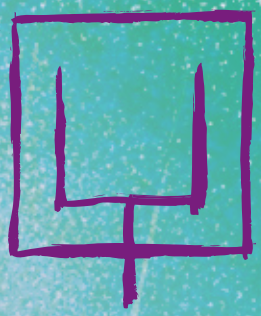

2022

# Foreign Direct Investment
## in Latin America and the Caribbean

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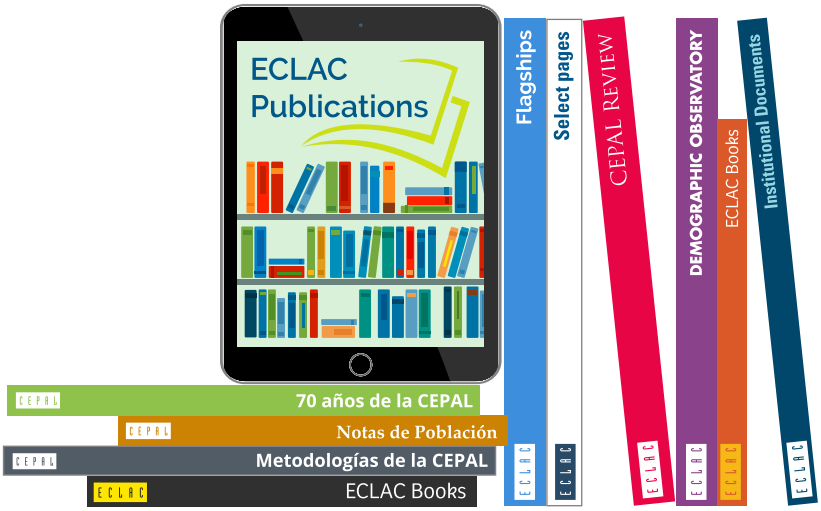


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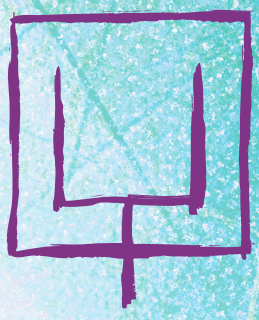

2022

# Foreign Direct Investment
## in Latin America and the Caribbean

UNITED NATIONS

ECLAC

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The 2022 version of *Foreign Direct Investment in Latin America and the Caribbean* is the most recent edition of an annual series produced by the Unit on Investment and Corporate Strategies of the Division of Production, Productivity and Management of the Economic Commission for Latin America and the Caribbean (ECLAC). This year's edition was prepared by Leandro Cabello, Álvaro Calderón, Filipe Da Silva, Andrea Laplane, Stephania Mageste, Georgina Núñez and Nunzia Saporito, under the coordination of Cecilia Plottier. The databases were prepared by Leandro Cabello.

Comments and suggestions were received from Mario Cimoli, Mario Castillo, Martín Abeles, Olga Lucía Acosta, Jennifer Alvarado, Hugo Beteta, Miguel Cosmelli, Nicolo Gligo, Camila Gramkow, Sebastián Herreros, Jorge Mario Martínez, Carlos Mussi, Carolina Rocha, Giovanni Stumpo and Helvia Velloso.

The document was also prepared with inputs from the project "Inclusive and sustainable smart cities in the framework of the 2030 Agenda for Sustainable Development in Latin America and the Caribbean", implemented by ECLAC together with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and financed by the Federal Ministry of Economic Cooperation and Development (BMZ) of Germany.

Thanks are due to the government authorities and executives of companies consulted, for their inputs for the preparation of this document.

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United Nations publication
ISBN: 978-92-1-122090-2 (print)
ISBN: 978-92-1-005582-6 (pdf)
ISBN: 978-92-1-358322-7 (ePub)
Sales No.: E.22.II.G.3
LC/PUB.2022/12-P
Distribution: G

Printed at United Nations, Santiago
S.22-00561

Explanatory notes:
- Three dots (...) indicate that data are not available or are not separately reported.
- A dash (-) indicates that the amount is nil or negligible.
- A full stop (.) is used to indicate decimals.
- The word "dollars" refers to United States dollars, unless otherwise specified.
- A slash (/) between years (e.g. 2013/2014) indicates a 12-month period falling between the two years.
- Figures and percentages in tables may not always add up to the corresponding total because of rounding.

