate (e.g., planning processes), sector regulations (e.g. electricity pricing) and fiscal instruments. Technical factors include the readiness of technologies, the availability of human and technological capacity, and surrounding infrastructure such as transmission lines and storage capacity. Environmental factors include the presence of fossil fuel resources, renewable energy potential and environmental risks. Finally, political considerations include energy security, national energy transition strategies, and overall political and regulatory risk.

Figure IV.4. Drivers and determinants of energy transition investment



Source: UNCTAD.

This section looks primarily at the economics of investment decisions related to the energy transition, considering the other factors as contextual.[2]

Each of these interdependent factors and considerations can affect different types of investors differently. They may be weighed differently by national and international, and public and private investors. As a result, the role that the various types of investors can play in the energy transition varies. For example, international investors may have access to lower costs of capital, advanced technologies or guarantees that affect their risk calculations. Local financiers may be better able to assess political and regulatory risks or anticipate developments driven by national energy transition plans.

Within each factor, several indicators underpin investment choices. Economic indicators include, for example, the relative investment cost per unit of capacity, capital versus operating expenditures per unit of energy, payback time, investment risk, risk of asset stranding and the relative cost of capital. Technical indicators include the energy return on energy invested, installed capacity of renewable energy sources, energy generated by renewable energy sources, total energy use, project duration, project lifetime, and reliability and readiness of renewable technologies. In addition, there are constraints related to technical and environmental factors that can arise from intermittency issues, weak existing energy infrastructure such as transmission lines and storage capacity, or the risk of natural disasters. Some of these factors and constraints are common to any type of investor whereas others, such as access to land, distance to connection points and export cabling, can be more relevant or binding for foreign investors.

Foreign and domestic investors play different roles in the energy transition, especially in a developing-country context. First, the substantial upfront capital expenditures required for renewable energy investment and especially energy infrastructure often cannot be entirely fulfilled by exclusively relying on local financial resources. Thanks to larger investment portfolios and access to global capital markets, foreign investors have access to a larger pool of financiers than do local investors. Second, compared with local sponsors, foreign investors can have an advantage in technological skills, knowledge, size and efficiency, as in any large investment project. Third, under certain circumstances, foreign investors may be able to take on higher levels of risk than local investors because they integrate projects into a wider and more diversified portfolio and can leverage their credibility and reputation in international markets. They can also insure against payment, political and regulatory risks through multilateral risk guarantees and bilateral investment agreements.

In contrast, local investors may have a deeper understanding of the local regulatory and policy environment, as well as established networks with key stakeholders, such as government officials and community leaders, which could be valuable for navigating the complexities of developing renewable energy projects. Moreover, they face less uncertainty than foreign investors, whose investment decisions can be hindered by a lack of information about the institutional and political environment, market size and macroeconomics. Political instability, in particular, is a key factor slowing down foreign investment in the energy transition (CCSI, 2022), although international investors can, depending on the country, mitigate payment and political risks through multilateral risk guarantees.

2. Investment decisions on energy sources and technologies

Investor choices between fossil fuel assets and renewables are significantly affected by the cost of capital. Higher costs of capital penalize renewable energy projects with high upfront costs. The higher cost of capital in developing countries represents a significant disincentive for their transition.

Investment decisions for new power plants related to the choice between different technologies and between different sources of energy, including the choice between fossil fuels and renewables, are made on the basis of an analysis that compares the cost of the electricity generated over the lifetime of different types of installations on an equal footing. The key measure used to establish a basis for comparison is the so-called levelized cost of electricity (LCOE). The LCOE is driven by numerous technical factors, such as capacity, operating costs, fuel prices, and maintenance and decommissioning costs, which are mostly the same for domestic and international investors (table IV.8).

A key component of the LCOE is the cost of capital, which can vary for different types of operators, potentially placing international investors with access to lower-cost finance at an advantage. Because the LCOE is a measure of the net electricity generation cost over the lifetime of a project, future costs are discounted on the basis of the cost of capital. Higher costs of capital increase the present value (i.e. cost) of electricity generation relatively more for investment projects with high upfront capital expenditures and low operating costs, because future operating expenditures are discounted more than initial upfront costs. As a result, in developing countries, which already struggle with the high upfront costs of renewable energy and weak energy sector fundamentals, high costs of capital further reduce the economic incentive to invest in renewables as opposed to fossil fuel-based installations. When comparing the cost of electricity for different technologies, renewable technologies are generally more competitive than non-renewable ones (figure IV.5). Despite the higher capital costs, renewable technologies entail lower operating costs and, by definition, do not involve fuel costs.

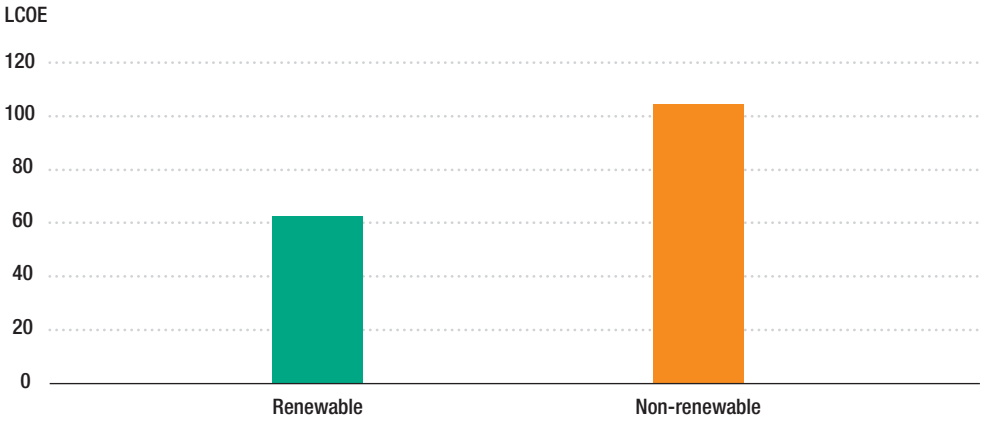
Table IV.8. Levelized cost of electricity: component variables

Variable	**Relation to the levelized cost of electricity** (LCOE)
Capacity factor (load factor)	Determines the actual amount of electrical energy generated
Decommissioning and waste management costs	Can be included in the LCOE for a more accurate estimation of the overall project cost
Expected asset lifetime	Can significantly reduce the LCOE if the lifetime of a project is increased, but only if the levelized capital cost remains higher than the average annual operating cost
Fixed operation and maintenance costs ($ per kilowatt)	Part of operating expenditure, implying higher costs in the LCOE
Fuel price ($ per gigajoule)	Only considered in the LCOE of non-renewable technologies
Investment costs ($ per kilowatt)	Initial investment required for the set-up of a plant, inputs higher costs in the LCOE
Variable operation and maintenance costs ($ per megawatt-hour)	Part of operating expenditure, implying higher costs in the LCOE
Weighted average cost of capital	Used as the discount rate in the LCOE to bring values back to the present year; higher costs of capital imply a higher discount rate and higher LCOE

Source: UNCTAD.

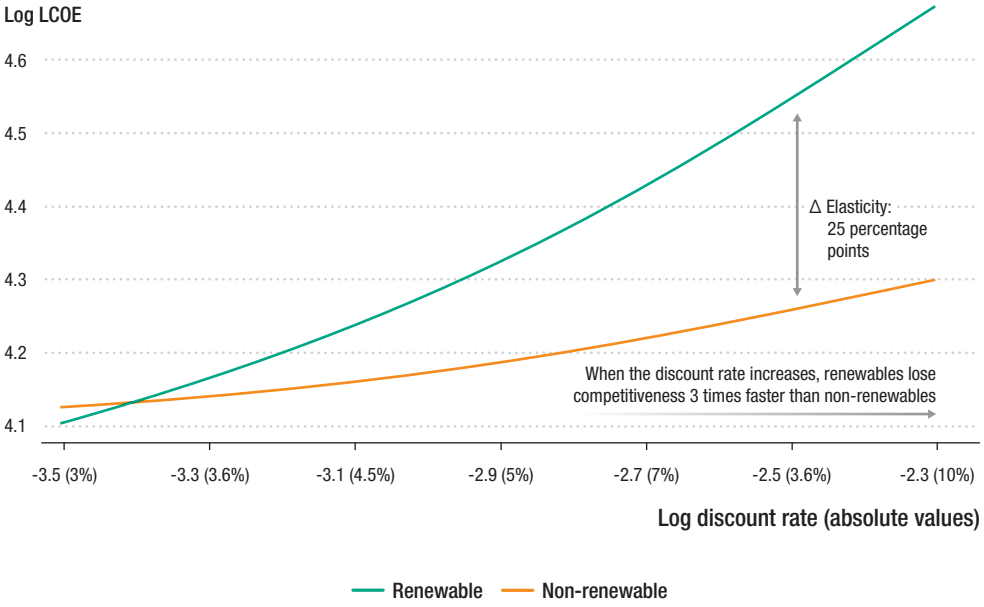
The sensitivity of the LCOE to discount rates is significant (figure IV.6). According to the IEA, the cost of capital can determine up to 50 per cent of the LCOE in solar energy installations. The attractiveness of renewables investment decreases three times faster than that of gas-fired power plants for each percentage point increase in the cost of capital. This effect can be important; on average across developing countries, the cost of capital for energy projects in 2022 was almost three times higher than that in developed countries.

Figure IV.5. **Levelized cost of electricity of renewable and non-renewable technologies in selected economies, 2022** (Dollars per megawatt-hour, average)



Source: UNCTAD, based on World Energy Outlook, IEA (2022b).
Note: Based on representative projects in China, India, the United States and the European Union. Renewable technologies include wind (offshore and onshore) and solar energy. Non-renewable technologies include oil, gas and coal.

Figure IV.6. **Sensitivity of the levelized cost of electricity to the discount rate, by generation source, 2020** (Dollars per megawatt-hour, log)



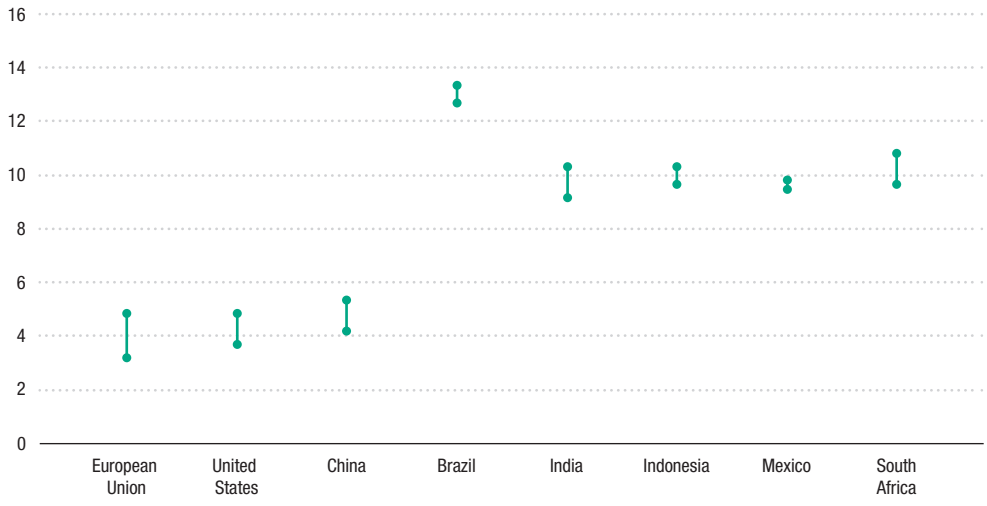
Source: UNCTAD, based on IEA, Levelised Cost of Electricity Calculator (2020).
Note: Estimations are based on a sample of 243 power plants in 24 countries. Figures in parentheses are the absolute value of the discount rates. Renewables include biomass, concentrated solar power, geothermal, hydropower, solar photovoltaic, wind offshore and wind onshore. Non-renewables include oil, coal, gas combined cycle and gas turbine.

And the total cost of capital in developing countries can be up to seven times that in developed markets (IEA, 2021b). This represents a significant disincentive for the transition away from fossil fuels. The ability of international investors to potentially access lower costs of finance could thus be an important contributor to accelerating the energy transition, especially in countries with relatively higher costs of capital.

For a given energy generation technology, the LCOE fluctuates significantly across regions, depending on the cost of fuel, (renewable) energy resources, capacity factors and interest rates. For onshore wind power generation, for example, the cost of energy is highest in Africa and the Middle East, and lower in North America, Europe and Asia. In contrast, Asia and Europe have the highest costs for solar energy. More in general, the cost of generating electricity is expected to be higher in developing economies because of higher interest rates and higher challenges associated with investment. Because the computation of the LCOE is sensitive to expected prices for fuel, uncertainties related to future fuel prices and exchange-rate fluctuations increase the cost of energy for developing countries, many of which depend on fossil fuel imports for their power generation. Currency uncertainties and exchange rate fluctuations also constitute one of the main sources of risks faced by foreign investors.

High financing costs are the major obstacle to attracting investment in renewable energy (IRENA 2022e; IEA, 2022b) in developing countries, and depend on both country-specific and project-specific factors, including the project sponsor and off-taker. The cost of capital also varies significantly, not only across technologies but also within a market for a given technology (IRENA, 2023). Across regions, the cost of capital for projects in renewable energy is 200 to 300 basis points above the country risk (IRENA, 2023). On average, in 2022 the economy-wide cost of capital in developing countries was almost three times higher than that in developed countries for debt, and two times higher for equity, but with large heterogeneity across countries. The highest value for the cost of capital (debt-based) in developing countries is almost 60 times higher than the lowest value in developed countries (IEA, 2022). Looking at data for actual renewable projects, the cost of capital for a solar photovoltaic plant in 2021 in large developing economies was between two and three times higher than in developed economies and China (figure IV.7).

Figure IV.7. Indicative weighted average cost of capital of utility-scale solar photovoltaic projects, 2021 (Per cent)



Source: UNCTAD, based on information from IEA (2022b).

The perception of higher investment risks in developing countries is reflected in sovereign credit scores and ratings and exacerbated by insufficient concessional finance and credit guarantees. The higher cost of capital in developing countries is at the heart of the dilemma facing the international community with regard to climate change mitigation in developing countries.

Today's rising cost of capital could intensify the financing challenges of investing in renewable projects, despite their competitive underlying operating costs. As such, financing costs need to be mitigated to attract funds and private capital. In addition, many existing high-emissions assets in developing countries are still relatively nascent, further reducing the incentive to undertake new investment in support of the energy transition.

3. Project characteristics and the cost of finance

International project finance is a key mechanism for foreign investors to fund energy infrastructure around the world. Financing costs in international project finance are driven by country risks, industry risks and project risks. Each of these will affect the choices made by investors and the potential for infrastructure projects to attract international capital.

In project finance, private and public partners share risks and develop projects using a financially and legally independent special-purpose vehicle that isolates the risks of the project in a tailor-made and self-sustained financial structure. This is particularly relevant for large infrastructure projects – including utility-sized renewable energy installations – in developing countries.

In assessing risk factors, the project's characteristics are seen as a combination of (i) host country-specific risks and factors, including institutional and macroeconomic factors (e.g. available infrastructure, time to get permits, financing conditions, national incentives, currency risks), (ii) factors related to the project's industry (e.g. unmet power demand, availability of workers with specific skills, technology-specific risks) and (iii) idiosyncratic factors linked to the investor and the project (e.g. sponsor credibility, financing conditions, expected returns).

These risks shape the structure and the cost of financing projects. This cascade of risks and impediments, if unmanaged, can lead to a significant escalation of the cost of capital, especially in developing economies (Bhattacharya et al., 2022). Project negotiations to close the financing package last longer in countries where the policy and economic environments are more volatile (James and Vaaler, 2022). Credit ratings of host countries, sponsors and, if available, project companies significantly influence the availability of financing and its cost. When banks provide non-recourse debt, they account for potential cash-flow risks by (i) increasing the required equity share from sponsors, (ii) increasing the premium, or spread, on the interest rate and (iii) shortening the maturity of the loan (*WIR21*).

(i) Host-country risk

Host-country risks are related to political and economic circumstances (political instability, conflicts, expropriation risks, currency and default risks) and to the institutional framework (legal and regulatory policies, financial market development).

Some of these risks are captured by sovereign credit ratings assigned by credit rating agencies. Country risk ratings are a key factor in determining the cost of capital for project finance. The average rating is typically at the top of the investment grade for developed countries and still in the investment grade for developing countries (excluding LDCs), while, with a few exceptions such as Bangladesh, it is non-investment grade for LDCs. This directly affects the cost of financing and – critically for LDCs – the amount of financing for projects.

Most banks have internal or regulatory limits (Basel III) that restrict their non-recourse lending volumes to non-investment-grade countries (*WIR21*).

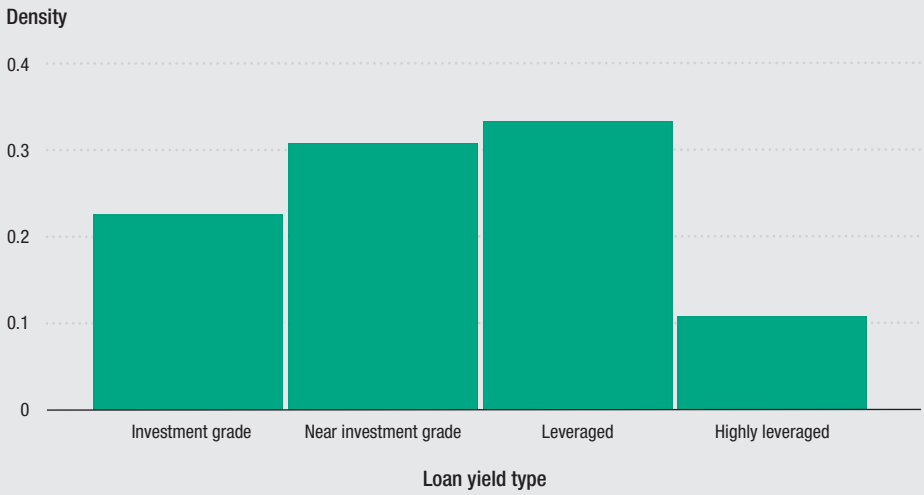
The development status of economies affects debt ratios on projects (the amount of debt that can be raised for a given amount of relatively expensive equity), the complexity or time it takes to obtain financing, and the spread or relative cost of debt (box IV.2). Maturities in poorer countries also tend to be shorter, reflecting lenders' risk aversion. Differences between developed and middle-income developing economies are relatively limited, at least for those developing countries that have been able to attract significant amounts of international finance. For LDCs, however, the challenges in obtaining project debt finance are sizeable (figure IV.8).

Box IV.2. The pricing of loans to finance infrastructure and energy projects

Data on pricing and cost of financing projects in developing countries is limited, especially for the least developed countries (LDCs). Information on the type of yield of the loans is relatively more available than that on the spread and can thus provide some additional indication about the cost of financing renewable energy projects.

The yield-type classification relies on data that rank loans according to the spread, i.e. the amount that the borrower pays in basis points over the underlying pricing base. Investment-grade projects have a spread over the pricing base of up to 150 basis points, near-investment-grade up to 300 basis points, leveraged projects up to 400 and highly leveraged projects above 400. The analysis is based on 1,700 projects with yield-type information, about 69 per cent of them in developed economies. Box figure IV.2.1 presents the discrete frequency distribution of the yield-type categorization. The majority of projects are near investment grade or leveraged, but about 23 per cent are highly leveraged.

Box figure IV.2.1. Discrete frequency distribution of project loan spread, by yield type, 2011–2022 (Per cent)



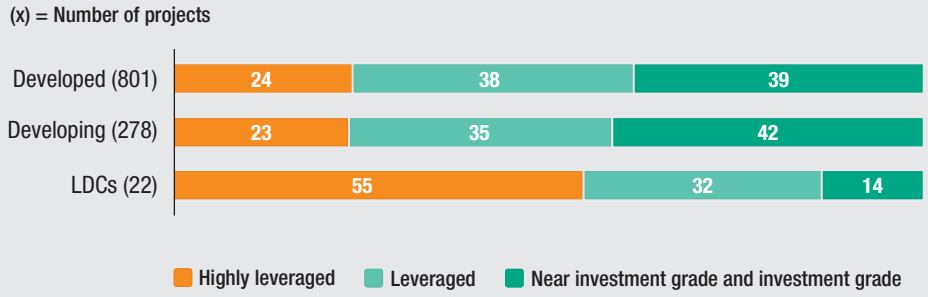
Source: UNCTAD, based on information from Refinitiv.

When analysing the conditional distribution of yield type across different regions and types of technology, the share of yield type by region (box figure IV.2.2) shows that financing costs are higher in LDCs than in developing and developed countries, where the share of highly leveraged loans is lower.

/...

Box IV.2. The pricing of loans to finance infrastructure and energy projects (Concluded)

Box figure IV.2.2. Yield type of investment projects, by economic grouping, 2011–2022 (Per cent)



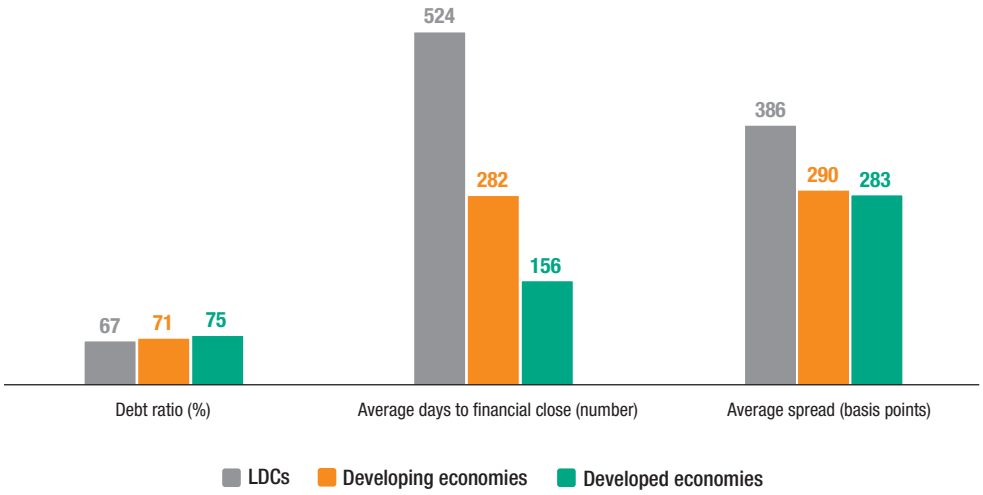
Source: UNCTAD, based on information from Refinitiv.

Whereas data on yield type are extensively available for all developed and developing countries, LDCs included, precise data on the cost of financing projects, as measured by the spread over the pricing base, is limited for LDCs. For this reason, to obtain an indication of the cost of capital in LDCs, the distribution of spread is estimated by predicting missing values within the observed yield categories. To predict missing information on the spread of LDCs, the estimation method assumes a normal distribution of the pricing data and uses as the explanatory variable information on project ownership (private versus public-private partnership), international financing (whether the sponsor is international or domestic), the participation of development banks, the country group of the project (developing, developed economies, LDCs), the technology (renewable, non-renewable or other) and the Moody's rating. Estimations are used in the analysis only for loans in LDCs, for which most of the yield information is missing.

Source: UNCTAD.

Figure IV.8. Key project finance indicators, energy sector projects, 2011–2022

(Per cent, number and basis points)



Source: UNCTAD, based on information from Refinitiv.
Note: Developing economies do not include LDCs. Spread data for LDCs are based on estimated values.

Lenders require a higher share of equity participation by sponsors whenever the project is deemed too risky. On average, projects in LDCs have less debt (-8 percentage points) which – by definition – implies more (costly) equity participation. It also takes significantly longer to find financiers, as captured by the average number of days to close a loan financing agreement. In LDCs, the amount of time between the announcement of a project and its financial close is almost double the amount of time in other developing economies and more than three times that in developed economies. This higher risk perception translates also into higher interest premiums, with spreads in LDCs being almost 100 basis points higher.

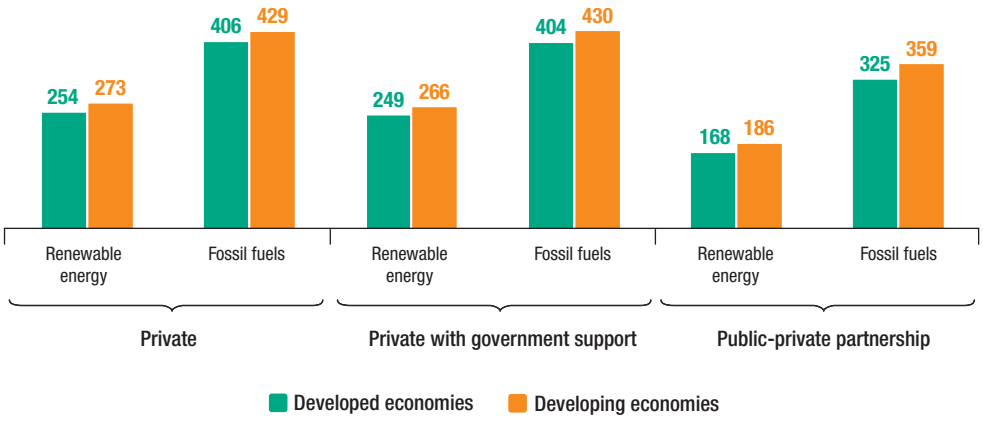
Government support in the form of a stake in the project can help lower the cost of debt by reducing the risk perceived by lenders through signalling government commitment to the project (figure IV.9). For projects in LDCs, government equity participation is a near-necessary condition for private investors to enter. Between 2011 and 2022, LDCs recorded only a few entirely privately financed projects in renewable power generation (figure IV.10). Furthermore, government participation lowers the average spread and loosens the project company's financial constraints, requiring lower debt ratios. At the same time, the government's stake increases complexity and often requires longer negotiations, explaining the significant increase in time to reach financial close. Majority stakes by governments can also raise concerns about a project's governance.

(ii) Industry risks

Industry risks are related to the technology used, its long-term performance and reliability, the unmet need for the service, industry-specific policies and regulations including licensing and permitting systems, land access, industry structure and renewable energy-specific aspects such as priority access to the grid (chapter II). Incentive policies specifically aimed at accelerating investment in renewables can have a favourable impact on both domestic and cross-border investments (Awate et al., 2015), by mitigating the institutional and economic risks.

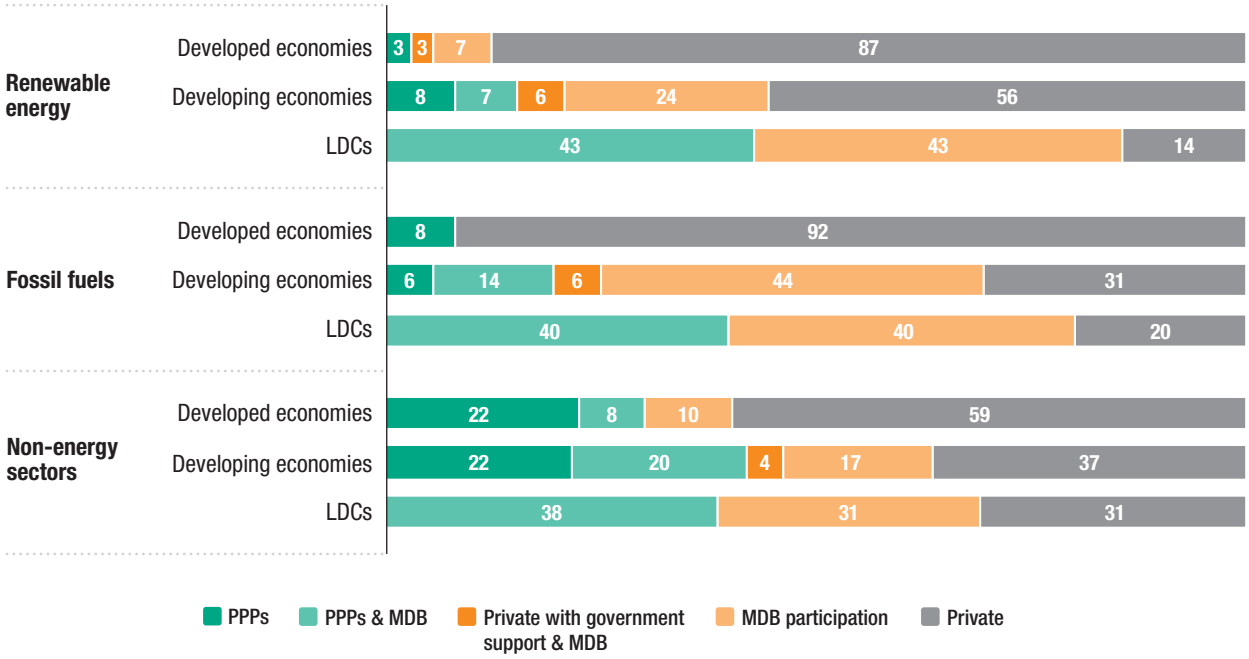
The regulatory risks, lack of support from multilateral agencies and risk of stranded assets associated with fossil fuel installations can explain the large difference (over 100 basis points) across countries in the cost of capital for projects in renewables and projects in fossil fuels (see figure IV.9). Some multilateral agencies have already stopped any form of support for projects in industries related to fossil fuels; others will follow suit.

Figure IV.9. Renewable energy and fossil fuel projects, average spread by investor type, 2011–2022 (Basis points)



Source: UNCTAD, based on information from Refinitiv.

Figure IV.10. **Energy projects: investor composition by sector and country grouping, 2011–2022** (Per cent)



Source: UNCTAD, based on information from Refinitiv.
Note: Projects are represented by region of the project country. MDB = multilateral development bank, PPP = public-private partnership. Developing economies do not include LDCs.

(iii) Project risks

Government stakes in projects are significantly more effective in lowering the cost of debt than non-equity forms of government support. Although incentives, subsidies, loans, guarantees and price guarantees are important for some critical factors in the investment decision, notably initial capital expenditures and project returns, they are less effective in improving risk perceptions among lenders. They lower interest rate premiums by only about 10 basis points, compared with almost 100 basis points for government equity involvement.

Idiosyncratic project-specific attributes can influence a project's company credit risk and capital structure. These risks relate to the different actors involved in the project, primarily the sponsors, the contractors, the power off-takers and the host-country administrators; it also relates to the size of the project (Vaaler et al., 2008) and to the expected stream of cash flows generated by the project. Larger projects represent harder-to-reverse commitments if poorly planned or implemented. Importantly, from the FDI perspective, the nationality of the main sponsors, their financial solvency and their expertise play a role in the cost and structure of loans.

Projects benefit from lead-sponsor credibility, local knowledge and relationships due to previous industry and host-country experience. Creditors and other stakeholders then have less uncertainty about how well the lead sponsor will direct the project (for example, in the case of the Sol del Desierto project of Chile; box IV.3). Consequently, domestic projects should involve lower risk. However, for large infrastructure projects and especially in developing countries, large international investors have higher credibility, higher fiscal solvency and a lower risk profile than local sponsors. Their international experience and technical knowledge typically lower borrowing costs in both developed and developing countries.

Box IV.3. Chile – Sol Del Desierto solar farm project: the importance of sponsor credibility and local knowledge

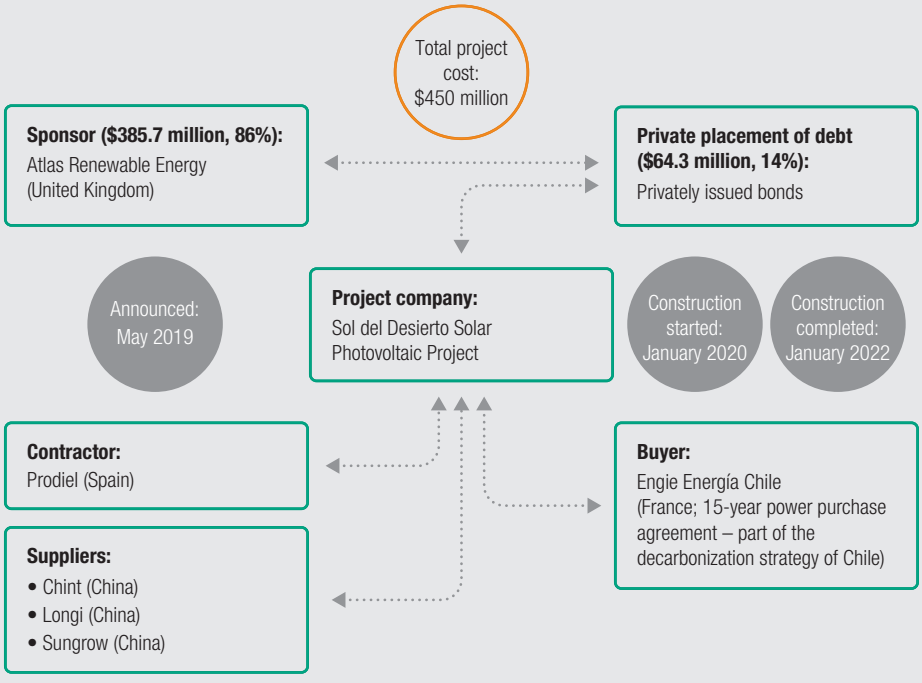
The Sol del Desierto project is an important part of the decarbonization plan of Ministry of Energy of Chile. The plan is to retire and or convert half of the coal-fired power plants in the country to renewables by 2025 (the project has already started operation).

Sol del Desierto is considered an innovative international project finance project. It comprises the construction of a $450 million 230 megawatt (MW) solar plant, expected to supply clean energy to nearly 350,000 houses. The technical efficiency of the solar park is improved by the use of a bifacial technology, which allows energy to be obtained from the back and front faces of each of its solar modules.

The project is secured by a long-term solar power purchase agreement (PPA) with Atlas Renewable Energy (United Kingdom) that, as sole sponsor, agreed to supply 550 gigawatt-hours per year of solar photovoltaic energy for a period of 15 years. The single sponsor was sufficiently credible to support the project without other equity providers and without the involvement of MDBs.

The plant, under a build-own-operate model, involved a financing arrangement through bond issuance (mostly green bonds) (box figure IV.3.1). The success of the green bonds was associated with three main factors: (i) the credibility of the sponsor, a lead actor in the sector with solid financial backing, (ii) the credibility of the Chilean energy transition agenda and (iii) the secured cash flows, thanks to a 15-year PPA with the off-taker (affiliated with a large MNE – Engie Energía Chile). The credit rating agency Fitch rated the private bond ($64 million) for this project as stable and creditworthy (BBB-), because of "the fixed-price inflation-adjusted PPA with creditworthy counterparties, significantly mitigating the project's exposure to limited merchant risk".

Box figure IV.3.1. Chile – Sol del Desierto financing



Source: UNCTAD.

For power infrastructure, of particular importance is the off-taking contract. A power purchase agreement (PPA) determines the future revenue stream and hence plays a key role in lowering liquidity risks and in facilitating finding creditors. PPAs can help hedge against currency and price risks by locking in a fixed price-per-unit of electricity over the duration of the contract (see boxes IV.3 and IV.4). Furthermore, they can contain specific clauses (e.g. put option, termination clause) that mitigate the risk of default or non-payment by the power off-taker (Lerner, 2020).

Box IV.4. Viet Nam – Quang Tri wind farm project: the role of MDBs in securing financing

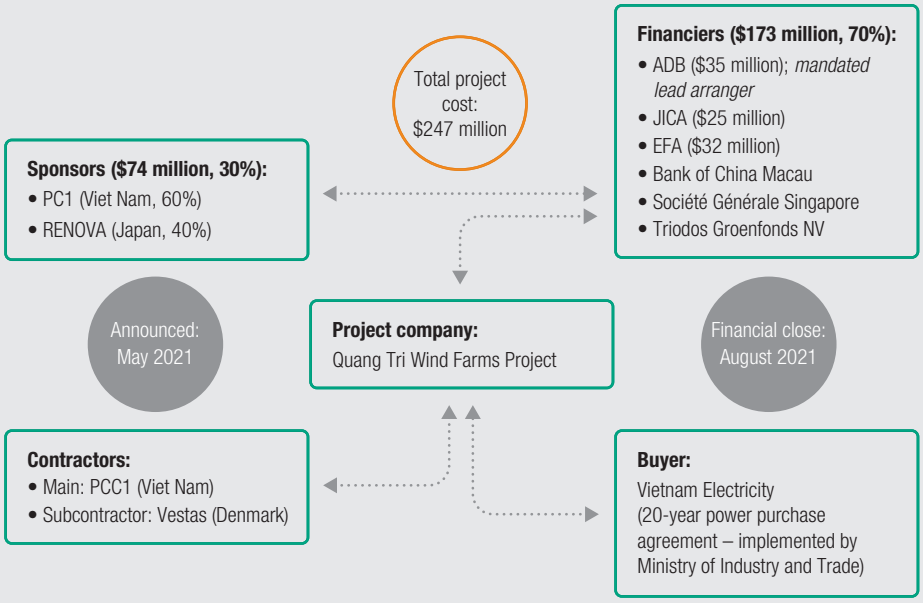
The attraction of investment in renewable energy, including wind energy, is a priority policy of Viet Nam. A core part of the strategy is turning the Quang Tri region into an energy pole by 2030, as part of the national energy transition agenda.

The 144 MW Lotus Onshore Wind Power Project, the first wind farm project in the country, is also the largest internationally project-financed wind-power project in the country. It was developed under a PPA arrangement, for $247 million, with financial closure reached in October 2021.

The project involved significant foreign participation through equity and debt financing but no government guarantee (box figure IV.4.1). It was formulated with viable risk allocation for international lenders. The project financing is 30 per cent equity, 60 per cent of it contributed by PCC1 (a local company) and the rest by Renova (Japan). The project was financially structured and arranged by the Asian Development Bank; other international stakeholders (e.g. adviseers, equipment providers and energy purchasing contractors) also played a key role. The formal policy support of the State, as part of the national policy agenda, facilitated the financial closure and implementation of the project.

Although sponsors are key, financiers are also central to the project development. The financing for the project was secured through two fundamental means. First was the role of the Asian Development Bank in deal structuring, due diligence and loan syndications. The Bank mobilized long-term, limited-recourse financing in United States dollars from commercial banks (so called B loans) and other development finance that was unavailable locally. Second was supportive national policy, including tax incentives applicable to wind power projects, a 20-year PPA with the State-owned energy company EVN covering energy production at a favourable price and other subsidies.

Box figure IV.4.1. Viet Nam – Quang Tri financing



Source: UNCTAD.

A sizeable risk in structuring PPAs is the currency of the contract. If the revenue a developer receives is in local currency, a local currency devaluation will affect the viability of the project. Also, when a currency devalues, it results in higher procurement costs (equipment and components are mostly purchased in dollars). PPAs need to be structured so as to provide a degree of revenue certainty and also the flexibility to adapt to changing technologies and economic circumstances.

MDBs and other international finance institutions (IFIs) play a crucial role in promoting and financing the energy transition, as they are instrumental in mobilizing financing and concessional and market-based funds, providing technical assistance, and facilitating knowledge-sharing and capacity-building among countries (box IV.5). MDBs provide a sizeable source of long-term, reliable finance. In the last decade, top donors in renewable energy include government and intergovernmental donors from China (Ex-Im Bank of China), Brazil (Brazilian Development Bank), the European Union (European Investment Bank), the International Finance Corporation, Germany (KfW Development Bank) and the United States (US International Development Finance Corporation) (IRENA, 2022c).

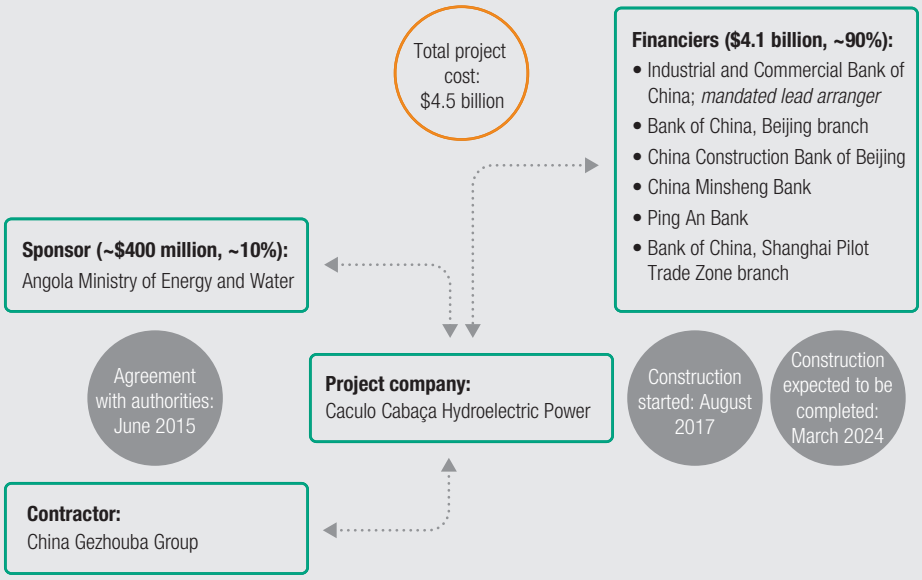
Recently, they have been urged to contribute more by focusing their support on the energy transition challenges. Some institutions or support programmes have stopped or are planning to stop supporting fossil fuel-related assets. Given the size, nature and risks associated with the energy transition, and the challenges to attract investment in renewable energy, MDBs and IFIs have increased their provision of investment guarantees and blended finance mechanisms for investment in sustainable infrastructure, including climate action and energy-related finance.