This publication should be cited as: Economic Commission for Latin America and the Caribbean (ECLAC), *Foreign Direct Investment in Latin America and the Caribbean, 2022* (LC/PUB.2022/12-P), Santiago, 2022.

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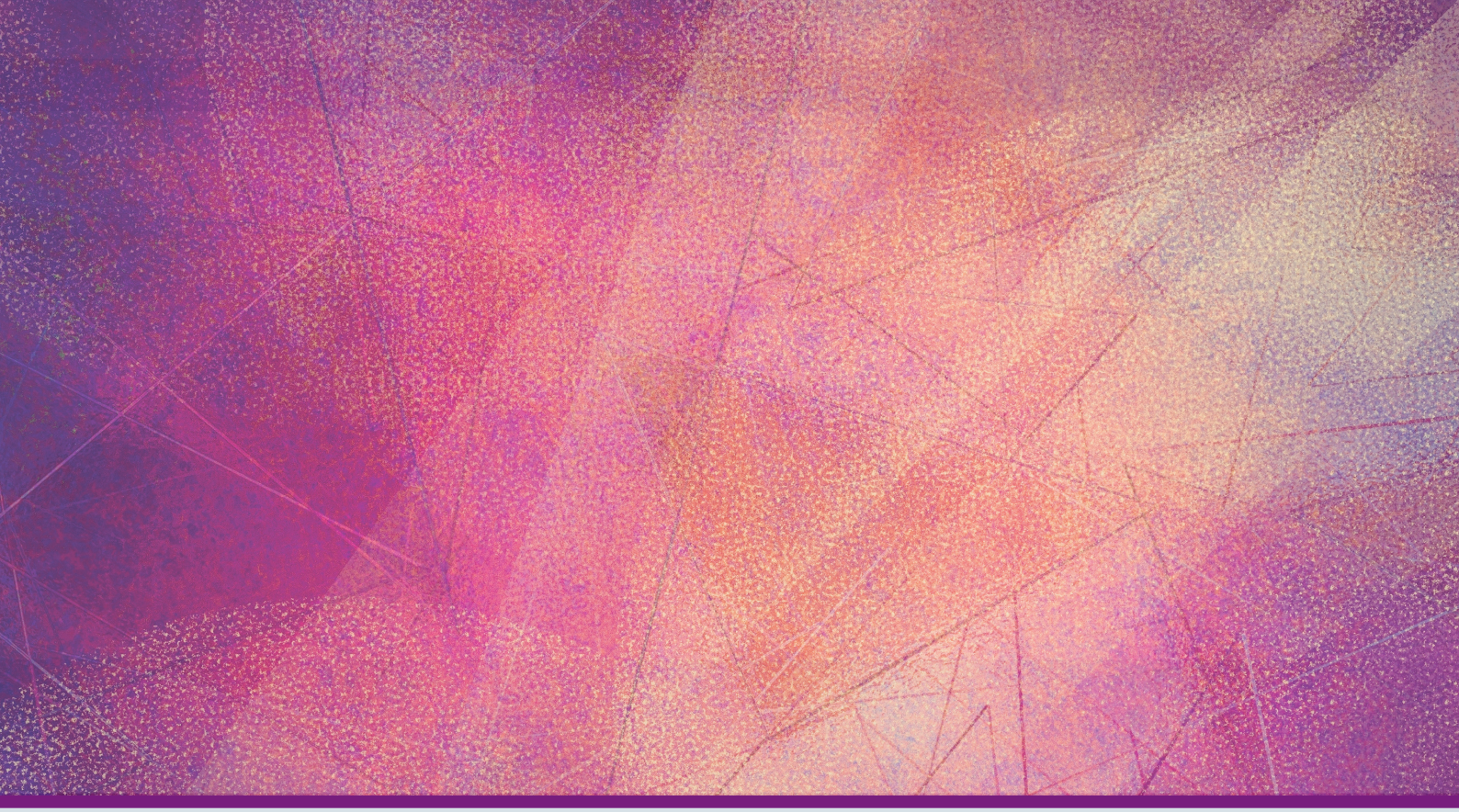


# Executive summary

# A. Overview of foreign direct investment in the region

Much as in the rest of the world, foreign direct investment (FDI) inflows to Latin America and the Caribbean rebounded in 2021 after dropping sharply the previous year. A total of US$ 142.794 billion was received, 40.7% more than in 2020. By contrast with the global situation, however, this growth was not sufficient to return investment to pre-pandemic levels (see figure 1). Moreover, FDI inflows amounted to 2.9% of GDP, which was still below the figure for the 2010s (3.5%). Considering that FDI inflows had already been on a downward trend since 2014, this weak recovery indicates how difficult it has been proving for the region as a whole to reposition itself as an attractive destination for the establishment of new operations by transnational corporations since the cycle of booming commodity prices and high growth rates came to an end. Moreover, the Latin American and Caribbean share of total global inflows was 9% in 2021, one of the lowest proportions in the last 10 years and well short of the 14% recorded in 2013 and 2014.