One of the primary ways in which MDBs and other IFIs facilitate financing for renewable energy and energy efficiency projects is by providing loans or grants to governments, private sector entities and other organizations to support the development and deployment of renewable energy technologies. In particular, MDBs' reputation for expertise, both technical

Box IV.5. Angola – Caculo Cabaça hydroelectric power project: the role of the Belt and Road Initiative

The Belt and Road Initiative (BRI) underpins many renewable projects in Africa, accounting for 10 to 15 per cent of international project finance deals in sub-Saharan Africa in recent years. One, the Caculo Cabaça hydroelectric project, promoted by Ministry of Energy and Water of Angola, aims to reduce the supply gap for electricity by generating additional capacity of 2,171 MW, and to promote economic and social development. The cost is estimated at $4.5 billion. The equity share retained by the Government of Angola is minimal, at about 10 per cent. The main loan was provided by the Industrial and Commercial Bank of China and other Chinese financiers (box figure IV.5.1). The project does not involve a PPA or a similar financial arrangement. Instead, the developer, China Gezhouba Group, will operate and maintain the power facility for the first four years and train Angolan technicians.

Box figure IV.5.1. Angola – Caculo Cabaça financing



Source: UNCTAD.

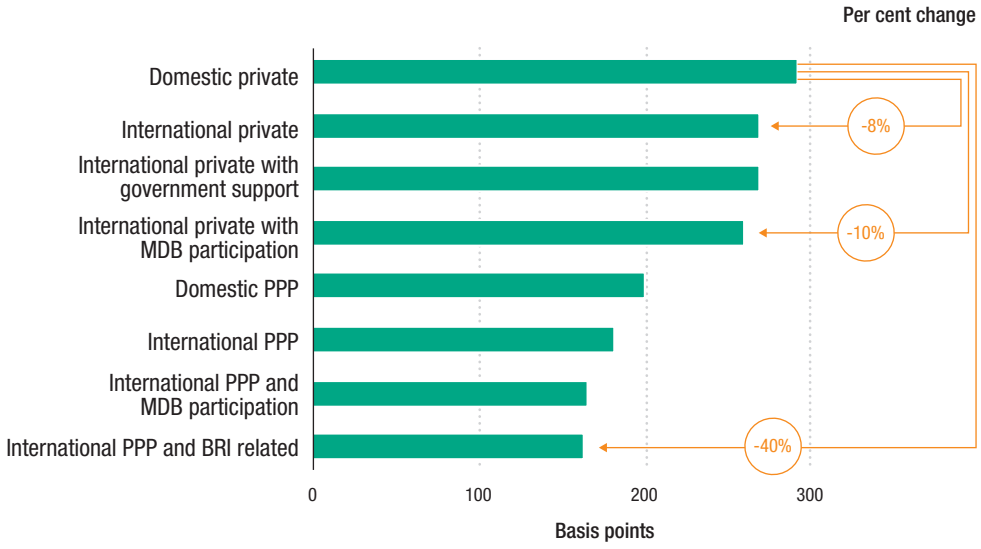
and financial, lowers lenders' perception of risk. They can also facilitate national banks' lending in local currency, thus lowering currency risks and strengthening local participation. They intervene where the host-country risk is high and commercial lenders need more guarantees to finance projects and to overcome institutional constraints.

Typically, MDBs intervene by complementing government support to make PPP projects viable. They do so as direct lenders or technical advisors, providing concessional finance, grants or guarantees. For projects in LDCs, the participation of the State and multilateral agencies is a common feature (see figure IV.10). On average, MDB participation in international project finance reduces the spread on project loans by 10 to 20 per cent.

In recent years, in addition to MDBs, a large infrastructure programme has had a big impact in developing countries and especially LDCs: the Belt and Road Initiative (BRI) of China. Many African countries, for example, participate in BRI-related joint ventures or partnerships, and in many instances, the BRI is credited with building valuable infrastructure, although significant drawbacks in relation to debt incurred have also been noted. On average, the cost of capital for these projects has been relatively low (box IV.5). Financing costs for energy projects can vary significantly depending on the equity stakeholders involved and on the degree of public support. On average, projects with international sponsors have lower interest rate premiums. Non-equity support on the part of governments does not seem to significantly affect interest rate premiums on international projects. International projects with government minority stakes and MDB participation have the cheapest debt by a significant margin. MDB participation appears to make the biggest difference in lowering the cost of debt for international project finance (figure IV.11).

The participation of development finance institutions through blended finance structures typically reduces the perceived risk of third-party investors and lowers the overall cost of capital. Such mechanisms can also be coupled with risk-mitigation instruments provided by those institutions to boost risk-adjusted returns and the bankability of projects. MDBs are thus uniquely positioned to finance projects with long-term horizons where private investors are reluctant or the risks are too high (see UNCTAD, 2019, 2021 and 2022).

Figure IV.11. **Renewable energy: average spread on debt financing, by actors involved, developing economies, 2011–2022** (Basis points and per cent)



Source: UNCTAD, based on information from Refinitiv.
Note: BRI = Belt and Road Initiative, MDB = multilateral development bank, PPP = public-private partnership.

C. COUNTRY PERSPECTIVE: INVESTMENT AND ENERGY TRANSITION PLANS

This section discusses how investment planning processes and investment policy measures at the country level connect with NDCs and energy transition strategies. It adds to the analysis of clean energy-related investment policy measures in chapter II.

Conceptually, investment policymaking in the context of the energy transition typically takes place at three levels:

- *Nationally determined contributions* set targets for emission reductions and other climate change mitigation and adaptation goals. They include high-level estimates for funding requirements and prospective financing mechanisms and constitute a government obligation under the Paris Agreement.
- *Energy transition investment plans* explain how the shift from traditional energy sources to sustainable and renewable sources will take place, drawing the path from the existing to the future energy mix with the implied changes in the asset base and the infrastructure gaps to be filled, allowing for full detail on funding requirements and financing mechanisms.
- *Energy transition investment policy measures* implement the energy transition investment plans, putting in place the necessary regulatory changes, incentives and investment promotion and facilitation initiatives.

These three levels guide the discussion in this section.

1. Nationally determined contributions and energy transition strategies

Most developing countries have adopted NDCs that set targets for climate change mitigation and adaptation. Relatively few contain details on investment requirements and prospective sources of finance.

Almost all developed and developing economies have adopted NDCs that address the energy transition imperative, the need to provide long-term solutions for energy security and the need to pursue SDG 7 – affordable, clean and reliable access to energy for all. Since the Paris Agreement in 2015, countries have established road maps to achieve carbon neutrality. Under the Agreement, each signatory is required to establish an NDC, propose an action plan to cut emissions and adapt to climate impact, and update the plan every five years. The national plans and NDCs define how climate targets will be reached and elaborate systems to monitor and verify progress. In 2023, the United Nations High-Level Political Forum is expected to review the progress of the 2030 Agenda and the SDGs at all levels, including SDG 7, exploring actionable policy guidance for its full implementation.

The most important outcome of COP27 was the establishment of new funding arrangements and a dedicated “loss and damage” fund to assist vulnerable developing countries that are disproportionately affected by climate change (UNFCCC, 2022). Member States agreed on a package of decisions that reaffirmed their commitment to limiting the global temperature rise to 1.5°C above pre-industrial levels. They also agreed to cut greenhouse gas emissions and adapt to the inevitable impacts of climate change, as well as boosting their support of

the finance, technology and capacity-building needed by developing countries. For the first time, developed countries will be providing finance towards the recovery and rebuilding of poorer countries affected by climate-related disasters. In the initial flurry, more than $300 million has been pledged by European nations. The fund will support the most vulnerable countries and middle-income economies that are highly exposed to climate-related shocks. A transitional committee with members from 24 countries will make recommendations for recipient countries to adopt at the COP28 summit in November 2023.

Many advanced economies have established energy transition strategies to achieve the 2030 climate targets, with regional and international support to assist companies and countries in decarbonizing. Following climate talks, large public and private investment support packages have been established in advanced economies, with billions destined for energy transition priorities. These packages have sparked the development of new green technologies and accelerated the reduction of costs related to the global energy transition.

In the European Union, development of National Energy and Climate Plans is a legal requirement under the Governance Regulation adopted in December 2018. For example, the Just Transition Mechanism, as part of the European Green Deal, entails a comprehensive plan to provide targeted support to the most vulnerable sectors and regions in navigating the energy transition. The Just Transition Mechanism supports those most affected by the transition, because of their dependence on fossil fuels and carbon-intensive industrial processes, through four main tools: the Just Transition Fund, a targeted investment scheme (InvestEU), a public sector loan facility and the Just Transition Platform.

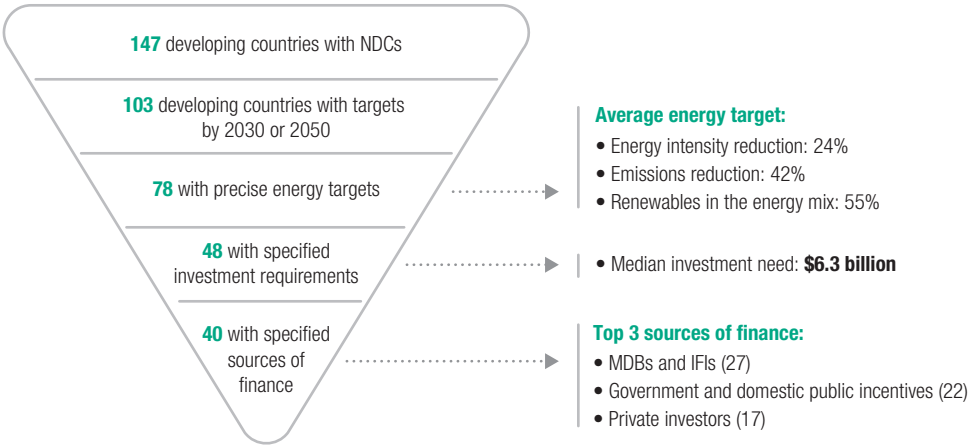
Similarly, the United States Inflation Reduction Act directed new government spending towards reducing carbon emissions. Through a combination of grants, loans, loan guarantees, rebates, incentives and other investments, the United States aims to build a clean energy economy (United States, White House, 2023). Of the nearly $400 billion in spending for energy security and climate change adaptation and mitigation, nearly two thirds will target clean energy (64 per cent), followed by four other sectors: manufacturing, green financing, clean transportation and electric vehicles, and agriculture.

In Japan, the Green Growth Strategy aims to achieve carbon neutrality by 2050 by bolstering nuclear power generation, expanding renewable energy, generating energy efficiency gains and reducing the need for imported fossil fuels. The strategy also aims to stimulate innovation through regulatory reforms and the establishment of an $18 billion Green Innovation Fund.

These initiatives in developed economies show that there is an important industrial policy component to the energy transition. NDCs and energy transition strategies should take into account industrial development opportunities and links to broader economic development strategies also – or especially so – in developing countries, which do not have the financial resources to adopt grand schemes like those in developed markets. Developing countries are faced with the challenges of ensuring energy security and meeting the energy needs of their growing economies, while simultaneously speeding up mitigation solutions and cutting carbon emissions. But despite the huge challenges they face in financing the energy transition – an objective that competes with many other, often more pressing, development goals – in the long term, exploiting renewable energy can enable developing countries to achieve vast cost savings, which could result in lower prices to end-users than for power generated from fossil fuels.

Despite the large number of NDCs for climate change adaptation and mitigation, few developing economies have clear mechanisms and policy guidance to attract international investment in the energy transition (figure IV.12). Some have developed energy transition strategies outlining policies to shift from traditional to renewable energy sources with outside support (see also chapter II).[3]

Figure IV.12. Investment focus in nationally determined contributions and energy transition strategies in developing countries



Source: UNCTAD, based on information from the United Nations Framework Convention on Climate Change, https://unfccc.int/NDCREG; London School of Economics, Climate Change Laws of the World, https://climate-laws.org.
Note: Averages are computed based on countries that reported comparable statistics.

As of COP26, 151 of the 193 parties to the Paris Agreement had communicated new or updated NDCs; among them, 147 are developing countries. Coverage varies among countries, with only 78 developing countries having precise energy targets and energy transition plans. According to these targets, countries aim to, on average, reduce energy intensity by 24 per cent, cut emissions by 42 per cent and expand the share of renewables in the energy mix to 55 per cent. However, only a minority outline clear energy investment plans to attain these objectives. Only 48 developing countries have specified clear investment requirements or needs for the energy sector by 2030 or 2050, and even fewer (40 countries) have indicated possible sources of finance for the transition (figure IV.12). When specified, investment needs are usually embedded in NDCs rather than in national energy transition plans, with large variations in value across countries and plans. The most cited sources of finance are MDBs and IFIs, followed by domestic public funds and international private investment.

2. Energy transition investment planning

Among developing countries the degree to which broad targets in NDCs are translated into detailed energy transition plans varies. Some countries provide detailed demand assessments, asset planning, and technical and economic analyses. A few elaborate on ways to connect the energy transition with industrial development strategies and other policy areas. These elements are important for attracting international investment.

As documented in chapter II, many countries have moved from the strategic planning stage to concrete policy measures to promote investment in clean energy, such as providing fiscal and financial incentives. However, relatively few countries explicitly connect those measures to individual aspects of their energy transition plans. This is because, in most cases, those plans address broad investment requirements without detailing specific assets in need of construction, or the ways in which those assets could be packaged as bankable projects and marketed to investors. Even where needs are spelled out, plans often jump immediately to policy measures establishing incentives or other investment promotion mechanisms,

without the requisite detail on assets required, renewables potential, infrastructure gaps, potential locations and other details necessary to provide certainty to investors and to package development projects.

Energy transition investment planning requires a comprehensive analysis of energy demand and assessment of assets and technical requirements. Other important considerations include a future-facing energy mix (in line with renewable energy goals), an estimation of the investment needs and an impact analysis of the electrical generation, transmission and distribution infrastructure, as well as the governance structure.

Some developing economies are more advanced than others in conceptualizing and charting the energy transition. For example, Cambodia, the Lao People's Democratic Republic, Mongolia, Nepal and Viet Nam in Asia, as well as Chile, Colombia and Mexico in Latin America, have published data-driven and reform-focused energy transition plans to integrate renewable energy and energy efficiency into national strategies while shifting away from fossil fuels. These plans are aligned with other productive sectors that are key for the energy transition. They are also anchored in strategic planning and business models for attracting investment in new infrastructure.

To generate employment and economic growth, some developing economies have been successful in attracting investment in renewable energy in synergy with action towards other economic objectives, such as (electricity) export generation (box IV.6), industrial development through special economic zones and logistics hubs, or the development of the tourism industry (box IV.7).

Energy transition investment planning varies across countries and regions, but some important commonalities exist in countries that have successfully translated high-level NDC target-setting into coherent investment policy measures, as follows.

Detailed electricity demand projections. Forward projections are normally based on population growth, access to electricity, industry and residential needs, and urban and rural needs, including a connection with development plans and transition strategies for priority industries. For example, in Ghana, the energy demand projection for the National Energy Transition Framework (2022–2070) is based on annual GDP growth of 5 per cent, population growth of 2 per cent and urban-rural growth of 1 per cent between 2021 and 2070. In Angola, the electricity demand projection in the Angola Energy 2025 plan draws on a technical assessment of the national electrification rate, residential and services consumption per inhabitant, the correlation between national wealth (GDP) and energy consumption, and industrialization. Similarly, the Pakistan Energy Demand Forecast (2021–2030) forecasts energy growth on the basis of key variables such as GDP, population, urbanization and energy prices.

The example of the Dominican Republic shows how demand planning can be integrated with pillars of economic growth prioritized in the national development strategy (see box IV.7). In several other countries, long-term development strategies include green industrial policy linked with the transition plan, which can broaden the cross-sector partnership for transition. For example, the green industrial policy of China has resulted in a manufacturing expansion and in R&D that has driven down costs and increased the deployment of clean energy technologies.[4]

Renewable energy potential. Assessments of renewable energy potential look at irradiation levels, wind levels, hydro potential and similar factors. For example, the first step of the Energy Transition Road Map developed by the United States Virgin Islands entailed consistent exploration of potential electricity production and consumption options. The Net Zero Emission Plan of Indonesia presents detailed technical estimations for utility-scale solar photovoltaics and onshore wind power. Under the Vision 2030 strategy, Kenya launched a range of policy interventions to mobilize resources and investment within the renewable energy sector.[5]

Box IV.6. Energy transition investment and regional electricity trade – the Lao People's Democratic Republic

Renewable power generation and the export of electricity are key features of the economy of the Lao People's Democratic Republic, underpinned by policy that promotes energy development and the attraction of hydropower FDI. About 80 per cent of installed energy capacity in 2021 in the country is from hydropower. International companies play a significant role in the energy value chain, from energy sources to generation, installation and transmission, and as technology solutions and equipment suppliers. Multilateral institutions and banks are active in international project finance.

Foreign investment and robust MNE participation in energy development have helped the Lao People's Democratic Republic transform into the biggest electricity exporter among the LDCs. Electricity exports generated more than $2 billion in revenue in 2021, contributing more than 15 per cent of GDP. About 65 per cent of the total 11 GW of installed capacity is exported to neighbouring countries under a web of PPAs and concession arrangements.

In 2021, more than 80 per cent of the 90 power plants in the country were wholly owned by, or involved in joint ventures with, foreign MNEs. Investment in power generation led to 100 per cent electrification in 2020, up from 70 per cent in 2010. The hydropower industry is a major FDI recipient in the country. Favourable regulatory frameworks and investment incentives support the promotion of FDI in hydropower and other renewable power plants (box table IV.6.1). The ASEAN power grid arrangement has further facilitated renewable power export from the Lao People's Democratic Republic to Singapore over the transmission lines of Malaysia and Thailand..

Box table IV.6.1. Lao People's Democratic Republic: key policies promoting FDI in renewable energy development

Policy	Selected elements
Policy on Sustainable Hydropower Development and Policy Guidelines (2015)	• Allows private sector participation in hydropower plant development through concessions (e.g. build-own-operate-transfer, build-operate-own schemes)
	• Promotes independent power producers
	• Facilitates transfer of concession right
	• Guarantees stability of electricity prices (under the power purchase agreement between the hydropower plant developer and the government)
	• Permits export of electricity generated by hydropower
Law on Investment Promotion (2016)	• Permits 100 per cent foreign equity and/or joint ventures with State-owned enterprises
	• Permits foreign investment in public-private projects
	• Provides incentives (e.g. tax holidays, customs and duty-free tax, 0 per cent value added tax rate) for infrastructure in promoted areas such as remote areas and in special economic zones, i.e. in hydropower development.
	• Encourages investment in concession activities such as development of electric energy and development of special economic zones.

Source: UNCTAD.

Public-private partnerships have facilitated investment in electricity generation and transmission in the country. Asian investors from ASEAN (mostly Thai companies) and China are the largest investor group in energy generation. China Southern Power Grid manages a large part of the country's transmission grid under a 25-year concession, through a joint-venture company in which it holds a majority stake. MNEs from Japan and the Republic of Korea are also active investors in power generation, mainly in hydropower and in plants linked with export markets.

In addition to energy and utility MNEs, IFIs and banks are playing a major role in power development in the country. They provide international project finance to support power projects sponsored by MNEs. These banks include Bangkok Bank (Thailand), Export-Import Bank of China, EXIM Thailand, Siam Commercial Bank (Thailand) and EXIMbank Viet Nam. Chinese banks are also providing financing facilities to power plants linked with the BRI.

Source: UNCTAD, based on Open Development Mekong, https://policy.asiapacificenergy.org/node/2823 and https://investlaos.gov.la.

Box IV.7. Energy transition investment and tourism development – the Dominican Republic

The Dominican Republic aims to diversify its energy supply, reduce dependency on fossil fuel imports, promote private investment, mitigate the environmental impacts of fossil fuels, contribute to decentralization of power and biofuel production and increase competition between providers. To achieve these goals, it aims to attract more than $2.5 billion in foreign investment over the next three years.

Following the Paris Agreement, the country launched the National Energy Plan 2021–2036, which created the National Energy Commission. The plan lays out short- and long-term goals, technical assessments and a road map for expanding the energy supply and upgrading the electricity transmission and distribution infrastructure. The plan also outlines fuel storage and management of infrastructure until 2036. Its implementation will create a platform not only for the improvement of energy efficiency but also for the economic development of the country.

The National Energy Plan links the goals of the energy transition to the most dynamic sectors with the greatest potential contribution to the change in the country's productive structure: (i) those linked to the communication and transportation infrastructure, energy supply and distribution, and international tourism; (ii) special economic zones and free trade zones (other than for textiles) and the manufacturing industry; and (iii) other infrastructure (mainly electricity and water).

To connect its transition planning with specific industrial needs, the government is partnering with the private sector. InterEnergy Holdings (United Kingdom) provides an illustrative case for how public and private transition planning can add value to the development of key industries, such as tourism. InterEnergy invests in three energy sources – carbon, fossil fuels and renewables – in the Dominican Republic and other countries in Latin America and the Caribbean. Its investment portfolio includes one vertically integrated utility, seven power generation plants, one technology business and one electric mobility business spread across four countries (Chile, the Dominican Republic, Jamaica and Panama). In addition, the company supports constructing and operating eligible renewable energy and clean transportation assets.

In the Dominican Republic, InterEnergy's subsidiary, CEPM, powers approximately 66 per cent of the tourism sector, including the leading resort areas of Punta Cana and Bavaro. CEPM's investment projects include solar and wind power generation through a combination of greenfield investment and mergers and acquisitions (M&As) – such as the acquisition of a 40 MW photovoltaic solar project and two 50 MW wind farms in 2021 and the more recent acquisition of the Matafongo wind farm (for $52 million). In addition, CEPM has contributed to clean transportation through electric mobility, adding 500 charging points throughout the island and launching a residential solution for electric vehicles. Future investment phases will finance additional technologies, including battery storage, wind generation, biomass and green hydrogen.

At the end of December 2022, CEPM concluded the electrification of Saona Island by developing a photovoltaic generation park with a storage capacity of 5 megawatt-hours (MWh). The island, in the eastern part of the country, is a prime tourism destination. The project enables the island's 600 inhabitants to access continuous power for tourist concessions and businesses, which receive more than 1 million tourists a year, all from a renewable energy source connected to a smart grid. This system has made the island the first in the Americas to operate 100 per cent on renewable energy.

Source: UNCTAD.

Meanwhile in Namibia, the pipeline renewable energy projects include biomass, solar, wind and battery storage as well as a large-scale green hydrogen project worth $10 billion, to be completed by 2026.

Energy infrastructure gaps. National evaluations of energy infrastructure gaps involve documenting shortfalls in adjacent infrastructure of grids, storage, distribution and transmission lines, and interconnections. In the Energy Transition Road Map of the United States Virgin Islands, the technical assessment included a comprehensive study of the energy transmission system, and how to safely distribute the greater amounts of electricity

generated, assess the capacity limits of the transmission system and indicate how much capacity is available at each of the main substations for interconnection of new-generation resources. If interregional energy storage and transmission infrastructure is improved, energy security in developing countries could be significantly enhanced across regions by increasing cross-border electricity trade.[6]

Decommissioning paths for fossil fuel assets. Reducing dependency on fossil fuels must include long-term planning for replacement and decommissioning of coal- and gas-fired power plants, whether alone or in collaboration with other countries. For example, the Government of the Philippines plans to repurpose coal plants in Mindanao into renewable energy power stations. Indonesia has identified 2,130 diesel generators across the country, all of which will be replaced with a combination of renewable sources and energy storage. Chile has pledged to achieve net zero by 2050, which includes the closure of two thirds of its coal plants by 2025, and all of them by 2040. Viet Nam signed a Just Energy Transition Partnership in 2022 with the G7 countries plus Norway and Denmark, to accelerate the energy transition from coal to renewable sources.

Efficiency and carbon capture and storage needs. Investment planning should include the costing of strategies that reduce the carbon intensity of fossil fuel-based installations. Notable examples include the South Africa JET framework, which comprises a set of strategies for demand-side management measures between the public and the private sectors, and the evaluation of new capacity options for carbon capture and storage in new power plants and technologies. Similarly, in 2022, India prepared an analytical policy framework and deployment mechanism on the pivotal role of carbon capture, usage and storage in the country's decarbonization efforts.

Energy mix. The end-state of energy sources and technologies is key to defining asset requirements over time. For example, Ghana has outlined a plan for a diversified energy mix in its Energy Transition Framework, with a model based on available technologies and updated needs (including solar photovoltaics, onshore wind and green hydrogen). The plan entails the development of a medium- to long-term set of policies and targets for 2070. In Barbados the National Energy Policy details the energy sources (solar, wind, biomass, waste-to-energy and energy storage) to eliminate the consumption of fossil fuels by 2030. It also includes provisions for the contribution of technologies not yet considered viable in its energy mix.

Location and installation sites. Location and installation plans involve the assessment of suitable locations for renewable energy installations, including the expected capacity factor, an environmental impact assessment and other elements. For example, in Mongolia, the Scaling-up Renewable Energy Programme model identifies the best locations for solar power plants and onshore wind energy production and facilities. It also paves the way for testing the viability of new locations for solar power generation. In Ghana, such calculations have found that the energy transition will require nearly 120,500 acres (about 0.17 per cent) of the country's agricultural land area.

Packages of bankable projects. Ultimately, the detailed elements of energy transition investment plans are all prerequisites for the packaging of bankable projects that can be marketed as investment opportunities. For example, the energy transition strategy of Nigeria includes a specific energy investment opportunity plan that provides a clear investment road map (with an investor presentation deck) based on current in-country programmes and projects that are directly related to the energy transition, including the large-scale financing (and potential) of hydropower and the facilitation of its solar photovoltaics market.

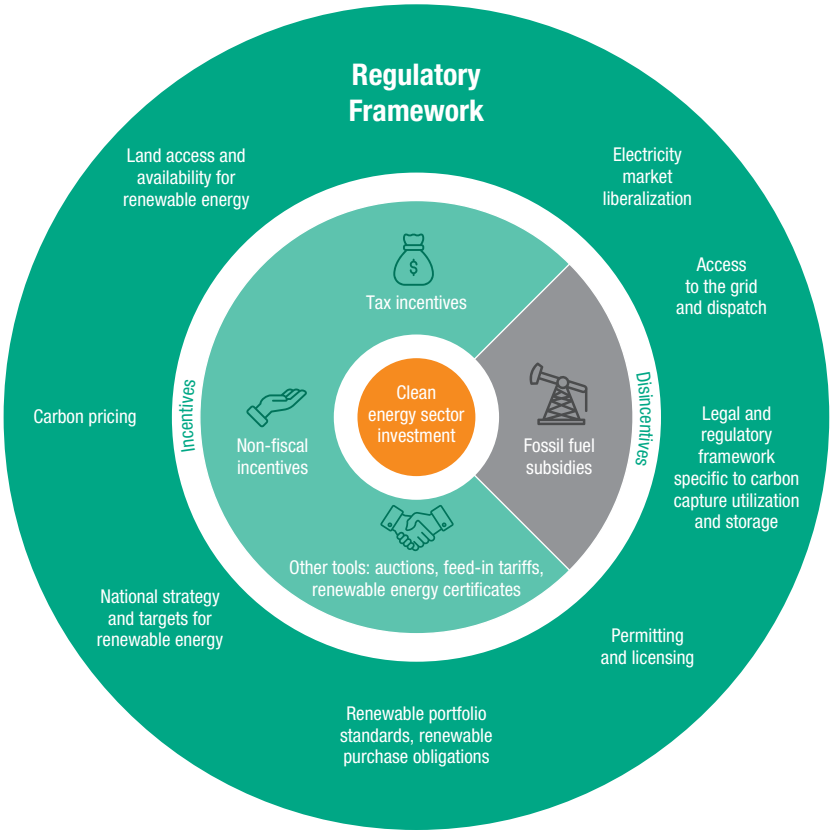
3. Energy transition investment policy measures

In developing countries, investment policy measures to support the energy transition often mirror those in other sectors. That means they come with the same potential downsides and do not always address the key barriers to attracting investment in the energy sector.

Energy transition investment policy measures do not work in isolation. They operate within a broader regulatory framework for the energy sector that entails both public incentives for investment in clean energy and disincentives for emission-intensive production of fossil fuels (figure IV.13). In developing countries, the incentives most often used to attract private investment in renewable energy are fiscal incentives, including profit-based and expenditure-based tax incentives, indirect tax exemptions and production-based tax credits (chapter II). In developed economies, instruments to attract investment are typically more complex, encompassing feed-in tariffs and auctions, renewable portfolio standards and guarantee schemes.

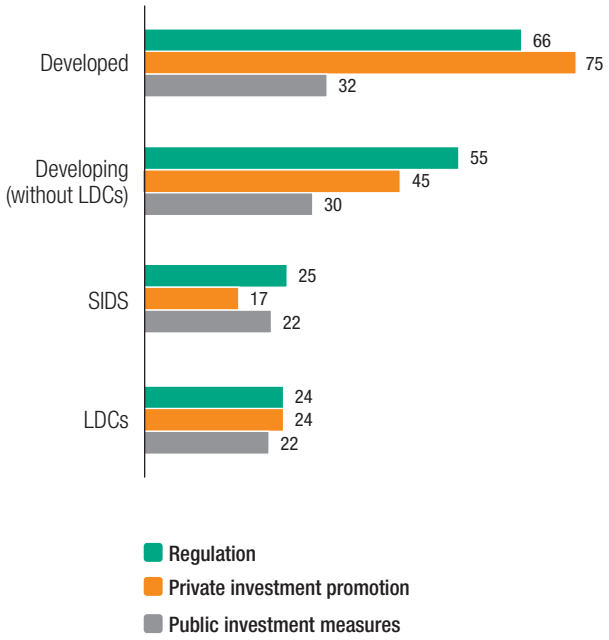
The broader regulatory framework within which these incentives operate encompasses a wide range of policy areas, including licensing and system permissions, land access, industry structure and areas specific to renewable energy, such as priority access to the grid. They also include policies aimed at achieving emission reduction targets or promoting access to energy that align with climate goals or energy-related SDGs. Such targets provide long-term vision and certainty, which are crucial for attracting investment.

Figure IV.13. Key elements of the regulatory framework for investment in the energy transition



Source: UNCTAD.

Figure IV.14. Renewable energy policies, by type and country group
(Per cent of countries)



Source: UNCTAD, based on information from the Climate Change Laws of the World database.

The universe of renewable energy policy measures is complex and depends on legal and regulatory systems in countries at various levels of development.[7] Policies in renewable energy typically focus on three main aspects: regulation, private investment promotion and public investment measures (figure IV.14). Private investment promotion measures embrace all types of incentives and risk reduction mechanisms aimed at attracting investment to the sector. Public investment promotion mechanisms include direct investment by the State in generation capacity, through public enterprises and PPPs as well as direct investment in R&D in the sector.

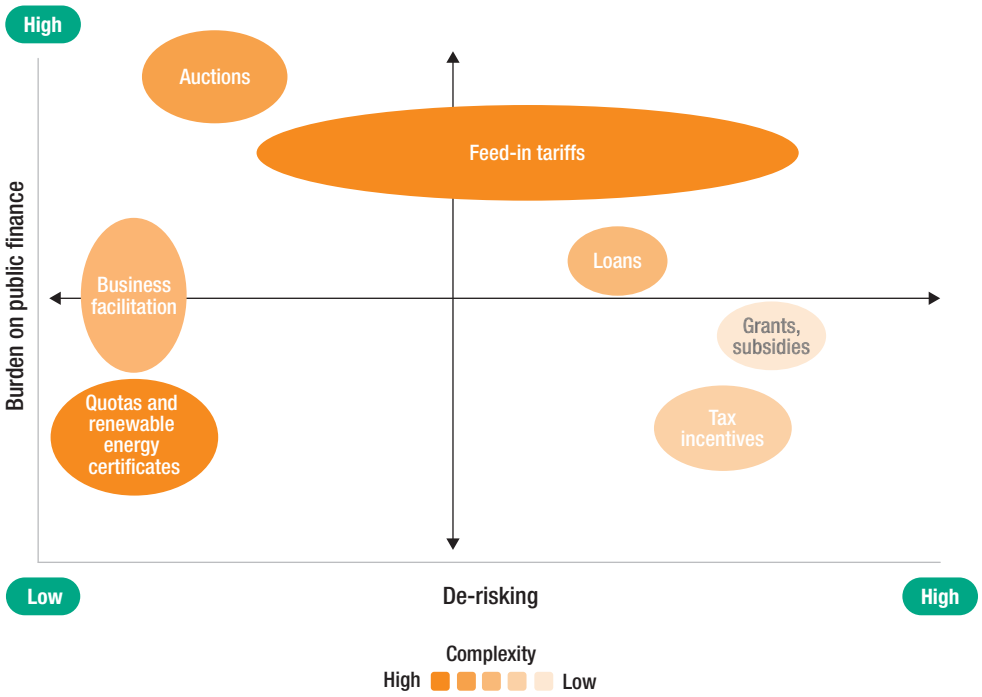
The use of these policy aspects varies across country groups. Whereas two thirds of developed economies prioritize improving the regulatory framework and promoting private investment in their renewable energy policies, only 24 per cent of LDCs and 25 per cent of SIDS do the same. Similarly, private investment promotion is a policy focus for more than 75 per cent of developed countries, but less than 30 per cent of LDCs and SIDS. About a third of developed and developing economies emphasize the role of public investment, but only 22 per cent of LDCs and SIDS do the same.

Many developing countries fast-forward to the implementation of investment policy measures to promote energy transition investment – or to the application of existing measures – often without a stepwise process or link to NDCs or national planning frameworks for energy transition investment. As a result, developing countries and LDCs tend to rely more on generic promotion instruments, such as profit-based tax incentives, because of familiarity with those tools, their lower level of complexity and the fact that they do not require upfront expenditure of public funds. However, these instruments can be expensive in the long run (in terms of forgone government revenues), and their effectiveness in the promotion of renewable energy investment is often low because they do not directly tackle the key challenges for investors in the sector. Advanced economies tend to use more complex and targeted mechanisms to promote investment in the renewables and energy infrastructure sectors (e.g. feed-in tariffs and auctions).

The relative complexity and impact on public finances of the different instruments available depends on multiple factors and varies over time (figure IV.15). Feed-in tariffs effectively support projects by ensuring a predictable revenue stream for renewable energy investors. Their impact on public finances is spread over time but can be substantial and can involve a degree of uncertainty for governments. Grants and subsidies entail significant upfront financial disbursements for governments but are certain and finite.

UNCTAD's annual survey of investment promotion agencies (IPAs) provides insights on the extent to which they are involved in the promotion and facilitation of renewable energy projects and other activities to support energy transition.[8] Their level of engagement has been mixed, with varying levels of success in attracting renewable energy projects. Some IPAs have been actively engaged, and others have not yet seen projects materializing or have seen them come in without their involvement. Almost 60 per cent of respondents stated that their countries had attracted numerous renewable energy projects, with various degrees of

Figure IV.15. Energy transition investment promotion and complexity of policy instruments



Source: UNCTAD.

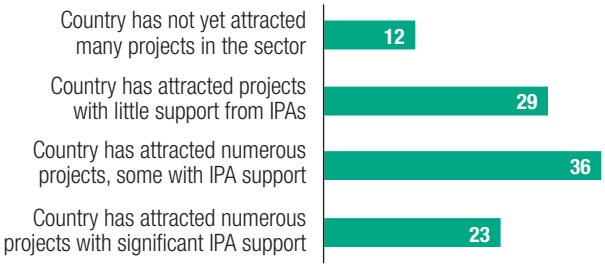
IPA support (figure IV.16). Almost all IPAs (more than 90 per cent) include renewable energy projects among their priority targets, including wind, solar and hydropower, as well as investment in energy efficiency, energy storage, and other technologies and infrastructure.

The promotion instruments that IPAs report using most are similar to those for projects in other industries, confirming the earlier finding that investment incentives for renewable energy projects are often generic. Fiscal incentives are the most common instrument, followed by business facilitation, including fast-track permitting and dedicated windows. More than half of the IPAs indicated that their respective countries offer financial incentives such as grants, subsidies and loans.

IPAs tend to be "policy takers" when it comes to promoting investment in the energy transition. Few are involved in formulating NDCs or energy transition strategies (12 per cent of respondents), and NDCs rarely refer to them. However, almost 40 per cent of IPAs indicated that their investment promotion strategy has been adjusted to reflect the country's NDC and/or energy transition strategy, and 29 per cent stated that the IPA has taken specific action to implement or support the NDC or energy transition strategy.

Major challenges in attracting investment in the energy transition identified by IPAs include a lack of appropriate policy tools, weak electricity infrastructure and a lack of policy coherence between the NDCs,

Figure IV.16. The role of IPAs in attracting energy transition investment, 2023 (Per cent of respondents)



Source: UNCTAD.

Figure IV.17. **IPA challenges in attracting energy investment, 2023**
(Per cent of respondents)

Source: UNCTAD.

the energy transition strategy and the investment promotion strategy (each of these were ranked as top challenges by more than one third of IPAs; figure IV.17). Other challenges in promoting and facilitating investment for the energy transition include an unfavourable business environment, the lack of a pipeline of bankable projects and lack of internal expertise.

* * *

The process of planning the energy transition requires a logical path from NDCs to investment policy measures that address the specific challenges of promoting investment in the energy sector. Constructing energy transition investment plans to achieve this, working with a broad set of stakeholders in the planning and implementation phases, is critically important. In developing countries in general, and in small and vulnerable economies such as SIDS and LDCs in particular, transition plans serve as logical road maps that allow countries to move towards net-zero targets and energy inclusion goals.

D. CHALLENGES AND THE WAY FORWARD

1. Key challenges and policy priorities

The investment needs associated with the energy transition are enormous. To stay close to the goal of limiting global warming to 1.5°C the world needs about 1.5 times today's global GDP in investment between now and 2050.

This chapter has discussed the role that international private investment and FDI can play in supporting the energy transition in developing countries. It has highlighted the main drivers and determinants of such investment and analyzed a key aspect of international project finance in renewables, the cost of capital. And it has looked at the way governments in developing countries frame investment policies in support of the energy transition in the context of NDCs. In doing so, the chapter has identified several key challenges for the promotion of energy transition investment. The earlier chapters on trends in FDI, national and international investment policies, and capital markets have done the same (table IV.9).

Table IV.9. Investing in sustainable energy for all: key challenges

FDI trends	
Geographical concentration	Despite strong growth in international investment in renewable energy at the global level, many developing countries are lagging behind.
Sectoral and supply chain concentration	International investment focuses very much on renewable energy generation and much less on other sectors that are crucial for the energy transition.
Investment paradoxes	The pipeline of new investment projects in fossil fuels is still flowing and will for another two decades or more, with asset lifetimes exceeding 30 years.
Project finance trends	
Reliance on international investors	FDI plays a significant role in renewables projects worldwide, but more so in those countries most in need of and least attractive to international investors.
Cost of capital constraints	The high cost of capital in countries in debt distress or with high risk ratings is a strong disincentive for investors to shift towards renewable energy assets.
Insufficient and unbalanced support	International support mechanisms are crucial to catalyse investment; a relatively low share of support reaches countries with low access to electricity.
Investment policy trends	
Weak investment planning in NDCs	Nationally determined contributions and energy transition strategies in many countries do not provide a sufficient basis for effective investment promotion.
Generic investment promotion tools	Developing countries and especially LDCs rely to a large degree on investment promotion tools not designed specifically to support the energy transition.
Old-generation IIAs	Unreformed IIAs can hinder the implementation of measures needed for the energy transition.
Capital market and sustainable finance trends	
Sustainable finance momentum	Climate finance slowed in 2022, trends in energy markets caused a shift in investment portfolios back to fossil fuels and greenwashing concerns remain.
Institutional investor inertia	A majority of the world's largest funds do not yet disclose or commit to net zero in their investment strategies.
Low coverage of carbon markets	More than three quarters of global emissions are not yet covered by carbon markets, and the spread in the price of carbon across markets is too wide.

Source: UNCTAD.

a. Enhancing the role of FDI in the energy transition in developing countries

Investment needs are daunting in both developing countries and developed countries that already have significant energy assets. They are much lower in absolute terms in countries where a significant share of the population does not yet have access to electricity, but much higher relative to the existing asset base and to the capacity to finance and support such assets. That is important, because energy investment is needed not only for the transition, but also to ensure access to sustainable and affordable energy for all. Renewable energy capacity needs to increase by a factor of 2.5 in the most advanced economies, but by a factor closer to 25 in LDCs.

Investment requirements are not limited to renewable energy generation. They extend to energy efficiency in buildings, industry and transportation; energy infrastructure such as power grids and storage capacity; clean and low-emission fuels; the renewables supply chain including R&D activities, critical minerals extraction and manufacturing of solar panels and wind turbines; and carbon capture and storage. In addition, as documented in chapter I of this report, investment in fossil fuel assets is continuing. Although investment in these assets will continue for some time to supply complementary capacity, investment will also be needed to improve efficiency and to mitigate the impact of such assets, and ultimately to decommission them.

International investment in the renewable energy sector has seen rapid growth in the past few years – although the growth was unbalanced, with much of it concentrated in developed countries. Several other sectors relevant for the transition, most notably energy infrastructure, still see much lower involvement of international investors. This is because electricity distribution is traditionally a highly regulated utility function with predominantly domestic, and often public equity involvement. However, with the clear interest on the part of international investors financing renewable energy assets and with the connecting infrastructure often a bottleneck for new investments, the motivation for governments to accelerate energy sector reforms should strengthen significantly.