**Figure 1**
Latin America and the Caribbean: inward foreign direct investment, 2010–2021
*(Billions of dollars and percentages of GDP)*


**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: On the basis of International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, Washington, D.C., 2009, except Barbados, Ecuador, Guyana, Paraguay, Peru and Suriname. No information is available for the Bolivarian Republic of Venezuela from 2016 onward. No data are available for Haiti for 2021.

Investments resumed in all subregions in 2021. The countries receiving the most investment were Brazil (33% of the total), Mexico (23%), Chile (11%), Colombia (7%), Peru (5%) and Argentina (5%). Strong FDI growth in Chile (66%) and Peru (919%) in South America, and in Guatemala (273%) and Panama (163%) in Central America, accounted for most of the year-on-year change. In Brazil and Colombia, the recovery was not sufficient to return to pre-pandemic levels. Mexico was among the countries where FDI inflows were least affected in 2020, and with 6% growth in 2021 its share of the increase was small. In Central America, Costa Rica ranked as the subregion's top recipient for the second year in a row, while in Guatemala a large telecommunications acquisition accounted for the substantial increase, and Panama managed to recover after a major hit to investment in 2020. In the Caribbean, Guyana was the country with the highest growth, and this took it past the Dominican Republic, which in previous years had been the leading recipient of investment in the subregion.

Services were the sector with the second highest growth (39%) and this increase was observed in almost all the countries analysed. In the manufacturing sector, the decline in FDI inflows in 2021 (14%) is explained by the decrease in manufacturing investments in Brazil. There, manufacturing activities received less FDI than in 2020, with some exceptions such as food and beverages and the automotive industry. In the case of Mexico, although inflows were 7% higher than in 2020, they did not match the average levels of the 2010s. The manufacture of auto parts, iron and steel products and household appliances were the sectors that accounted for the dynamism of the country, and Costa Rica and Colombia, in that order, ranked next among the countries with the most investment in the sector. Natural resource investments were 62% higher than in 2020, which is mainly explained by an increase in inflows to Guyana, Mexico, Chile, Colombia and the Dominican Republic.

There were more mergers and acquisitions in the region in 2021 (33%), but this was still one of the lowest levels of the last decade. In a global context where mergers and acquisitions grew very strongly, in the region they only recouped the decline of 2020. Transnational companies' interest in acquiring assets in the region in 2021 has been concentrated in the electricity, gas and water, telecommunications and oil refining sectors.

The outlook for future investment, as measured by announcements of new investment projects, continues to reflect the impact of the pandemic, despite momentum in sectors that may be key to sustainable and inclusive development. After falling sharply in 2020, the value of new FDI projects in the region declined by 9.1% in 2021, with project announcements estimated at around US$ 51.5 billion, below the average for the previous 10 years. The sectors in which the largest project announcements were made in 2021 were telecommunications, renewable energies, cars and auto parts, technology-intensive industries (led by consumer electronics, medical devices, the manufacture of non-automotive transport equipment, and transport and storage). For some years now Latin America and the Caribbean has been an attractive market for the implementation of transnational projects geared towards the green transition, especially in renewable energies, consistent with the pursuit of Sustainable Development Goal (SDG) 7 (affordable and clean energy). Progress with digitalization in the region, which is critical to achieving the SDGs related to industry, innovation, inclusion and the establishment of "smart cities", among others, cannot be separated from investments by transnational corporations. In 2021, this was the sector where the most FDI projects were announced, with the most dynamic areas being the development of Internet infrastructure and data centres.

There are two phenomena that must be addressed through targeted policies framed as part of an inclusive and sustainable development strategy if the countries of the region want to use FDI to support processes of structural change and capacity-building and to increase the technological sophistication of their production mix. The first of these is the decade-long decline in the manufacturing share of FDI inflows, from 40% in 2010–2019 to 23% in 2021. The second phenomenon is the decline in the value of new investment project announcements.