Investment in sustainable energy can come from the public and private sectors, and from domestic and international sources. International private investment, or FDI, plays a significant role. In the renewable energy sector, international project finance accounts for 55 per cent of total project finance values. This share increases for developing countries, exceeding 75 per cent in LDCs. For the poorest countries, attracting international investment is therefore a crucial prerequisite for a timely energy transition. This is a concern, because many of these countries continue to be unsuccessful in attracting significant amounts of FDI outside the extractive sector. To date, 31 developing countries, including 13 LDCs, have not registered a single international investment project in renewables or other energy transition sectors since 2015.

International investors also continue to be involved in fossil fuel-related investments, such as coal- or gas-fired power plants and extractive or refining activities, although many are shifting their portfolios to renewable or lower-emission assets. Major oil and gas multinationals, for example, have been selling off some upstream fossil fuel assets. There are concerns that this process can be detrimental to the energy transition, as buyers of these assets – often private investment funds – face less pressure to disclose climate impacts and may look to maximize returns by ramping up production before these assets become stranded. Policy action to establish the continued responsibilities of both buyers and sellers of fossil fuel assets is overdue.

Despite the gradually shifting interest of international investors, at the current rate of decline new project announcements in fossil fuel extraction, processing and energy generation will continue to enter the pipeline for at least another two decades. International policy support for such investment, and lending by development banks, is waning. In some

cases and under strict conditions, international engagement and support may result in higher standards and relatively lower-emission assets, and can be instrumental in guaranteeing timely decommissioning.

In addition to building downstream renewable energy assets, international investors are scrambling to build up production capacity in key renewables technologies and to secure the supply of critical minerals. Investor home countries – both for the main producers of renewable energy equipment and for mining – are relatively few and almost all developed. Host countries where resources are located are more diverse – although some key mineral deposits are more concentrated – and almost all developing. As supply chains come under increasing pressure because of the explosive growth of demand, international cooperation to apply appropriate standards will be critical to ensure that the extraction and trade of minerals are carried out sustainably and responsibly, and that the supply of energy transition materials and equipment remains uninterrupted. Renewable energy supply chains should also offer opportunities for developing countries to increase their participation in global value chains and their value added production in order to secure development benefits.

b. Realizing the full potential of international project finance for sustainable energy

From the perspective of investors, sustainable energy investment decisions involve multiple choices, including location, source of energy, type of installation and financing modalities. The factors influencing these choices – the drivers and determinants of investment decisions – are the economics of a project, the regulatory environment, the technological and environmental context, and political considerations. Most of the drivers and determinants affect domestic and international investors equally, but a few are more important or more binding for international investors, explaining the role of FDI and the potential specific contributions it can make. Critically, international investors can often access cheaper finance, lowering the cost of capital for projects.

An important indicator underpinning investor choices between different sources of energy and types of installation is the levelized cost of electricity (LCOE) to be generated by a prospective new power plant. The LCOE allows a comparison between different sources of energy on an equal footing. Between 30 and 50 per cent of the LCOE is determined by the cost of capital and by the discount rates applied to project cash flows. Low discount rates favour sustainable energy, because almost all capital expenditures for installations of renewables are frontloaded. High discount rates favour fossil fuel-generated energy because the operating expenditures (fuel costs) over their lifetime are discounted. The high cost of capital in developing countries, and especially countries in or near debt distress, thus constitutes a significant economic disincentive for the energy transition. This means that debt relief is inextricably linked to progress on the energy transition. It also means that support in catalying international investment with lower financing costs is even more important.

Many countries with low rates of access to electricity, where building renewable energy installations would allow not only leapfrogging the transition phase but also making progress on the goal of access to sustainable energy for all, are among those that benefit least from international investment in renewable energy assets. Across these countries, a significant number of fossil fuel-related projects is still in the pipeline. Some may have access to low-cost local or regional fossil fuels, especially coal. But, typically, given their high country-risk ratings, the cost of capital is a disincentive to making the transition.

The cash flow analyses underpinning decisions on renewables and fossil fuel investment show very different patterns – high upfront capital expenditures for renewables; high (and

uncertain) fuel costs over the lifetime of coal- or gas-fired power plants; different recourse to incentives, subsidies and advance pricing agreements for the electricity generated; and different maintenance and decommissioning costs, among other aspects. Guaranteed electricity prices are a major factor in the investment decision. Such guarantees for fossil fuel plants can have a long-term negative effect on the energy transition. They result in LCOEs for potential new renewable energy projects that are always higher than the marginal costs of producing additional units of electricity with existing plants. Therefore, when commissioning new fossil fuel installations, it is important to build in a phase-out mechanism that establishes a decommissioning schedule and avoids lock-in effects. Provisions should further be made for energy efficiency and carbon capture.

Fiscal incentives and subsidies also feature prominently in cash flow analyses. As discussed in chapter II of this report, incentives for electricity generation should reward initial capital outlays rather than reduce rates over income generated over the lifetime of installations. This emphasis favours renewables over fossil fuel plants because of their high upfront investment costs and low operating and production costs. It is also in line with longstanding investment policy advice (as in UNCTAD's Investment Policy Framework for Sustainable Development) and with the implications for fiscal incentives of the prospective G20-OECD Base Erosion and Profit Shifting reforms that will introduce a global minimum tax affecting large investors (*WIR22*).

Financing decisions and borrowing costs for investors in sustainable energy projects depend on many factors and on country, industry and project risks. A key factor is the actual line-up of equity and non-equity stakeholders in a project. In developing countries, bringing in international sponsors as (part) project owners leads to a lower cost of capital than in purely domestic projects. Government policy support, while important insofar as it affects cash flow projections, does not appear to significantly affect borrowing costs. However, minority equity involvement by the public sector – such as through PPPs – does decrease borrowing costs substantially. International projects with both government and MDB participation have the lowest borrowing costs. This lends support for the planned shift in MDB lending priorities towards sustainable energy and infrastructure assets. Their involvement will be especially important in countries with higher costs of capital, to counter the disincentive that high discount rates constitute for the shift from fossil fuels to renewables assets.

c. Making investment policy more conducive to supporting the energy transition

Following the Paris Agreement, all countries set out their sustainable energy commitments in their NDCs and in national energy transition strategies. Not all of these show the same level of detailed planning. Of 147 NDCs submitted by developing countries, 78 provide precise targets for sustainable energy production. Of these, 48 provide information on investment requirements and 40 discuss prospective sources of investment.

Most countries have adopted specific policy measures for the promotion and regulation of sustainable energy investment (chapter II). These are often motivated directly by the targets set in NDCs and energy transition strategies. What is missing in many cases is the intermediate step, translating high-level targets for emission reductions into a transition path for the energy mix, implied asset requirements and infrastructure gaps, assessments of energy demand, potential and locations, and other elements that are crucial to provide investors with greater certainty about investment opportunities and that allow the construction and marketing of bankable projects. In many developing countries, and especially LDCs, capacity-building and technical assistance is crucial to move from NDCs to such detailed energy transition investment planning.

Because of the lack of detailed planning in many countries, the policy measures adopted for the promotion of international investment in the energy sector are often similar to those available for any industry. In developing countries, especially, traditional fiscal incentives (income tax reductions) abound, as do other common measures such as indirect tax reductions or exemptions on duties on the import of capital goods. Although these measures can work, approaches that specifically address the needs of the energy sector in transition have proven to be more effective. Feed-in tariffs and quota-based instruments such as renewable portfolio standards, renewable purchase obligations and renewable energy certificates, which are designed to increase the use of renewable energy, are increasingly common in more advanced energy markets. However, their effectiveness depends on a degree of forward planning for the availability of different sources of energy. Similarly, more sophisticated mechanisms to market renewable energy projects such as electricity price guarantees and auctions depend on adequate demand projections, asset planning and regulatory preparation. Jumping from high-level NDC target-setting straight to investment policy measures precludes the use of the most effective tools for promoting energy transition investment (table IV.10).

Better energy transition investment planning will also ensure that investment policy measures are better suited to country-specific situations. Taking into consideration the unique challenges faced by different types of countries in the development of renewable energy infrastructure is critical for selecting the appropriate promotion tools. For example, a large middle-income economy may consider a combination of tools such as auctions to develop generation capacities in specific technologies and locations, and market-based incentives such as renewable energy certificates to take advantage of its market size and regulatory capacities. With much smaller markets and important infrastructure and capacity gaps, LDCs may consider a mix of auctions to control the generation capacity needed and business facilitation and guarantee schemes to help investors assess opportunities in the country. These countries will also need to prioritize the promotion of investment in modern grid infrastructure to support new generation capacities and consider the use of specific subsidies or feed-in tariffs for off-grid and rural renewable energy development to take advantage of grid decentralization options offered by renewable energy technologies. SIDS may consider a mix of auctions to build the main power plants needed and targeted incentives to acquire decentralized and smaller units, such as net billing and net metering schemes, to adapt their infrastructure to their unique geography.

Table IV.10. Key elements of detailed energy transition investment planning

Detailed electricity demand projections	Forward projections based on population growth, access to electricity, industry and residential needs, urban and rural needs, and connections with industrial development plans
Renewable energy potential	Irradiation levels, wind levels and hydro potential
Energy infrastructure gaps	Gaps in adjacent infrastructure such as grids, storage, distribution and transmission lines, and interconnections
Decommissioning paths for fossil fuel assets	Long-term planning for coal- and gas-fired power plants, replacement and decommissioning options
Efficiency and carbon capture and storage needs	Options such as reducing the carbon intensity of fossil fuel-based installations, lowering methane emissions and expanding electrification
Energy mix	Detailed assessment of energy sources and technologies, over time, and end-state
Locations and installation sites	Assessment of suitable locations for renewable energy installations, including expected capacity factor, and environmental impact assessment
Packages of bankable projects	Bundled or individual projects that support the transition with full regulatory preparation, marketable to financiers

Source: UNCTAD.

Policy terrain that lies beyond the scope of investment policy but nonetheless affects international investment is fossil fuel subsidies. These subsidies are detrimental to climate action in and by themselves, and they are also a factor holding back renewables investment in some countries. They affect the incentive for firms to invest in clean energy, and they weigh heavily on government resources to support energy transition investment. Subsidies can amount to several percentage points of GDP in some developing countries and LDCs. Reallocating resources currently devoted to supporting traditional fossil fuel technologies can facilitate the adoption of targeted policies and regulations for promoting clean energy.

d. Making international investment treaties more conducive to the energy transition

International investment agreements (IIAs), and especially old-generation IIAs, are not aligned with energy transition objectives. In their current form IIAs largely lack clauses that proactively support low-carbon energy investment. Some exceptions exist, but the nascent approach is vastly underutilized. As documented in chapter II, many investor–State dispute settlement cases have challenged policy measures of direct relevance to climate action. Investors in the fossil fuel sector have been frequent claimants, initiating more than 200 cases.

Various options exist to transform IIAs into tools that are conducive to the promotion and facilitation of sustainable energy investment and climate concerns more generally. IIA reform actions should pursue a dual goal: (i) ensure that all provisions in IIAs appropriately safeguard the right and duty of States to regulate in the public interest, including in areas where frequent regulatory change is necessary, as in the case of an energy sector in transition, and (ii) enhance the ability of IIAs to positively contribute to the sustainable energy transition. The reform toolbox presented in chapter II focuses on four interacting action areas: the promotion and facilitation of sustainable energy investments, technology transfer, the right to regulate for climate action and the energy transition, and corporate social responsibility. For each action area, different policy options are provided (as summarized in table IV.11).

Table IV.11. IIA reform toolbox: promoting sustainable energy for all

Promotion and facilitation of sustainable energy investment	Incorporate IIA provisions aimed at actively promoting and facilitating sustainable energy investment
	Provide for preferential treatment of sustainable energy investment
	Establish institutional mechanisms for cooperation on R&D of sustainable technologies
	Commit to technical assistance on the adoption of investment facilitation measures for sustainable energy
Technology transfer and diffusion	Encourage technology transfer of low-carbon and sustainable technologies, including related know-how
	Make efforts to create an enabling environment to receive technology
	Allow certain kinds of performance requirements relevant to the energy transition
	Ensure that the protection of intellectual property rights does not unduly impede the diffusion of technology
Right to regulate for climate action and the energy transition	Refine the content of investment protection standards and reform investor–State dispute settlement with regard to energy investment
	Acknowledge the need for regulatory flexibility
	Include general exceptions related to climate change and the energy transition
	Clarify provisions on compensation and damages
Corporate social responsibility	Include binding obligations relating to corporate social responsibility
	Specifically oblige energy investors to comply with requirements for sustainable investment (e.g. by requiring environmental impact assessments and maintenance of an environmental management system)

Source: UNCTAD.

Since 2012, more than 90 countries and regional economic integration organizations have benefited from UNCTAD's support in developing reform-oriented model bilateral investment treaties and conducting IIA reviews. In 2022 and 2023, UNCTAD provided backstopping support on the Investment Protocol of the African Continental Free Trade Agreement, which promotes low-carbon and renewable energy investment while maintaining African countries' right to regulate.

e. Maintaining the momentum of sustainable finance and maximizing its impact

Global capital markets are the ultimate source for much of the investment needed for the energy transition. The growth rate of climate finance in those markets appears to have slowed and, despite the urgency of United Nations calls for immediate action, current financing levels remain inadequate. The trends in financial products, institutional investment, capital markets, and standards and regulations are by and large positive, but there is still room for improvement so that capital markets and sustainable finance can contribute further to sustainable energy for all.

The market for sustainable financial products needs continued surveillance to avoid greenwashing. The increase in the fossil fuel exposure of sustainable funds in 2022, a result of higher valuations of oil and gas companies, is not a positive step for the credibility and the growth of the market. In an environment of rising interest rates, sustainable fixed-income products such as green bonds need further support and wider availability, including in developing countries. The growing coverage of emissions trading and carbon pricing is positive, but still more than three quarters of global emissions are not covered and the spread in the price of carbon across different markets ranges from near $0 per tCO_2 to over $50 per tCO_2. Greater coordination and alignment are required, including a global or at the very least a benchmark price for carbon.

Institutional investors such as pension and sovereign wealth funds are ideally placed for helping finance sustainable energy. However, a majority of the world's largest funds have not yet committed to net zero in their investment strategies. They often lack access to investment opportunities. This especially affects funds from developing countries, which are often compelled to invest in developed-country assets instead of in assets in their own country. Policy action is needed to transform non-fiduciary investment opportunities in developing economies into fiduciary investment assets through international support for de-risking activities.

Stock markets play a crucial role in channelling capital to sustainable investment opportunities through listed companies or other products. Their public nature also makes them important sources of information about sustainability performance and compliance with a range of voluntary standards. There is growing concern that companies may opt to stay in the private market to avoid ever-expanding disclosure obligations. Policy action is necessary to enhance transparency and disclosure requirements in the private market.

Meanwhile, the proliferation of regulations on sustainability disclosure has led to other problems, including a lack of comparability and standardization across markets and sectors. However, as described in chapter III, standardization, comparability and interoperability are now improving, with efforts to align reporting standards on climate through the International Sustainability Standards Board as well as widespread mandatory use of the recommendations of the Task Force on Climate-Related Financial Disclosures and the standards of the Global Reporting Initiative.

UNCTAD will continue to monitor the sustainable and climate finance market to inform policymaking and discussions on investment in sustainable energy for all, including through the Global Sustainable Finance Observatory and the Sustainable Stock Exchanges Initiative, both housed in and managed by UNCTAD.

2. A Global Action Compact for Investment in Sustainable Energy for All

Since the adoption of the Paris Agreement, innumerable climate finance and investment strategies, road maps and action plans have been launched by multitudes of public and private stakeholders. The policies and instruments proposed by specialized agencies and development finance institutions are all important parts of the solution. PPPs, blended finance, investment guarantees and other de-risking mechanisms are fundamental to catalyse private investment in renewables and energy infrastructure. Enhancing the role of MDBs in energy transition investment, increasing concessional finance, expanding technical support to build pipelines of bankable projects and stimulating energy sector reforms to create a more conducive climate for private investment are recommendations of this and many other reports.

Based on an analysis of cross-border investment, international project finance, national investment policies and international investment treaties, this report has formulated several recommendations that are specific to international investment policy:

- The role of investment policymakers, authorities and promotion agencies in energy transition planning should be enhanced. Currently, they are mostly policy-takers, perceiving priorities for investment attraction from the needs formulated in NDCs and energy transition strategies. Their involvement as policymakers in formulating energy transition plans could help ensure that such plans provide a sufficient basis for the design, packaging, bundling and marketing of bankable projects.
- In many countries, and especially in developing countries, the general-purpose incentive mechanism applicable to investment across industries is also used for energy transition investment. Investment promotion instruments should consider the specific characteristics of energy investment, especially the high upfront capital expenditures and the need for long-term visibility on income and costs to facilitate debt financing.
- IIAs can hinder the implementation of policy measures needed for the transition to sustainable energy for all. IIA reforms should lower the risk of investor–State dispute settlement cases related to sustainable energy policies, prohibit the lowering of environmental standards to compete for investment and strengthen the promotion and facilitation dimension of measures.

Some of the policy actions called for in the previous section and the investment promotion mechanisms commonly recommended for the purpose of increasing finance and investment in the energy sector echo the proposals contained in UNCTAD's Investment Policy Framework for Sustainable Development, and specifically the Action Menu for Investment in the SDGs. That menu also aims to boost investment across a host of sectors in which governments generally have a public service responsibility – such as infrastructure, water and sanitation, health and education – and in which project finance is the prevalent form of international private sector participation.

Combining the recommendations above with existing policy guidance on SDG investment, UNCTAD proposes a Global Action Compact for Investment in Sustainable Energy for All (figure IV.18). The design criteria for the Compact, for its guiding principles, advocate a balanced approach that considers all three objectives of the energy transition – meeting

Figure IV.18. Global Action Compact for Investment in Sustainable Energy for All

Guiding principles

Design criteria for investment strategies, policies and treaties

Implementing a just transition to meet global climate goals	Achieving the goal of access to affordable and clean energy for all	Ensuring energy security and resilient energy supply

- Balancing the global energy transition imperative with the need for a differentiated approach in developing countries and especially LDCs
- Balancing the need for attractive risk-return rates with the need for accessible and affordable utility services
- Balancing short-term energy crisis responses with long-term transition and sustainable development goals
- Balancing the push for private funds with the fundamental role of public investment
- Balancing liberalization and regulation
- Balancing the need for policy space for sustainable energy measures with safeguards guarantees and protection for investors

Action packages

National Investment Policies
- Reorient general investment incentives to consider emissions performance
- Customize investment promotion mechanisms for energy transition investment
- Strengthen the capacity of investment promotion institutions to attract energy transition investment
- Leverage SEZs as energy transition models for the economy and to incubate sustainable energy investment

International Investment Policies
- Mainstream sustainable development as a core objective of IIAs
- Prohibit the lowering of environmental standards as a means to compete for investment
- Strengthen the promotion and facilitation dimension of IIAs
- Reform IIAs and investor–State dispute settlement to lower the risk of cases on sustainable energy policymaking

Global Partnerships
- Set up a one-stop shop for sustainable energy investment solutions, technical assistance and capacity-building
- Promote partnerships for support to groups of vulnerable economies with specific energy transition needs (e.g. LDCs, SIDS)
- Promote partnerships for developing investment initiatives in high-emissions/high-impact sectors (e.g. industry, agriculture, tourism)

Regional & South–South Cooperation
- Support regional industrial clusters and regional value chains in new strategic energy transition sectors
- Leverage regional economic cooperation in sustainable energy infrastructure development
- Factor in promotion of energy transition investment in regional trade, investment and industrial cooperation agreements

Financing Mechanisms & Tools
- Maximize the lending and de-risking capacity of DFIs, their focus on catalysing energy transition investment, and their weight in countries with low access to electricity
- Leverage PPPs, in combination with DFIs, to lower financing costs for private investors and to turn projects into fiduciary assets for institutional investors
- Increase deployment of blended finance to mobilize additional private capital

Capital Markets & Sustainable Finance
- Ensure adequate standards, disclosure requirements and monitoring capacity to eliminate greenwashing
- Expand requirements to private markets to minimize risks in the process of fossil fuel asset sell-offs
- Expand coverage of carbon markets and exploit cross-border impact potential of voluntary carbon markets
- Raise awareness and capacity to grow sustainable finance in emerging markets

Coherence & synergies with other policy areas

Energy policy:
Provide detailed energy transition investment planning, linked to NDCs, as a basis for bankable projects

Industrial policy:
Connect energy investment planning with development objectives and opportunities for strategic sectors

Trade policy:
Ensure responsible and resilient supply chains for critical minerals and environmental goods, and value chains that offer widespread development benefits

Science and technology policy:
Maximize the capacity of economies to effectively absorb advanced sustainable energy technologies in energy generation and in industry

Public finance:
Ensure responsible and targeted use of concessional loans, subsidies, fiscal incentives and other mechanisms for promoting energy transition investment

Source: UNCTAD.
Note: See UNCTAD's Investment Policy Framework for Sustainable Development for detailed national and international investment policy guidance and UNCTAD's Action Menu for Investment in the SDGs for more action packages. DFI = development finance institution, IIA = international investment agreement, LDCs = least developed countries, NDCs = nationally determined contributions, PPP = public-private partnership, SEZ = special economic zone, SIDS = small island developing States.

climate goals, providing affordable energy for all and ensuring energy security – and recognizes the need to find an equilibrium in investment and energy policymaking between many alternative approaches.