At the same time, there is still a great need for resources if the region is not only to meet its climate commitments under the Paris Agreement, but also to make progress on the implementation of the 2030 Agenda for Sustainable Development. New forms of sustainable finance, especially those involving environmental, social and governance bonds, are already proving to be a reality for the region and have the potential to attract more private investment, including foreign investment, to SDG-related sectors.

Moreover, the outlook for 2022 is one of enormous uncertainty. Deteriorating expectations, accelerating inflation (in the region and globally) and, more generally, the great uncertainty regarding the duration and consequences of the war in Ukraine make it extremely difficult to estimate the behaviour of FDI inflows to Latin America and the Caribbean in 2022.

In this context, it is worth considering whether the region is undergoing a reconfiguration of its role in the global FDI landscape, in which, although some sectors and countries have consolidated themselves in specialized niches within global value chains, the region as a whole plays only a marginal role in the decision-making processes of transnational capital. Moreover, part of the recovery of FDI in 2021 took the form of asset sales in service industries and of mergers and acquisitions and reinvestment of earnings by established firms, which reinforces the existing production structure and does not in itself foster the development of new capabilities.

The situation thus faced by the region could be further entrenched by the reconfiguration of global FDI flows. The global crisis of 2020 strongly impacted global value chains and investment decisions. In 2021, the recovery of the global economy was characterized by national or regional recovery plans that differed greatly by geographical area and attracted investor interest to the core economies; this process could intensify in the coming years (not only in 2022) as a result of the profound transformation of international equilibria, relations and alliances triggered by the war in Ukraine.

This being so, the role of policies is increasingly important, not so much (or not only) those specifically geared towards attracting FDI as those designed to shape a new development model. FDI can support the investments needed for countries to move towards more inclusive and sustainable development, but, as ECLAC has argued in successive editions of this report, that does not happen automatically. Policies are needed to provide the necessary framework so that FDI entering the region is directed towards activities that support virtuous development in respect of inclusiveness, employment quality, environmental sustainability, innovation and technological sophistication. Given the growing complexity of the international landscape, it is becoming increasingly necessary to establish national and multilateral development strategies in the region and to coordinate public and private efforts so that Latin America and the Caribbean can position itself in the global economic landscape in a way that helps it to move towards inclusive and sustainable development, rather than being relegated to a marginal role determined by exogenous strategies.

## B. Foreign direct investment in the region's pharmaceutical industry

The pharmaceutical sector is strategic for Latin America and the Caribbean because of its importance in two areas central to the socioeconomic development of the region and the achievement of the SDGs: (i) its impact on public health and (ii) its importance as a technology-based industrial sector, with considerable potential for the creation of capacity, value and employment and the attraction of investment. In light of the pandemic impact, the countries of the region manifested their interest in the region re-evaluating its productive and technological capacities in health-related goods and services, as evidenced by the plan approved unanimously at the Summit of the Community of Latin American and Caribbean States (CELAC) in 2021 (ECLAC, 2021a).

The pharmaceutical industry can be defined as the set of activities, processes, operations and entities involved in the discovery, development, production and distribution of medical products and drugs (Moniz, Barbosa-Póvoa and Pinho de Sousa, 2015).[1] Like most sectors, today's pharmaceutical industry is based on a global value chain of distinct stages, from the discovery of new molecules through research and development (R&D)

[1] In this chapter, medicines and drugs refer interchangeably to all end products of the pharmaceutical industry, including drugs and vaccines (but not medical devices).

activities, to the design and production of active pharmaceutical ingredients (APIs), to the sale and distribution of drugs. It is R&D-intensive and highly regulated. The introduction of a new drug on the market is the result of lengthy research processes and clinical trials.

The R&D process for new drugs has become highly complex in recent decades, due to the intensified pace of technology and drug development, as well as the regulatory requirements for approval, in addition to the fundamental role played by intellectual property rights. It gives rise to an oligopolistic market structure, characterized by the concentration of R&D activities and patents in large pharmaceutical firms in developed countries. In the biotechnology sector, meanwhile, smaller companies have specialized in R&D and have built significant technological capacities and patent portfolios (KPMG, 2021).

While United States and European companies still develop nearly 70% of new chemical or biological products, the pharmaceutical sector has undergone major structural change since the first decade of the 2000s. Companies in the United States have consolidated their position, accounting for more than 40% of the new entities developed, while European firms have lost momentum and new players in certain developing countries such as Brazil, China, India and South Africa have developed significant pharmaceutical capabilities (EFPIA, 2021).

The first stage of production involves the biological or chemical synthesis of APIs and is one of the most frequently outsourced stages in the pharmaceutical industry, including in Europe and the United States. In a highly competitive market, the cost advantages enjoyed by China and India in terms of inputs, labour, infrastructure, transportation and equipment have favoured large-scale production and improved the competitive position of these countries (Bumpus and Betsch, 2009).

The pharmaceutical product market has grown steadily in the last two decades. Although emerging markets have together accounted for less than 10% of the global market, they have been more dynamic than those of developed countries. Between 2014 and 2019, the drug market grew by 11.2% in Brazil, 11.1% in India, 6.9% in China, 6.1% in the United States and 5.4% in the top five markets of the European Union (IQVIA, 2020). Latin America and the Caribbean is one of the world's most promising markets. With an estimated 660 million inhabitants in 2021 (ECLAC, 2022), the region's sales are projected to grow by 9.7% on a cumulative average annual basis between 2021 and 2026, positioning this market as the fastest-growing in the world over the next six years (IQVIA, 2022).

The companies in the sector have internationalized their operations mainly through mergers and acquisitions. Mega mergers and acquisitions among the major companies in the sector began in 1995 and continued until the mid-2000s. These operations aimed to create more efficient organizations, with greater economies of scale, allowing companies to balance out their portfolios and expand and streamline in geographic terms. They also pushed back the imminent expiry of patents on commercially successful products and addressed underperformance issues in R&D activities (Williams, 2009; Gautam and Pan, 2016). Cross-border mergers and acquisitions rose from an annual average of US$ 7 billion between 1990 and 2002 to US$ 54 billion between 2003 and 2021. These processes have concentrated market power in the hands of large pharmaceutical companies.

In Latin America and the Caribbean, the analysis of both mergers and acquisitions and project announcements reflects a scenario in which transnationals have focused on a few countries and there is no clear trend in terms of dynamism or specialization in product types. In addition, most inflows have targeted production, followed by post-production (mainly marketing), while no major investments have been identified in the pre-production segment.

Although the biopharmaceutical industry in Latin America and the Caribbean has significant productive and research capacities, the region remains heavily dependent on extraregional imports of innovative drugs and production inputs (ECLAC, 2021b). The pandemic has highlighted the weaknesses in the supply chains of pharmaceutical products from abroad and the vulnerability of regional markets in terms of imports of medicines and, in particular, vaccines. In this context, capacity-building in the pharmaceutical sector has become strategic. In Latin America and the Caribbean, the development of the pharmaceutical industry requires industrial strategies to strengthen national production capacities, increase investment in R&D and consolidate regional integration in terms of regulation, standards and production and distribution chains.

Moreover, R&D and innovation capacities are a determining factor in the investment decisions of multinational pharmaceutical companies. Although the countries of the region have invested in developing a solid base of researchers in the pharmaceutical and biotechnology sectors, traditional market incentives and capabilities of the production ecosystem are not enough to attract quality investment in the pharmaceutical sector. Thus, it is necessary to prioritize capacity-building in the pharmaceutical industry at the national and regional levels, implementing activities that enable the leveraging and expansion of existing capacities.

## C. The emerging electric vehicle industry: opportunities for Latin America

Profound transformations are about to take place in urban mobility. Recent global trends indicate that the automotive sector's future is electric. Driven by a renewed sense of urgency, regulators in many countries —mainly those with developed economies— have set much more ambitious targets for reducing greenhouse gas emissions from vehicles. In response, manufacturers are adapting quickly, offering an increasing number of electric vehicles in their product portfolios and setting deadlines for the production of internal combustion engine vehicles to come to an end. These developments are driving and consolidating the global market for electric vehicles.

In a very short period of time, electric vehicles have conquered a major share of the world market. Between 2018 and 2021, electric vehicles increased their share of global light vehicle sales from 2.2% to 8.3%. In the heavy-duty vehicle sector —buses in particular— electric models have also increased their presence, accounting for 4% of global fleets in 2021.

At the present juncture, one particularly interesting segment is the production of more environmentally friendly public transport vehicles, as they could play a key role in modern economies and societies. Not only can this segment of the automotive sector contribute to the GDP and competitiveness of the countries where production is located, it also represents an important source of direct and indirect employment. In addition, it can offer solutions to social and environmental challenges that impact cities, such as mobility.