The Compact puts forward six action packages. The national and international investment policy action packages contain the areas of intervention discussed above. A key priority should be the strengthening of IPAs and related institutions (including special economic zones) to improve their capacity to attract energy transition projects. This will require capacity-building and innovative solutions, such as the possibility for IPAs to participate in project preparation facilities for green finance, which provide financial and technical assistance for the preparation of project funding proposals, effectively transforming IPAs into investment development agencies – as first proposed in UNCTAD's Action Menu for Investment in the SDGs.

The Compact contains two action packages that emphasize the importance of strategic partnerships and international cooperation. Connected to the need to strengthen investment project development capabilities in developing countries, a first initiative is to bring together on a common platform the gamut of technical assistance and capacity-building solutions that are on offer from development institutions and international organizations. In 2022, UNCTAD joined hands with the World Bank, the Organisation for Economic Co-operation and Development, the World Association of Investment Promotion Agencies, and several knowledge partners and regional organizations, including the African Union, to tackle common investment policy challenges. Together, these organizations could work towards such a "one-stop shop" for sustainable energy investment capacity-building.

Other potential partnership initiatives could be built to support groups of countries that have specific investment needs or that are particularly vulnerable to the impact of climate change. For example, an initiative that brings together SIDS, development banks, financial institutions and energy firms could address the specific challenges that SIDS face in attracting investment in sustainable energy. The Investment Advisory Council, a joint initiative between UNCTAD and the International Chamber of Commerce created to leverage both business and policymaker perspectives on promoting investment in the LDCs, could consider initiatives to support the energy transition in those countries.

Partnerships could also be developed for sectors that have a specific energy-use profile or that are particularly energy-intensive. In certain developing countries, partnerships can also support the achievement of industrial development objectives, such as in the case of the tourism industry illustrated in this chapter. For industry, special economic zones could play an important coordinating role and act as a catalyst for action in manufacturing sectors that are not directly affected by the energy transition in the way that the energy or automotive sectors are. With their important function as export hubs for goods and services from developing countries to markets that are set to place increasing demands on emissions performance, special economic zones have the opportunity to provide value added services.

This important connection with trade policy is also the driver of another proposed action item, which is to factor energy transition investment promotion into international trade and investment cooperation frameworks. International trade and investment policy can contribute more to climate action by designing rules and proposing trade and investment facilitation methods that help improve the resilience of international supply chains to climate change, ensure responsible supply chains for critical minerals and environmental goods, and maximize the development benefits that countries can derive from participating in growing renewable-energy value chains. To support this, UNCTAD and the World Trade Organization announced a collaborative initiative at COP27 to jointly develop a set of principles for trade- and investment-related climate action.

The Compact's action package on financing mechanisms and tools to catalyse private investment in sustainable energy builds, as mentioned above, on common policy advice provided by all agencies and development finance institutions. This chapter has shown that de-risking investment through loans, guarantees, insurance instruments and equity participation of both the public sector – through PPPs and blended finance – and MDBs is an important prerequisite for achieving the investment levels required in developing countries that have high risk ratings, and necessary to mitigate the cost-of-capital disincentive to invest in renewable energy installations. Increasing the use of PPPs is fraught with challenges, given the negative experiences of the past in many developing countries, but their essential role in energy investment makes it imperative to put in place the necessary institutional capacity and safeguards to ensure they work in the common interest. As for MDBs, maximizing their capacity to catalyse investment for the energy transition, and ensuring that this capacity is deployed in the countries that need it the most, is urgent. The range of financing institutions that can support energy transition investment should also be considered as widely as possible. Export-import banks, for example, can create new facilities to support sustainable energy projects in developing countries. Guarantee schemes, such as those provided by the Multilateral Investment Guarantee Agency, also need scaling up to bring more projects to investment grade, which is a condition for greater participation by institutional investors.

That recommendation links to the final set of actions on sustainable finance in capital markets. Significant progress is being made in improving climate disclosure and harmonizing reporting standards. Expanding requirements to private markets is important across sectors, but it is particularly important in the energy sector, where listed companies, to avoid the risk of stranded assets, will continue to offload fossil fuel operations, often to private equity firms or smaller operators with less stringent reporting requirements. Ensuring the responsible behaviour of both sellers and buyers of assets, and enabling public scrutiny of that behaviour, should be a priority for markets, regulators and the industry itself.

* * *

This report has documented significant achievements over recent years, in the form of rapidly growing international investment in renewable energy, widespread policy action to promote and facilitate investment in the energy transition, and solid interest in sustainable finance in global capital markets. However, significant gaps remain. International investment is concentrated in renewables, while other energy infrastructure sectors that will be key to the transition receive much less attention. Nationally determined contributions and energy transition strategies in many countries do not provide a sufficient basis for investment planning, and investment promotion mechanisms in developing countries often fail to address the specific challenges of the energy sector. And while sustainable finance has reached mainstream status in developed markets, too little capital flows to projects in developing economies.

This report comes at the midpoint of the "SDG Era". Looking back at the period after the adoption of the SDGs and the Paris Agreement, it seems that – despite all the challenges and crises that the world has faced – the conditions for rapid growth of investment in sustainable energy infrastructure have been exceptionally conducive. The cost of finance has been extremely low – witness the boom in international project finance – and the cost of renewable energy technologies, especially solar installations, has been decreasing exponentially, to the point that renewables are now more competitive than fossil fuels.

This is now changing. Interest rates are rising, and inflation is driving up prices of the raw materials needed for renewable energy components. Moreover, the energy crisis and energy security concerns are leading to a degree of distraction from a singular focus on energy transition objectives in many countries. Therefore, now is the time to redouble efforts,

to bridge the gaps left to date in climate finance and investment, and to ensure that the momentum of energy transition investment is maintained despite emerging headwinds.

UNCTAD's World Investment Forum, which will take place in October this year in Abu Dhabi, will be an important opportunity in this respect. Taking place ahead of COP28, in the same location, the WIF2023 offers a platform for policymakers at the highest levels, and for the broadest possible constituency of investment-for-development stakeholders, to take forward the actions proposed in the Global Action Compact for Investment in Sustainable Energy for All.

NOTES

[1] Estimated on the basis of shares of foreign assets of major utilities companies and international flows of greenfield investment in renewables.

[2] Regulatory, technological and environmental factors are the core competency of specialized energy agencies, notably IRENA and the IEA.

[3] Countries can find support from international agencies in the development and definition of their energy transition plans. For example, IRENA's global renewable energy road map programme (REmap 2030) assists countries and regions in scaling up renewable energy use. REmap assesses renewable energy potential, starting with country analyses in collaboration with country experts, and then aggregating the findings to provide a global picture. The road map focuses not only on renewable power technologies, but also on technology options in heating, cooling and transport. Metrics in the technical analysis include technology, sector and system costs; investment needs; externalities relating to air pollution and climate; CO_2 emissions; and economic indicators such as employment and economic growth.

[4] For more on this aspect, see Allan, B., J.I. Lewis and T. Oatley (2021). "Green industrial policy and the global transformation of climate politics". *Global Environmental Politics*, 21, no. 4: 1–19.

[5] Rapid Transition Alliance (2022), "Doing development differently: How Kenya is rapidly emerging as Africa's renewable energy superpower", 17 November.

[6] See also Timilsina, G.R., and M. Toman (2016), "Potential gains from expanding regional electricity trade in South Asia". *Energy Economics*, 60: 6–14.

[7] This analysis is based on review of 798 renewable energy policies and laws, covering 192 economies, focusing on investment promotion instruments and incentives used around the world to foster private investment in the renewable energy sector. The database covers 192 economies, including 186 Member States of the United Nations. It does not cover the following Member States: Benin, the Central African Republic, Comoros, Sao Tome and Principe, and South Sudan. The database covers the following economic entities and non-member observer States: Hong Kong (China), Taiwan Province of China, Cook Islands, Kosovo (United Nations Administrative Region, Security Council resolution 1244 (1999)), Niue and State of Palestine.

[8] UNCTAD's annual World Investment Prospects survey, conducted in April–May 2023, received responses from 72 investment promotion agencies in 70 countries.

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ANNEX TABLES

List of annex tables available on the UNCTAD website, www.unctad.org/wir

Annex table 1. FDI flows, by region and economy, 2017–2022 (Millions of dollars)

Region/economy	FDI inflows						FDI outflows					
	2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022
World[a]	1 644 872	1 375 437	1 707 830	961 983	1 478 137	1 294 738	1 593 102	1 014 750	1 400 770	731 854	1 729 076	1 489 756
Developed economies	943 166	678 200	998 716	315 461	597 243	378 320	1 145 392	637 812	1 002 377	349 933	1 244 183	1 030 865
Europe	518 733	323 683	634 327	132 537	50 711	-106 770	527 156	539 713	618 233	-38 461	573 223	224 283
European Union	263 468	309 973	600 079	115 623	152 381	-124 948	324 044	343 807	617 348	63 582	476 548	96 167
Austria	14 953	5 390	4 905	-9 351	13 494	1 947	10 251	5 612	12 486	6 756	18 291	-143
Belgium	-3 065	27 137	11 861	6 805	11 587	-1 710	29 627	43 581	6 111	10 373	33 013	24 202
Bulgaria	1 814	1 143	1 835	3 397	1 892	2 505	331	249	449	246	351	389
Croatia	530	1 199	401	146	4 427	3 675	-725	203	-116	40	1 118	-272
Cyprus	9 438	-413	52 330	-24 451	-35 744	4 913	8 932	-6 941	51 415	-32 965	-40 911	-1 286
Czechia	9 522	11 010	10 108	9 411	9 051	9 853	7 560	8 663	4 128	2 990	7 734	2 474
Denmark	5 437	-2 497	27 029	1 685	4 681	4 494	11 507	-3 971	36 425	9 960	27 371	3 791
Estonia	1 277	1 426	3 083	3 419	-832	1 205	253	-46	1 891	239	-600	874
Finland	2 864	-2 172	13 456	-1 579	13 806	9 445	-574	11 455	4 865	5 856	9 463	15 453
France	24 833	41 833	13 100	11 359	30 885	36 413	35 985	102 042	43 813	21 610	44 672	48 026
Germany	48 390	72 022	52 684	56 204	46 468	11 053	86 078	97 117	151 078	50 625	165 178	142 980
Greece	3 485	3 973	5 019	3 213	6 328	7 604	168	477	642	549	1 109	2 881
Hungary	3 515	6 460	4 256	7 047	7 559	8 571	1 220	3 364	3 180	4 428	4 014	4 241
Ireland	52 835	-12 017	149 433	76 572	-4 930	1 490	-2 048	5 154	32 083	-52 475	58 045	5 340
Italy	24 047	37 682	18 146	-23 622	-8 956	19 947	24 531	31 542	19 787	-2 118	27 965	-1 874
Latvia	746	964	925	1 005	3 322	1 508	141	207	-104	265	2 321	143
Lithuania	1 021	977	3 022	3 518	2 865	2 158	80	704	1 747	2 874	1 328	366
Luxembourg	-27 370	-83 336	163 718	9 839	25 123	-322 054	15 019	21 857	176 767	148 012	52 174	-264 952
Malta	3 407	4 024	3 778	3 921	4 116	4 240	7 249	7 401	6 960	7 235	7 499	6 690
Netherlands	20 589	99 381	-1 140	-86 507	-77 453	-67 340	18 598	-46 905	14 379	-189 474	23 507	-1 654
Poland	9 172	15 996	13 510	15 195	29 580	29 462	2 169	891	1 854	851	1 819	2 184
Portugal	6 928	7 181	12 251	7 683	9 615	9 099	-930	1 375	4 010	2 526	1 468	2 714
Romania	5 419	6 219	5 791	3 432	10 574	11 273	-97	379	363	53	141	1 135
Slovakia	4 017	1 675	2 511	-2 404	59	2 905	1 325	322	43	348	389	433
Slovenia	898	1 384	1 463	220	1 773	1 622	338	281	610	519	1 303	336
Spain	23 503	58 063	17 842	17 948	21 957	34 811	38 215	37 944	26 196	38 124	751	39 443
Sweden	15 264	5 269	8 761	21 514	21 133	45 963	28 839	20 852	16 286	26 135	27 033	62 253
Other Europe	255 266	13 710	34 248	16 914	-101 670	18 178	203 113	195 906	884	-102 043	96 675	128 116
Albania	1 149	1 290	1 288	1 108	1 234	1 434	26	83	128	88	63	163
Belarus	1 279	1 421	1 293	1 398	1 238	1 603	70	50	16	88	-71	173
Bosnia and Herzegovina	492	581	458	429	587	661	79	2	35	62	44	43
Iceland	-41	-381	-225	-928	153	620	-208	76	479	-427	-30	-231
Moldova, Rep. of	152	297	509	150	410	587	13	38	40	-2	28	51
Montenegro	559	490	416	532	699	877	11	109	75	-5	11	53
North Macedonia	205	725	446	230	556	794	2	12	40	53	98	88
Norway	-5 849	226	16 715	-8 229	1 749	-3 436	-2 220	11 408	12 524	9 302	18 838	10 119
Russian Federation	25 954	13 228	32 076	10 410	38 639	-18 681	34 153	35 820	22 024	6 778	64 072	10 440
Serbia	2 878	4 091	4 270	3 469	4 590	4 646	147	363	294	112	264	112
Switzerland	128 120	-101 148	-83 218	-50 252	-88 169	13 311	28 338	65 058	-47 404	-40 042	-71 481	-23 025
Ukraine	3 727	4 732	6 017	-36	7 320	848	281	-127	842	22	-198	344
United Kingdom	96 354	87 837	53 918	58 237	-71 174	14 093	142 373	82 961	11 717	-78 140	84 918	129 602
North America	331 723	240 896	280 473	122 766	453 439	337 690	403 968	-99 357	97 835	246 900	446 932	452 273
Canada	22 767	37 662	50 544	26 884	65 659	52 633	76 188	58 049	77 492	42 438	96 974	79 277
United States	308 956	203 234	229 929	95 882	387 780	285 057	327 780	-157 406	20 343	204 462	349 958	372 996
Other developed economies	92 710	113 621	83 917	60 158	93 093	147 400	214 267	197 456	286 309	141 494	224 029	354 309
Australia	46 114	67 568	38 886	13 583	20 899	61 629	7 800	7 825	9 960	6 035	3 401	116 562
Israel	16 893	21 515	17 363	23 109	21 486	27 760	7 624	6 087	8 690	4 425	9 456	9 241
Japan	9 356	9 963	13 755	10 703	24 652	32 509	164 588	144 982	232 627	95 666	146 782	161 470
New Zealand	2 723	2 298	4 273	3 886	3 993	7 539	227	377	-169	547	-1 584	612
Republic of Korea	17 913	12 183	9 634	8 765	22 060	17 996	34 069	38 220	35 239	34 832	66 001	66 408
Bermuda	-288	95	5	112	2	-33[c]	-42	-35	-38	-11	-27	16[c]
Developing economies[a]	701 705	697 237	709 114	646 522	880 894	916 418	447 709	376 938	398 393	381 921	484 893	458 890
Africa	40 358	44 171	45 962	39 195	79 583	44 929	11 272	8 108	4 965	1 140	3 149	5 817
North Africa	13 275	15 407	13 550	9 800	9 509	15 038	1 370	2 269	1 727	356	994	1 108
Algeria	1 232	1 475	1 382	1 143	870	89	-18	854	31	15	-52	71
Egypt	7 409	8 141	9 010	5 852	5 122	11 400	199	324	405	327	367	342
Libya	..	..	..	..	..	..	110	276	377	-487	-55[c]	50[c]
Morocco	2 686	3 559	1 720	1 419	2 266	2 141	1 021	782	893	458	644	615
South Sudan	1	60	-232	18[c]	68[c]	122[c]	..	..	..	..	..	..
Sudan	1 065	1 136	825	717	523	574	..	..	..	..	..	..

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Annex table 1. FDI flows, by region and economy, 2017–2022 (Continued)

Region/economy	FDI inflows						FDI outflows					
	2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022
Tunisia	881	1 036	845	652	660	713	57	34	22	43	35	30
Other Africa	27 084	28 764	32 412	29 395	70 074	29 891	9 902	5 839	3 238	785	2 155	4 708
West Africa	10 381	8 044	11 389	8 857	12 947	8 454	1 222	1 104	1 277	2 112	2 454	1 029
Benin	201	194	218	174	346	267	32	10	27	22	43	28
Burkina Faso	3	268	163	-102	-80	121	10	68	16	-7	-43	21
Cabo Verde	111	103	123	68	104	136[c]	16	-14	-13	-8	-7	-10[c]
Côte d'Ivoire	975	620	936	713	1 377	1 584	676	145	120	1	285	436
Gambia	18	52	71	190	249	236	2	0.5	-2	-3	-3	2[c]
Ghana	3 239	2 908	3 292	1 333	2 414	1 473	16	81	588	542	192	351[c]
Guinea	578	353	44	176	198	139[c]	1	-0.3	1	2	-3	0.1[c]
Guinea-Bissau	16	21	72	21	19	22	0.3	-0.4	0.4	0.3	1	0.1
Liberia	248	129	87	87	46[c]	73[c]	54[c]	84[c]	102[c]	80[c]	91[c]	91[c]
Mali	563	467	721	537	640	253	15	0.3	1	1	56	9
Mauritania	587	773	887	955	1 064	1 148[c]	10[c]	4[c]	5[c]	6[c]	5[c]	3[c]
Niger	339	466	717	361	595	581	29	39	32	15	39	40
Nigeria	2 413	775	2 305	2 385	3 313	-187	311	566	285	1 473	1 818	-67
Senegal	588	848	1 065	1 846	2 588	2 586	82	53	71	99	52	182
Sierra Leone	414	250	342	173	212	250[c]	..	..	..	..	..	..
Togo	89	-183	346	-59	-136	-227	-33	70	43	-112	-71	-56
Central Africa	8 946	9 353	8 858	9 338	6 488	6 006	291	290	257	262	289	558
Burundi	0.3	..	1	9	10	13	-	..	1	1	1	2
Cameroon	814	762	1 027	675	964	889[c]	22	110	127	84	71	94[c]
Central African Republic	7[c]	18[c]	26[c]	2[c]	5[c]	24[c]	..	..	..	..	..	..
Chad	363[c]	461[c]	567[c]	558[c]	705[c]	614[c]	..	..	..	..	..	..
Congo	4 417	4 315	3 366[c]	4 016[c]	532[c]	532[c]	45	14[c]	23[c]	27[c]	25[c]	25[c]
Congo, Democratic Republic of the	1 340	1 617	1 488	1 647	1 870	1 846	292	209	134	149	192	436
Equatorial Guinea	305[c]	396[c]	452[c]	410[c]	460[c]	459[c]	..	..	..	..	..	..
Gabon	1 314[c]	1 379[c]	1 553[c]	1 717[c]	1 529[c]	1 105[c]	-84[c]	-63[c]	-34[c]	..	..	..
Rwanda	356	382	354	274	399	399	16	18	5	..	..	..
Sao Tome and Principe	29	23	24	32	14	127	0.3	2	1	1	-	1
East Africa	8 779	7 868	7 652	6 329	8 433	8 726	-323	248	174	203	652	341
Comoros	4	6	4	4	4	4[c]	..	..	..	..	..	..
Djibouti	165	170	175	158	168	191[c]	..	..	..	..	..	..
Eritrea	55[c]	61[c]	-61[c]	-30[c]	-31[c]	-32[c]	..	..	..	..	..	..
Ethiopia	4 017	3 310	2 549	2 381	4 259	3 670	..	..	..	..	..	..
Kenya	1 404	1 139	1 098	717	463	759[c]	14	11	11	-7	410	138[c]
Madagascar	358	353	474	358	358	396[c]	106	118	102	119	114	155[c]
Mauritius	480	461	444	225	253	252[c]	89	98	58	16	86	19[c]
Seychelles	187	-66	30	165	225	212	-532	20	4	75	42	28
Somalia	369[c]	408[c]	447[c]	534[c]	601[c]	636[c]	..	..	..	..	..	..
Uganda	803	1 055	1 274	874	1 100	1 526	0.3	0.3	0.3	0.3	0.3	0.4
United Republic of Tanzania	938	972	1 217	944	1 033	1 111	..	..	..	..	..	..
Southern Africa	-1 023	3 499	4 514	4 871	42 206	6 704	8 712	4 196	1 529	-1 793	-1 241	2 780
Angola	-7 397	-6 456	-4 098	-1 866	-4 355	-6 142	1 352	6	-2 349	91	-1 057	41
Botswana	261	286	94	32	-319	216	-1	82	-20	-68	-33	-42
Eswatini	-56	36	130	36	117	21[c]	65	-11	22	-13	60	-22[c]
Lesotho	42	41	35	28	-12	-8	..	..	..	..	..	..
Malawi	90	77	55	252	129	189	-7	-102	23	-154	28	30
Mozambique	2 293	2 703	2 212	3 035	5 102	1 975	26	-25	-31	153	194	564
Namibia	280	209	-179	-146	697	945	-66	98	9	52	17	9
South Africa	2 008[b]	5 450[b]	5 125[b]	3 062[b]	40 948[b]	9 051[b]	7 371[b]	4 076[b]	3 147[b]	-1 951[b]	22[b]	2 571[b]
Zambia	1 108	408	860	245	-352	116	-72	45	696	64	-504	-388
Zimbabwe	349	745	280	194	250	342	42	27	32	33	32	17
Asia	504 352	497 309	503 480	516 465	662 137	661 807	400 100	361 194	346 195	382 709	445 323	396 128
East and South-East Asia	410 728	403 426	399 020	403 447	546 333	546 129	345 955	301 551	293 456	335 705	371 099	354 849
East Asia	253 391	254 455	232 335	284 850	333 522	323 561	257 442	243 603	203 040	267 089	289 923	268 947
China	136 315	138 306	141 225	149 342	180 957	189 132	158 288	143 037	136 908	153 710	178 819	146 503
Hong Kong, China	110 685	104 246	73 714	134 710	140 186	117 725[d]	86 704	82 201	53 202	100 715	96 428	103 588[d]
Macao, China	1 509	2 613	6 683	-6 980	4 771	4 000[c]	864	270	1 041	1 137	3 221	2 500[c]
Taiwan Province of China	3 401[b]	7 114[b]	8 240[b]	6 053[b]	5 416[b]	10 189[b]	11 537[b]	18 058[b]	11 763[b]	11 500[b]	11 341[b]	16 280[b]
Democratic Republic of Korea	-13[c]	2[c]	30[c]	6[c]	18[c]	10[c]	..	..	..	..	..	..