On the demand side, although the vast majority of the urban public transport fleet still uses fossil fuels, the adoption of electric buses is expanding worldwide. In the coming years, the share of electric models in global sales is expected to rise swiftly. The expansion of electromobility will be one of the key drivers of growth in the global bus market; however, this dynamic will probably not manifest itself uniformly across the entire world.

In this scenario, several countries are competing to build new high-value industrial clusters for transport. China has taken the lead in electric bus manufacturing. Today, 90% of the world's electric buses in use are deployed in Chinese cities. At the same

time, China is the world's largest exporter of electric buses and is increasingly geared to meet the growing demand of Latin American countries, including Argentina, Chile, Colombia and Mexico.

Latin American countries have been unable to assume a clearly defined position in an international scenario characterized by the rapid consolidation of new market dynamics, business models, leading companies and technological options. Indeed, the region's automotive sector has not yet shown strong signs of taking advantage of the opportunities emerging in an industry that is undergoing a far-reaching transformation process.

On the one hand, in the light vehicle sector, the strengthening of production capacity to respond to the growing demand for low-emission vehicles is concentrated in the United States, and only Mexico is receiving some investments as part of the transformation of North American value chains. Currently, the major global manufacturers are supplying the region's local markets with imports. However, charging infrastructure shortcomings and low consumer awareness and confidence mean that electric vehicles still account for a low share of total car sales, although the proportion is growing rapidly.

On the other hand, in the heavy-duty vehicle segment —buses in particular— the industry is heterogeneous, fragmented and with evident problems of scale and technological backwardness, and electromobility investments are focusing on Brazil, where the most competitive and internationalized companies, several of them subsidiaries of transnational companies, are located. As in the case of light vehicles, in most cases, the first steps towards electrification of heavy-duty vehicles in the region are being taken by importing vehicles and much of the key support infrastructure. Chinese manufacturers are the main suppliers of electric buses in Latin America, accounting for more than 99% of purchases.

The existence of a mature automotive industry and a degree of conventional bus production capacity in the region is a good starting point for a transition to electric public transport bus manufacturing. However, the strength of the conventional industry does not guarantee that it will be able to respond adequately to the global changes taking place. Thus, possible future disruptions will require major efforts to structure the change process, in order to ensure the predictability of demand and thereby make the investments required feasible. Accordingly, given the existing international commitments and national policies aimed at mitigating climate effects, it is necessary to start developing new products, to use environmentally friendly technologies and to pave the way for investment, taking advantage of existing capacities and assets.

In the electric car segment, more ambitious and long-term coherent policies are required to boost demand. Support for demand should be combined with actions to accelerate the transformation of existing local capacities and to create new ventures for the development of the electromobility production chain. Public policies should at first offer incentives for accelerating the refitting of production lines and give signals regarding the creation of a stable and growing local electric vehicle market.

In the electric bus manufacturing segment, which is particularly attractive, the deployment of the industry in Latin America requires the creation of a market that ensures predictable demand and an adequate scale of production. This requires progress with the planning of a gradual, progressive and time-bound transition to electromobility. Fostering public-public and public-private interconnections, accelerating the replacement of bus fleets, supporting the creation and consolidation of manufacturing capacities and promoting investment in R&D are some of the measures needed to achieve a competitive insertion into the global and regional market for electric public transport buses.

The regional outlook seems favourable to the automotive sector's transition to the new technological model, although it is challenging. Demand predictability —in terms of the unit numbers required and their technical specifications— and a rising supply require an explicit, credible and clear political will to align the various interests and needs involved.

# Bibliography

Bumpas, J. and E. Betsch (2009), *Exploratory study on active pharmaceutical ingredient manufacturing for essential medicines. Health, Nutrition and Population (HNP) discussion paper,* Washington, D.C., Banco Mundial [online] https://openknowledge.worldbank.org/handle/10986/13682.

ECLAC (Economic Commission for Latin America and the Caribbean) (2022a), "Statistics and Indicators", CEPALSTAT [online database] https://statistics.cepal.org/portal/cepalstat/dashboard.html?lang=en&temaIndicadores=394.

___(2021a), *Plan for self-sufficiency in health matters in Latin America and the Caribbean: lines of action and proposals* (LC/TS.2021/115), Santiago.

___(2021b), *International Trade Outlook for Latin America and the Caribbean, 2021* (LC/PUB.2021/14-P/Rev.1), Santiago.

EFPIA (European Federation of Pharmaceutical Industries and Associations) (2021), *The Pharmaceutical Industry in Figures: Key Data* [online] https://www.efpia.eu/media/602709/the-pharmaceutical-industry-in-figures-2021.pdf.

Gautam, A. and X. Pan (2016), "The changing model of big pharma: impact of key trends", *Drug Discovery Today,* vol. 21, No. 3, March.

IQVIA (Institute for Human Data Science) (2022), *The Outlook for the Latin American Pharmaceutical Market* [online] https://www.iqvia.com/library/publications/the-outlook-for-the-latin-american-pharmaceutical-market.

___(2020), *Global Medicine Spending and Usage Trends: Outlook to 2024* [online] https://www.iqvia.com/insights/the-iqvia-institute/reports/global-medicine-spending-and-usage-trends.

KPMG (2021), *Biopharmaceuticals deal trends: competition for innovation overcomes economic headwinds* [online] https://advisory.kpmg.us/articles/2021/biopharmaceuticals-deal-trends.html#:~:text=A%20new%20KPMG%20report%2C%20Biopharmaceuticals,2021%20in%20the%20deal%20market.

Moniz, S., A. P. Barbosa-Póvoa and J. Pinho de Sousa (2015), "On the complexity of production planning and scheduling in the pharmaceutical industry: the Delivery Trade-offs Matrix", *Computer Aided Chemical Engineering*, vol. 37, May.

CHAPTER

I

# Overview of investment in Latin America and the Caribbean

# A. A recovery strained by the international context

The recovery in the world's economies whose first signs appeared in 2021, driven by progress with vaccination against coronavirus disease (COVID-19), the consequent lifting of mobility restrictions and the passing of large stimulus packages to support recovery in the core economies, was interrupted in 2022. One reason for this was the war in Ukraine, which added new challenges to the impacts of the pandemic on global value chains. In addition to the humanitarian crisis and geopolitical impact, inflationary pressures intensified, resources were redirected towards the defence industry and the management of new crises, and disruption spread to the oil, gas, aluminium and grain sectors and to those producing inputs for agriculture (ECLAC, 2022a). At the same time, new variants and flare-ups of SARS-CoV-2 led to the introduction of restrictive measures in some of China's industrial cities, which created new difficulties for the recovery of global value chains.

In this context, it is difficult to predict whether the recovery of global investment flows seen in 2021 can be sustained. In 2020, foreign direct investment (FDI) inflows were hit hard by the COVID-19 pandemic crisis and experienced one of the largest year-on-year declines on record (-35%), surpassing even the impact of the international financial crisis in 2008 and 2009. In 2021, the decline was reversed and global FDI inflows increased by 64% to a total of US$ 1.58 trillion, exceeding the inflows of 2018 and 2019 (see table I.1).

**Table I.1**
Global foreign direct investment inflows, rates of change and distribution by region, 2010–2021
*(Billions of dollars and percentages)*

| Grouping by region | Investment flows (Billions of dollars) | | | | | | Rate of change (Percentages) | | | | Distribution of investment flows (Percentages) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2010–2013[a] | 2014–2017[a] | 2018 | 2019 | 2020 | 2021 | 2018 | 2019 | 2020 | 2021 | 2010–2013[a] | 2014–2017[a] | 2018 | 2019 | 2020 | 2021 |
| World total | 1 482 | 1 786 | 1 448 | 1 481 | 963 | 1 582 | -11 | 2 | -35 | 64 | 100 | 100 | 100 | 100 | 100 | 100 |
| Developed economies | 821 | 1 090 | 753 | 764 | 319 | 746 | -20 | 1 | -58 | 134 | 55 | 61 | 52 | 52 | 33 | 47 |
| European Union | 356 | 382 | 366 | 402 | 210 | 138 | 33 | 10 | -48 | -34 | 24 | 21 | 25 | 27 | 22 | 9 |
| United States | 207 | 359 | 203 | 225 | 151 | 367 | -34 | 11 | -33 | 144 | 14 | 20 | 14 | 15 | 16 | 23 |
| Developing economies[b] | 661 | 696 | 695 | 716 | 644 | 837 | 0 | 3 | -10 | 30 | 45 | 39 | 48 | 48 | 67 | 53 |
| Latin America and the Caribbean | 200 | 174 | 176 | 158 | 101 | 143 | 9 | -10 | -36 | 41 | 14 | 11 | 12 | 11 | 11 | 9 |
| Africa | 50 | 50 | 45 | 46 | 39 | 83 | 13 | 1 | -15 | 113 | 3 | 3 | 3 | 3 | 4 | 5 |
| China and Hong Kong (Special Administrative Region of China) | 199 | 262 | 243 | 215 | 284 | 322 | -2 | -11 | 32 | 13 | 13 | 15 | 17 | 15 | 29 | 20 |
| Other developing Asia | 226 | 233 | 245 | 297 | 235 | 297 | 0 | 17 | -21 | 27 | 15 | 13 | 18 | 20 | 24 | 19 |