Annex table 1. FDI flows, by region and economy, 2017–2022 (Continued)

Region/economy	FDI inflows						FDI outflows					
	2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022
Mongolia	1 494	2 174	2 443	1 719	2 173	2 504	49	37	127	26	113	76
South-East Asia	157 336	148 971	166 685	118 596	212 812	222 568	88 513	57 948	90 416	68 616	81 176	85 902
Brunei Darussalam	460	517	375	577	205	-292	..	..	..	..	..	..
Cambodia	2 786	3 213	3 663	3 625	3 483	3 579	115	124	102	127	92	150
Indonesia	20 579	20 563	23 883	18 591	21 131	21 968	2 077	8 053	3 352	4 448	3 845	6 848
Lao People's Democratic Republic	1 686	1 358	756	968	1 072	528[c]	10	..	..	..	..	..
Malaysia	9 399	7 618	7 813	3 160	12 173	16 940	5 638	5 114	6 231	2 419	4 676	13 322
Myanmar	4 409	2 892	2 509	1 907	2 067	1 239	..	..	..	..	..	..
Philippines	10 256[b]	9 949[b]	8 671[b]	6 822[b]	11 983[b]	9 200[b]	3 305[b]	4 116[b]	3 351[b]	3 562[b]	2 251[b]	3 900[b]
Singapore	85 369	73 561	97 484	72 903	131 151	141 211	62 706[b]	22 811[b]	66 102[b]	38 393[b]	50 802[b]	50 788[b]
Thailand	8 285	13 752	5 519	-4 951	14 641	10 034	14 182	17 132	10 164	18 593	19 152	8 218
Timor-Leste	7	48	-106	-805	-755	262	..	..	650	694	..	..
Viet Nam	14 100	15 500	16 120[b]	15 800[b]	15 660[b]	17 900[b]	480	598	465[b]	380[b]	358[b]	2 674[b]
South Asia	51 644	52 262	59 090	71 050	52 683	57 370	11 493	11 630	13 275	11 206	17 716	16 042
Afghanistan	52[b]	119[b]	23	13[b]	21[c]	..	11[b]	39[b]	26	37[b]	31[c]	..
Bangladesh	2 152	3 613	2 874	2 564	2 896	3 480	142	23	28	12	92	53
Bhutan	-7	6	3	1	1	11[c]	..	..	..	..	..	..
India	39 904	42 156	50 558	64 072	44 763	49 355	11 141	11 447	13 144	11 109	17 253	14 543
Iran (Islamic Republic of)	5 019	2 373	1 508	1 342	1 425[c]	1 500[c]	76	75[c]	85[c]	78[c]	82[c]	100[c]
Maldives	458[b]	576[b]	961[b]	441[b]	643[b]	722[b]	..	..	..	..	..	..
Nepal	198	67	185	126	196	65	..	..	..	..	..	..
Pakistan	2 496	1 737	2 234	2 057	2 147	1 339	52	-21	-85	-45	242	1 331
Sri Lanka	1 373[b]	1 614[b]	743[b]	434[b]	592[b]	898[b]	72[b]	68[b]	77[b]	15[b]	17[b]	15[b]
West Asia	33 183	34 989	37 147	35 429	55 911	48 268	41 599	49 019	42 053	37 920	55 015	27 487
Armenia	253	267	100	59	366	998	29	7	-133	-27	25	50
Azerbaijan	2 867	1 403	1 504	507	-1 708	-4 474	2 564	1 761	2 432	825	77	172
Bahrain	1 426	1 654	1 548	1 021	1 779	1 951	229	111	-197	-205	64	1 948
Georgia	1 991	1 352	1 352	590	1 242	2 000	269	340	282	23	322	348
Iraq	-5 032	-4 885	-3 508	-2 859	-2 637	-2 088	78	188	194	147	135	238
Jordan	2 030	955	730	760	622	1 137	7	-8	43	26	16	-16
Kuwait	348	204	351	240	567	758	9 013	3 715	-2 696	7 932	4 666	-25 603
Lebanon	2 522	2 658	1 905	1 607	605	458[c]	1 317	631	345	29	-1 366	99[c]
Oman	2 988	6 455	4 237	2 889	4 021	3 716[c]	2 424	718	-466	-697	-398	-520[c]
Qatar	986	-2 186	-2 813	-2 434	-1 093	76	1 695	3 523	4 450	2 730	160	2 384
Saudi Arabia	1 419	4 247	4 563	5 399	19 286	7 886	7 280	19 252	13 547	4 911	23 860	18 826
Syrian Arab Republic	..	..	..	..	..	..	..	..	..	..	..	..
Türkiye	11 113	12 511	9 543	7 686	11 840	12 881	2 626	3 666	2 966	3 230	4 966	4 715
United Arab Emirates	10 354	10 385	17 875	19 884	20 667	22 737	14 060	15 079	21 226	18 937	22 546	24 833
Yemen	-270[c]	-282[c]	-371[c]	..	..	..	6[c]	4[c]	3[c]	..	..	..
State of Palestine	188	252	132	80	353	233	3	31	56	59	-58	13
Central Asia	8 797	6 633	8 223	6 539	7 210	10 041	1 052	-1 006	-2 589	-2 122	1 493	-2 250
Kazakhstan	4 714	3 898	3 284	3 670	3 337	6 108	913	-1 095	-2 620	-2 206	1 441	-1 808
Kyrgyzstan	-107	144	404	-402	226	291	-29	5	5	2	2	-458
Tajikistan	307[b]	360[b]	364[b]	107[b]	84[b]	174[b]	159[b]	82[b]	23[b]	70[b]	48[b]	12[b]
Turkmenistan	2 086[c]	1 607[c]	1 854[c]	1 436[c]	1 287[c]	936[c]	..	..	..	..	..	..
Uzbekistan	1 797[b]	625[b]	2 316[b]	1 728[b]	2 276[b]	2 531[b]	9[b]	2[b]	3[b]	11[b]	3[b]	4[b]
Latin America and the Caribbean[a]	156 052	154 464	158 143	89 857	137 898	208 454	36 604	8 072	48 372	-1 011	38 021	59 023
South America	106 361	106 690	110 190	53 374	92 776	160 058	32 177	-1 156	36 456	-3 752	37 782	44 216
Argentina	11 517	11 717	6 649	4 723	6 782	15 087	1 156	1 726	1 523	1 292	1 363	2 323
Bolivia (Plurinational State of)	712	302	-217	-1 129	584	-26	80	-84	48	-111	91	-336
Brazil	66 585	59 802	65 386	28 318	50 651	86 050	19 040	-16 336	19 031	-12 935	20 451	25 242
Chile	6 695	13 031	14 403	10 833	13 194	19 786	3 992	6 934	11 169	5 783	11 207	11 697
Colombia	13 701	11 299	13 989	7 459	9 381	17 048	3 690	5 126	3 153	1 686	3 181	3 720
Ecuador	630	1 389	979	1 095	647	788	..	..	..	..	..	..
Guyana	212	1 231	1 695	2 086	4 468	4 408	-	-	17	14	15	5
Paraguay	340	164	332	110	192	474	..	..	..	..	..	..
Peru	6 530	6 761	6 241	-417	5 755	11 656	538	98	1 046	423	64	359
Suriname	98	119	-8	0.3	-124	7	..	..	..	..	..	..

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Annex table 1. FDI flows, by region and economy, 2017–2022 (Concluded)

Region/economy	FDI inflows						FDI outflows					
	2017	2018	2019	2020	2021	2022	2017	2018	2019	2020	2021	2022
Uruguay	-590	-11	2 018	753	2 241	3 839	1 447	718	627	-263	477	564
Venezuela (Bolivarian Republic of)	-68	886	-1 278	-456	-996	941[c]	2 234	661	-159	358	932	391[c]
Central America	45 327	45 059	44 008	32 577	42 562	44 480	4 378	8 941	11 548	2 736	-357	13 615
Belize	24	118	94	76	125	134	0.3	1	2	4	2	1
Costa Rica	2 778	2 487	2 812	1 763	3 231	3 045	126	53	117	118	85	104
El Salvador	889	826	636	293	314	-99	0.2	-	0.4	22	6	2
Guatemala	1 130	981	976	935	3 462	1 352	196	201	180	149	476	389
Honduras	1 176	961	498	419	739	823	141	66	3	46	357	143
Mexico	34 012	34 097	34 567	28 195	31 543	35 292	3 988	8 365	10 640	2 265	-1 594	12 849
Nicaragua	1 035	838	503	747	1 220	1 294	65	75	59	40	14	13
Panama	4 282	4 751	3 921	150	1 927	2 640[c]	-138	180	547	92	298	114[c]
Caribbean[a]	4 364	2 715	3 945	3 905	2 560	3 916	49	287	368	6	596	1 192
Antigua and Barbuda	151[b]	205[b]	128[b]	77[b]	245[b]	196[b]	12[b]	-1[b]	-11[b]	2[b]	-4[b]	-11[b]
Bahamas	901	947	611	897	1 185	1 255	151	117	148	157	66	226
Barbados	206	242	215	262	239[c]	200[c]	-28	9	28	8	18[c]	15[c]
Dominica	23[b]	78[b]	63[b]	22[b]	34[b]	28[b]	-1[b]	0.1[b]	0.1[b]	-0.4[b]	-[b]	-[b]
Dominican Republic	3 571	2 535	3 021	2 560	3 197	4 010	27	209	-192	-99	153	-49
Grenada	153[b]	186[b]	204[b]	136[b]	140[b]	160[b]	4[b]	18[b]	24[b]	-19[b]	-2[b]	6
Haiti	375	105	75	25	51	39	..	..	..	..	..	..
Jamaica	889	775	665	265	320	360[c]	34	13	446	7	56	80[c]
Saint Kitts and Nevis	48[b]	40[b]	62[b]	6[b]	26[b]	16[b]	6[b]	29[b]	12[b]	3[b]	-2[b]	23[b]
Saint Lucia	90[b]	46[b]	76[b]	48[b]	86[b]	67[b]	-6[b]	-9[b]	45[b]	-6[b]	-27[b]	41[b]
Saint Vincent and the Grenadines	165[b]	40[b]	69[b]	65[b]	160[b]	86[b]	21[b]	7[b]	5[b]	2[b]	2[b]	6[b]
Trinidad and Tobago	-471	-700	184	1 056	-1 008	-493[c]	-12	65	114	98	387	1 160[c]
Anguilla	97[b]	212[b]	148[b]	77[b]	114[b]	141[b]	-4[b]	21[b]	7[b]	1[b]	2[b]	3[b]
Aruba	88	110	-136	137	143	253	9	5	-1	1	4	87
British Virgin Islands	39 610[c]	34 390[c]	39 103[c]	39 620[c]	39 361[c]	38 119[c]	50 904[c]	41 587[c]	44 154[c]	42 280[c]	43 217[c]	42 809[c]
Cayman Islands	15 173[c]	20 681[c]	28 165[c]	23 621[c]	25 893[c]	24 590[c]	4 079[c]	8 261[c]	31 630[c]	10 835[c]	21 232[c]	17 990[c]
Curaçao	173	..	203	156	146	141[c]	-145	..	-11	7	3	13[c]
Montserrat	3[b]	3[b]	1[b]	3[b]	2[b]	2[b]	..	..	..	..	..	..
Sint Maarten	64	-48	74	22	28	13[c]	2	4	24	12	29	4[c]
Oceania	943	1 293	1 529	1 004	1 276	1 227	-266	-437	-1 139	-917	-1 599	-2 077
Cook Islands	2[b]	12[b]	9[b]	5[b]	-2[b]	4[c]	0.3[b]	0.3[b]	0.3[b]	0.3[b]	0.3[b]	0.3[c]
Fiji	386	471	321	241	407	104	-2	-4	-36	14	32	16
Kiribati	1	-1	-1	3	1	1[c]	0.1	0.1	0.1	0.1	0.1	0.1[c]
Marshall Islands	6	10	4	3	0.5	3[c]	..	..	..	..	..	..
Palau	45	51	54	42	33	58[c]	..	..	..	..	..	..
Papua New Guinea	-180[b]	306[b]	335[b]	112[b]	-11[b]	327[b]	-369[b]	-578[b]	-1 211[b]	-990[b]	-1 691[b]	-2 162[b]
Samoa	9	17	-2	4	9	5	0.1	-	4	2	1	-0.1
Solomon Islands	43	25	33	9	28	41	7	9	4	3	5	2
Tonga	14	15	2	4	0.3	3	1	1	1	1	-0.1	0.4
Tuvalu	0.3[c]	0.3[c]	0.3[c]	0.1[c]	0.2[c]	..	..	..	..	..	..	..
Vanuatu	40	37	37	25	43[c]	-4[c]	1	1	0.2	2	1[c]	2
French Polynesia	90	6	13	-16	-26	-9[c]	15	38	21	-3	13	6[c]
New Caledonia	489	345	723	572	794	696[c]	79	96	76	55	40[c]	57[c]
Other country groupings												
Least developed countries (LDCs)[e]	21 081	21 605	22 572	22 965	26 397	22 043	2 208	797	-308	1 400	-592	1 367
Landlocked developing countries (LLDCs)[f]	24 996	21 598	21 900	14 989	18 589	19 698	3 908	969	801	-1 448	1 593	-2 232
Small island developing States (SIDS)[g]	7 545	6 168	7 228	5 853	5 632	7 809	-211	572	1 294	951	807	1 559

Source: UNCTAD, FDI/MNE database (www.unctad.org/fdistatistics).

[a] Excluding financial centres in the Caribbean and special-purpose entities in reporting countries.

[b] Asset/liability basis.

[c] Estimates.

[d] Directional basis calculated from asset/liability basis.

[e] Least developed countries include Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, the Central African Republic, Chad, the Comoros, the Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, the Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, the Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, the Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, the Sudan, Timor-Leste, Togo, Tuvalu, Uganda, the United Republic of Tanzania, Yemen and Zambia.

[f] Landlocked developing countries include Afghanistan, Armenia, Azerbaijan, Bhutan, the Plurinational State of Bolivia, Botswana, Burkina Faso, Burundi, the Central African Republic, Chad, Eswatini, Ethiopia, Kazakhstan, Kyrgyzstan, the Lao People's Democratic Republic, Lesotho, North Macedonia, Malawi, Mali, Mongolia, Nepal, the Niger, Paraguay, Rwanda, the Republic of Moldova, South Sudan, Tajikistan, Turkmenistan, Uganda, Uzbekistan, Zambia and Zimbabwe.

[g] Small island developing States include Antigua and Barbuda, the Bahamas, Barbados, Cabo Verde, the Comoros, Dominica, the Dominican Republic, Fiji, Grenada, Jamaica, Kiribati, Maldives, the Marshall Islands, Mauritius, the Federated States of Micronesia, Nauru, Palau, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Príncipe, Seychelles, Solomon Islands, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

Annex table 2. FDI stock, by region and economy, 2000, 2010, 2021 and 2022 (Millions of dollars)

Region/economy	FDI inward stock				FDI outward stock			
	2000	2010	2021	2022	2000	2010	2021	2022
World[a]	7 377 201	19 855 669	47 079 311	44 252 759	7 408 902	20 450 169	42 667 167	39 852 940
Developed economies	5 860 038	13 788 303	32 816 197	29 093 016	6 740 421	17 546 481	33 565 228	30 267 335
Europe	2 491 244	8 381 352	16 719 061	15 604 111	3 193 644	10 228 044	18 346 618	16 797 022
European Union	1 882 785	5 902 591	12 098 672	11 170 459	1 967 112	6 952 372	13 993 717	12 726 307
Austria	31 165	160 615	212 889	203 974	24 821	181 638	259 378	254 326
Belgium	..	473 358	555 736	523 855	..	431 613	677 282	673 680
Bulgaria	2 704	44 970	57 989	57 378	67	2 583	3 507	3 460
Croatia	2 785	32 918	39 200	38 314	952	4 969	6 462	6 796
Cyprus	2 846	260 132	425 018	58 262	557	242 556	415 640	25 447
Czechia	21 644	128 504	200 468	202 679	738	14 923	55 472	55 705
Denmark	73 574	96 136	142 662	142 569 [c]	73 100	163 133	272 400	260 195 [c]
Estonia	2 645	15 551	29 184	29 975	259	5 545	10 230	10 876
Finland	24 273	86 698	86 292	99 901	52 109	137 663	141 608	149 636
France	184 215	630 710	944 763	896 806	365 871	1 172 994	1 525 794	1 489 811
Germany	470 938	955 881	1 057 990	1 007 533 [c]	483 946	1 364 565	2 031 617	1 929 024 [c]
Greece	14 113	35 026	42 112	49 245	6 094	42 623	13 963	15 855
Hungary	22 870	91 015	104 788	104 254	1 280	23 612	39 674	41 681
Ireland	127 089	285 575	1 394 868	1 408 749	27 925	340 114	1 439 308	1 184 351
Italy	122 533	328 058	449 962	448 493	169 957	491 208	561 562	532 121
Latvia	1 691	10 869	24 043	24 094	19	931	6 019	5 679
Lithuania	2 334	15 455	26 215	27 541	29	2 647	6 698	6 779
Luxembourg	..	172 257	1 515 850	1 155 324	..	187 027	1 878 096	1 626 463
Malta	2 263	129 770	231 499	225 185	193	60 596	65 769	61 043
Netherlands	243 733	588 077	2 744 450	2 683 600	305 461	968 105	3 472 501	3 249 395
Poland	33 477	187 602	270 719	269 840	268	16 407	27 021	30 189
Portugal	34 224	90 900	177 801	177 329	19 417	52 497	61 990	62 904
Romania	6 953	68 699	113 586	115 980	136	2 327	3 163	4 079
Slovakia	6 970	50 328	59 367	57 375	555	3 457	5 418	5 428
Slovenia	2 389	10 667	20 836	21 103	772	8 147	8 881	8 881
Spain	156 348	628 341	782 903	787 311	129 194	653 236	538 500	550 793
Sweden	93 791	324 478	387 483	353 791	123 618	377 258	465 762	481 710
Other Europe	608 459	2 478 760	4 620 389	4 433 652	1 226 532	3 275 672	4 352 901	4 070 715
Albania	247	3 255	10 081	11 397	..	154	830	978
Belarus	1 306	9 904	14 657	16 055	24	205	1 408	1 317
Bosnia and Herzegovina	450	6 709	9 432	9 323	..	211	700	705
Iceland	497	11 784	8 103	8 314	663	11 466	5 072	4 194
Montenegro	..	4 231	5 360	5 681	..	..	139	215
North Macedonia	540	4 351	7 133	7 479	16	100	141	178
Norway	30 265	177 318	211 593	145 513	34 026	188 996	164 839	188 035
Republic of Moldova	449	2 897	4 781	4 901	23	90	325	379
Russian Federation	29 738	464 228	497 690	379 127	19 211	336 355	374 612	315 320
Serbia	..	22 299	52 223	53 523	..	1 960	4 527	4 471
Switzerland	101 635	648 092	1 038 359	1 036 890	232 202	1 043 199	1 423 046	1 351 872
Ukraine	3 875	52 872	65 746	51 118	170	6 548	-295	-867
United Kingdom	439 458	1 068 187	2 689 966	2 698 563	940 197	1 686 260	2 376 902	2 203 114
North America	3 108 255	4 406 182	14 498 716	11 901 532	3 136 637	5 808 053	11 921 570	10 081 146
Canada	325 020	983 889	1 442 334	1 439 848	442 623	998 466	2 155 634	2 033 032
United States	2 783 235	3 422 293	13 056 382	10 461 684	2 694 014	4 809 587	9 765 936	8 048 114
Other developed economies	260 539	1 000 769	1 598 420	1 587 373	410 140	1 510 383	3 297 040	3 389 166
Australia	121 686	527 728	755 178	758 032	92 508	449 740	630 360	660 926
Israel	20 426	60 086	226 590	235 151	9 091	67 893	106 731	113 383
Japan	50 323	214 880	241 125	225 367	278 445	831 076	1 935 653	1 948 555
New Zealand	24 101	59 738	92 768	93 854	8 491	16 717	19 107	18 604
Bermuda	265 [c]	2 837	2 674	2 642	108 [c]	925	114	129
Developing economies[a]	1 517 163	6 067 365	14 263 114	15 159 744	668 481	2 903 688	9 101 939	9 585 605
Africa	153 062	623 424	1 030 978	1 052 527	39 815	137 363	305 229	283 312
North Africa	45 590	201 109	331 636	334 462	3 199	25 770	39 946	40 407
Algeria	3 379 [c]	19 545	33 977	34 066	205 [c]	1 505	2 699	2 770
Egypt	19 955	73 095	137 543	148 888	655	5 448	8 848	9 190
Libya	471 [c]	16 334	18 462 [c]	18 462 [c]	1 903 [c]	16 615	20 400 [c]	20 450 [c]
Morocco	8 842 [c]	45 082	72 994	63 278	402 [c]	1 914	7 326	7 314

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Annex table 2. FDI stock, by region and economy, 2000, 2010, 2021 and 2022 (Continued)

Region/economy	FDI inward stock				FDI outward stock			
	2000	2010	2021	2022	2000	2010	2021	2022
Sudan	1 398	15 690	29 728	30 301 [c]	..	..	..	..
Tunisia	11 545	31 364	38 933	39 467	33	287	673	683
Other Africa	107 472	422 315	699 342	718 066	36 616	111 594	265 283	242 905
West Africa	33 010	109 968	203 696	210 284	6 381	18 090	26 491	27 320
Benin	213	604	2 945	3 044	11	21	349	357
Burkina Faso	28	354	2 462	2 441	0.4	8	376	375
Cabo Verde	192 [c]	4 745	2 373	2 291	..	2	86	91
Côte d'Ivoire	2 483	6 978	12 816	13 675	9	94	1 310	1 676
Gambia	216	323	915	1 151	..	..	..	..
Ghana	1 554 [c]	10 080	41 021	42 493 [c]	..	83	1 840	2 191 [c]
Guinea	263 [c]	486	5 112	5 252 [c]	12 [c]	144	97	97 [c]
Guinea-Bissau	38	63	311	315	..	5	11	11
Liberia	3 247 [c]	10 206	8 929 [c]	9 002 [c]	2 188	4 714	4 919 [c]	5 010 [c]
Mali	132	1 964	6 388	6 272	1	18	290	282
Mauritania	146 [c]	2 372 [c]	11 013 [c]	12 161 [c]	4 [c]	28 [c]	104 [c]	107 [c]
Niger	45	2 251	8 122	8 238	1	9	406	422
Nigeria	23 786	66 797	87 525	88 202	4 144	12 576	13 581	13 632
Senegal	295	1 699	9 670	11 729	22	263	977	1 104
Sierra Leone	284 [c]	482	2 438 [c]	2 688 [c]	..	..	..	..
Togo	87	565	1 658	1 331	-10	126	2 146	1 964
Central Africa	5 053	39 227	111 115	117 112	1 651	2 217	4 242	4 721
Burundi	47 [c]	13	242 [c]	255 [c]	2 [c]	2	6 [c]	8 [c]
Cameroon	917 [c]	3 099 [c]	5 558	6 446 [c]	1 252 [c]	971 [c]	706	801 [c]
Central African Republic	104	511	691 [c]	715 [c]	43	..	..	..
Chad	576 [c]	3 594 [c]	7 758 [c]	8 372 [c]	..	..	..	..
Congo	1 893 [c]	9 261 [c]	33 494 [c]	34 026 [c]	40 [c]	34 [c]	132 [c]	157 [c]
Democratic Republic of the Congo	617	9 368	29 149	30 995	34	229	3 241	3 677
Equatorial Guinea	1 060 [c]	9 413 [c]	15 434 [c]	15 892 [c]	..	..	..	..
Gabon	-227 [c]	3 287 [c]	15 486 [c]	16 591 [c]	280 [c]	946 [c]	79 [c]	..
Rwanda	55	422	2 938	3 327	..	13	74	74
Sao Tome and Principe	11 [c]	260 [c]	366	493 [c]	..	21 [c]	4	5 [c]
East Africa	7 202	37 754	98 555	106 988	387	1 474	1 200	1 544
Comoros	21 [c]	60 [c]	142 [c]	145 [c]	..	..	..	..
Djibouti	40 [b]	..	..	..	..	..	..	..
Eritrea	337 [c]	666 [c]	1 061 [c]	1 029 [c]	..	..	..	..
Ethiopia	941	4 206	31 611	35 281	..	..	..	..
Kenya	932 [c]	4 967	10 473 [c]	11 232 [c]	115 [c]	62	495 [c]	633 [c]
Madagascar	141	4 383	8 696 [c]	9 092 [c]	9 [c]	193	1 019 [c]	1 174 [c]
Mauritius	683	4 658	5 355 [c]	5 607 [c]	132	864	711 [c]	731 [c]
Seychelles	515	2 960	2 846	2 955	130	290	-1 198	-1 168
Somalia	4 [c]	566 [c]	4 287 [c]	4 923 [c]	..	..	..	..
Uganda	807	5 575	16 563	18 089	..	66	174	174
United Republic of Tanzania	2 781	9 712	17 523 [c]	18 634 [c]	..	..	..	..
Southern Africa	62 208	235 365	285 975	283 682	28 198	89 813	233 350	209 320
Angola	7 977	32 458	20 861	14 719	-8	1 870	5 218	5 259
Botswana	1 827	3 351	5 011	5 211	517	1 007	1 164	1 006
Eswatini	536	927	4 130	4 151 [b]	87	91	604	582 [b]
Lesotho	330	929	1 024	958	..	..	..	..
Malawi	358	963	1 605	1 361	-5	45	238	224
Mozambique	1 249	4 331	50 068	54 114	1	3	7	7
Namibia	1 276	3 595	7 216	7 848	45	722	963	1 304
South Africa	43 451	179 565 [b]	174 783 [b]	173 584 [b]	27 328	83 249 [b]	223 830 [b]	199 983 [b]
Zambia	3 966 [c]	7 433	15 120	15 236 [c]	..	2 531	619	231 [c]
Zimbabwe	1 238	1 815	6 158	6 499	234	297	707	724
Asia	1 023 690	3 879 019	10 846 116	11 495 416	575 247	2 348 138	7 996 160	8 454 259
East and South-East Asia	908 302	2 888 852	9 102 393	9 689 402	557 764	2 059 331	7 188 115	7 563 034
East Asia	650 700	1 738 193	5 786 523	6 125 287	473 708	1 455 117	5 242 384	5 462 891
China	193 348	586 882	3 633 317	3 822 449 [c]	27 768 [c]	317 211	2 785 150	2 931 653 [c]
Hong Kong, China	435 417	1 067 520	1 957 365	2 090 558 [d]	379 285	943 938	1 999 451	2 054 592 [d]
Macao, China	2 801 [c]	13 603	41 555	45 555 [c]	..	550	12 442	14 942 [c]
Taiwan Province of China	18 875	61 508 [b]	127 065 [b]	137 254 [c]	66 655	190 803 [b]	444 516 [b]	460 796 [c]

/...

Annex table 2. FDI stock, by region and economy, 2000, 2010, 2021 and 2022 (Continued)

Region/economy	FDI inward stock				FDI outward stock			
	2000	2010	2021	2022	2000	2010	2021	2022
Democratic Republic of Korea	77 [c]	236 [c]	939 [c]	949 [c]	..	..	..	..
Mongolia	182	8 445	26 282	28 521	..	2 616	825	907
South-East Asia	257 603	1 150 659	3 315 869	3 564 115	84 056	604 214	1 945 731	2 100 143
Brunei Darussalam	3 868 [c]	4 140	7 302	6 798	..	..	..	..
Cambodia	1 580	9 026	41 025	44 537	193	331	1 268	1 418
Indonesia	25 060	160 735	259 697	262 920	6 940	6 672	96 615	103 941
Lao People's Democratic Republic	588 [c]	1 888 [c]	12 208 [c]	12 736 [c]	26 [c]	68 [c]	95 [c]	95 [c]
Malaysia	52 747	101 620	187 257	199 206	15 878	96 964	130 877	137 655
Myanmar	3 752 [c]	14 507	37 189	38 427	..	..	..	..
Philippines	13 762 [c]	25 896	111 526	112 965	1 032 [c]	6 710	65 593	67 280
Singapore	110 570	633 354 [b]	2 169 538 [b]	2 368 396 [b]	56 755	466 723 [b]	1 463 041 [b]	1 595 381 [b]
Thailand	30 944	142 334	296 270	306 163	3 232	24 418	176 372	179 828
Timor-Leste	..	155	1 286	1 495	..	94	0.1	-
Viet Nam	14 730 [c]	57 004 [c]	192 571 [c]	210 471 [c]	..	2 234 [c]	11 871 [c]	14 545 [c]
South Asia	30 743	269 143	654 708	650 103	2 761	100 441	216 180	231 707
Afghanistan	17 [c]	963	1 613 [c]	1 613 [c]	..	16	165 [c]	165 [c]
Bangladesh	2 162	6 072	21 582	21 158	68	98	390	400
Bhutan	4 [c]	204	409	419 [c]	..	..	..	..
India	16 339	205 580	514 112	510 719	1 733	96 901	208 096	222 557
Iran (Islamic Republic of)	2 597 [c]	28 953	60 136 [c]	61 636 [c]	411 [c]	1 713 [c]	4 139 [c]	4 239 [c]
Maldives	128 [c]	1 114 [c]	5 996 [c]	6 718 [c]	..	..	..	..
Nepal	72 [c]	239	1 934	2 040	..	..	..	..
Pakistan	6 919	19 828	32 543	31 924	489	1 362	1 869	2 813
Sri Lanka	2 505	6 190	16 384	13 877	60	351	1 522	1 534
West Asia	72 352	619 446	877 384	939 462	14 672	172 001	575 148	636 946
Armenia	513	4 405	5 629	7 124	-	150	519	571
Azerbaijan	1 791	14 253	34 320	29 436	1	5 790	26 692	26 858
Bahrain	5 906	15 154	33 484	35 436	1 752	7 883	19 007	20 955
Georgia	762	8 518	19 399	22 329	118	848	2 958	3 249
Iraq	-48	7 965	..	..	..	632	3 151	3 389
Jordan	3 135	21 899	37 305	38 380	44	473	697	681
Kuwait	608	11 884	15 531	15 091	1 428	28 189	35 399	46 821
Lebanon	14 233	44 285	70 083	70 540 [c]	352	6 831	14 636	14 735 [c]
Oman	2 577 [c]	14 987	45 844	49 560 [c]	..	2 796	5 113	4 593 [c]
Qatar	1 912	30 549	27 534	27 610 [c]	74	12 995	47 670	50 054 [c]
Saudi Arabia	17 577	176 378	261 061	268 947	5 285 [c]	26 528	151 499	167 483
Syrian Arab Republic	1 244	9 939 [c]	10 743 [c]	10 743	..	5	5 [c]	5 [c]
Türkiye	18 812	188 329	139 970	164 909	3 668	22 509	51 752	56 681
United Arab Emirates	1 069 [c]	63 869	171 563	194 300	1 938 [c]	55 560	215 047	239 880
Yemen	843 [c]	4 858 [c]	1 942 [c]	1 942 [c]	13 [c]	571 [c]	672 [c]	672 [c]
State of Palestine	1 418 [c]	2 176	2 976	3 116	..	241	332	318
Central Asia	12 293	101 577	211 631	216 449	49	16 365	16 717	22 573
Kazakhstan	10 078	82 648	152 763	154 183	16	16 212	15 640	22 066
Kyrgyzstan	432	1 698	3 896	3 768	33	2	609	23
Tajikistan	136	1 226	2 825	3 329	..	..	271	283
Turkmenistan	949 [c]	13 442 [c]	40 601 [c]	41 537 [c]	..	..	..	..
Uzbekistan	698 [c]	2 564 [b]	11 547 [c]	13 631 [c]	..	152 [b]	198 [c]	202 [c]
Latin America and the Caribbean[a]	338 557	1 550 229	2 355 235	2 580 077	53 170	417 359	798 554	845 948
South America	186 425	1 085 418	1 514 739	1 669 720	43 634	288 295	587 066	626 033
Argentina	67 601	85 591	99 890	116 710	21 141	30 328	42 452	44 832
Bolivia (Plurinational State of)	5 188	6 890	10 586	10 131	29	8	890	586
Brazil	..	640 330	729 577	815 627 [c]	..	149 333	302 252	327 494 [c]
Chile	45 753	160 904	242 201	256 064	11 154	61 126	131 009	135 558
Colombia	11 157	82 991	219 498	233 919	2 989	23 717	68 653	72 374
Ecuador	6 337	11 858	21 410	22 199	..	..	..	..
Guyana	756	1 784	12 666	17 074	1	2	73	78
Paraguay	1 003	3 510	7 045	8 384	..	..	..	..
Peru	11 062	42 976	117 845	129 541	505	4 265	9 886	10 121
Suriname	..	..	1 929	1 940	..	..	215	202
Uruguay	2 088	12 479	31 084	36 183	138	345	6 506	7 081
Venezuela (Bolivarian Republic of)	35 480	36 107	21 008	21 949 [c]	7 676	19 171	25 129	25 520 [c]

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Annex table 2. FDI stock, by region and economy, 2000, 2010, 2021 and 2022 (Concluded)

Region/economy	FDI inward stock				FDI outward stock			
	2000	2010	2021	2022	2000	2010	2021	2022
Central America	139 768	417 113	763 963	829 908	8 534	126 025	207 118	214 354
Belize	294	1 454	2 538	2 671	42	49	75	76
Costa Rica	2 809	15 936	49 343	52 243	22	1 135	3 654	3 851
El Salvador	1 973	7 284	10 611	10 561	104	1	1 650	1 655
Guatemala	3 420	4 554	21 367	22 507	93	452	2 259	2 608
Honduras	1 392	6 951	17 637	18 459	..	867	2 839	2 978
Mexico	121 691	355 512	592 221	649 287	8 273	119 967	189 622	196 045
Nicaragua	1 414	4 681	11 206	12 500	..	181	811	818
Panama	6 775	20 742	59 040	61 680 [c]	..	3 374	6 208	6 322 [c]
Caribbean[a]	12 365	47 697	76 533	80 449	1 002	3 039	4 370	5 562
Antigua and Barbuda	..	..	1 671 [b]	1 869 [b]	..	..	94 [b]	83 [b]
Bahamas	3 865 [c]	13 160	27 258	28 512	547 [c]	2 538	7 346	7 572
Barbados	308	4 970	8 344 [c]	8 544 [c]	41	4 058	3 843 [c]	3 858 [c]
Dominica	..	..	516 [b]	541 [b]	..	..	1 [b]	1 [b]
Dominican Republic	1 673	18 793 [b]	47 883 [b]	51 893 [b]	..	743 [b]	966 [b]	917 [b]
Grenada	..	..	1 830 [b]	1 990 [b]	..	..	99 [b]	105 [b]
Haiti	95	625	1 992	2 031	..	..	..	..
Jamaica	3 317	10 855	17 808	18 167 [c]	709	176	1 076	1 156 [c]
Saint Kitts and Nevis	..	..	1 683 [b]	1 699 [b]	..	..	104 [b]	127 [b]
Saint Lucia	..	..	1 752 [b]	1 819 [b]	..	..	648 [b]	689 [b]
Saint Vincent and the Grenadines	..	..	1 525 [b]	1 611 [b]	..	..	97 [b]	103 [b]
Sint Maarten	..	256	173 [c]	186 [c]	..	10	106 [c]	109 [c]
Trinidad and Tobago	7 280 [c]	17 424	8 851	8 358 [c]	293 [c]	2 119	2 328	3 488 [c]
Anguilla	..	..	1 311 [b]	1 452 [b]	..	..	131 [b]	135 [b]
Aruba	1 161	4 567	4 425	4 679	675	682	664	751
British Virgin Islands	30 289 [c]	265 783 [c]	990 238 [c]	1 028 356 [c]	69 041 [c]	376 866 [c]	85 497 [c]	128 306 [c]
Cayman Islands	27 316 [c]	161 916 [c]	548 337 [c]	572 927 [c]	21 643 [c]	89 316 [c]	344 445 [c]	362 435 [c]
Curaçao	..	527	940	1 081 [c]	..	32	989	1 002 [c]
Montserrat	..	..	38 [b]	40 [b]	..	..	..	..
Sint Maarten	..	256	173 [c]	186 [c]	..	10	106 [c]	109 [c]
Oceania	1 854	14 694	30 785	31 724	249	828	1 997	2 086
Cook Islands	..	..	177	181 [c]	..	..	14	14 [c]
Fiji	356	2 963	5 914	5 755	39	47	101	125
Kiribati	..	5	13 [c]	14 [c]	..	2	1 [c]	2 [c]
Marshall Islands	20	120	167	170 [c]	..	..	..	..
Micronesia (Federated States of)	..	7	..	..	..	..	..	..
Palau	173	232	600 [c]	659 [c]	..	..	..	..
Papua New Guinea	935	3 748	4 447	4 773 [c]	194 [c]	209 [c]	135 [c]	135 [c]
Samoa	77	220	327	320	..	14	53	51
Solomon Islands	106 [c]	552	621	649	..	27	76	77
Tonga	19 [c]	220 [c]	470 [c]	472 [c]	14 [c]	58 [c]	110 [c]	111 [c]
Tuvalu	..	5	9 [c]	9 [c]	..	..	..	..
Vanuatu	61 [c]	454	709 [c]	705 [c]	..	23	29 [c]	31 [c]
French Polynesia	146 [c]	442 [c]	1 120 [c]	1 110 [c]	..	144 [c]	348 [c]	354 [c]
New Caledonia	-41 [c]	5 726 [c]	16 211 [c]	16 908 [c]	2 [c]	304 [c]	1 130 [c]	1 187 [c]
Other country groupings								
Least developed countries (LDCs)[e]	35 974	161 606	421 212	438 732	2 604	11 515	22 941	23 391
Landlocked developing countries (LLDCs)[f]	33 630	183 927	433 391	445 638	1 025	29 288	51 025	58 601
Small island developing States (SIDS)[g]	18 806	83 932	146 314	153 459	1 906	11 076	16 576	18 157

Source: UNCTAD, FDI/MNE database (www.ctad.org/fdistatistics).

[a] Excluding financial centres in the Caribbean and special-purpose entities in reporting countries.

[b] Asset/liability basis.

[c] Estimates.

[d] Directional basis calculated from asset/liability basis.

[e] Least developed countries include Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, the Central African Republic, Chad, the Comoros, the Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, the Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, the Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, the Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, the Sudan, Timor-Leste, Togo, Tuvalu, Uganda, the United Republic of Tanzania, Yemen and Zambia.

[f] Landlocked developing countries include Afghanistan, Armenia, Azerbaijan, Bhutan, the Plurinational State of Bolivia, Botswana, Burkina Faso, Burundi, the Central African Republic, Chad, Eswatini, Ethiopia, Kazakhstan, Kyrgyzstan, the Lao People's Democratic Republic, Lesotho, Malawi, Mali, the Republic of Moldova, Mongolia, Nepal, the Niger, North Macedonia, Paraguay, Rwanda, South Sudan, Tajikistan, Turkmenistan, Uganda, Uzbekistan, Zambia and Zimbabwe.

[g] Small island developing States include Antigua and Barbuda, the Bahamas, Barbados, Cabo Verde, the Comoros, Dominica, the Dominican Republic, Fiji, Grenada, Jamaica, Kiribati, Maldives, the Marshall Islands, Mauritius, the Federated States of Micronesia, Nauru, Palau, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Príncipe, Seychelles, Solomon Islands, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

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