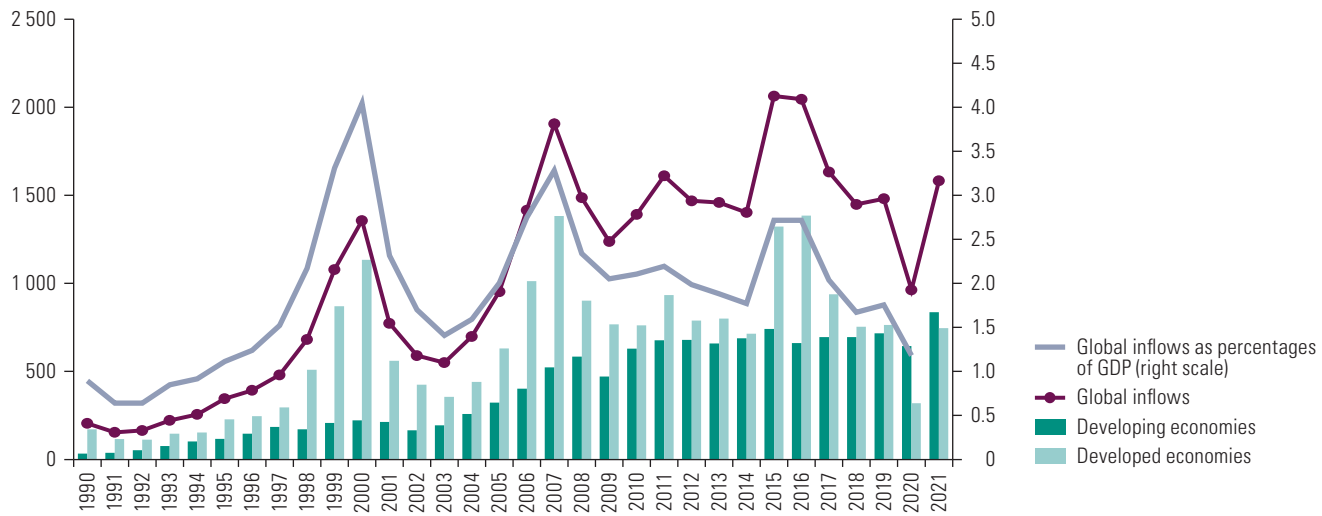
**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2022,* Geneva, 2022, and official figures and estimates for Latin America and the Caribbean.

[a] Simple averages.

[b] The figures do not match the sum of the values for the regions or groupings because the information for Latin America and the Caribbean is not obtained from UNCTAD.

However, it must be recognized that this recovery could be fragile. In addition to the high levels of international tension seen in the first half of 2022, this upswing has been taking place in a medium-term context in which the growth of FDI inflows has stagnated. Between 1990 and 2000, global FDI inflows grew at an average annual rate of 23%; this rate fell to 11% between 2001 and 2007 and to 2% between 2008 and 2021. Moreover, these cross-border capital flows have been decreasing as a share of the economy, falling to 1.8% and 1.2% of world GDP in 2019 and 2020, respectively (see figure I.1).

**Figure I.1**
Global foreign direct investment inflows, 1990–2021
*(Billions of dollars and percentages of world GDP)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2022,* Geneva, 2022, and UNCTADstat.

FDI flows revived across both developed and developing economies in 2021. Growth was highest in developed economies (134%), which had suffered the largest drop in 2020, while the increase in inflows to developing economies was smaller (30%). Since the latter started from a higher value, they received more investment overall (53% of the total) (UNCTAD, 2022). FDI inflows to the United States grew by 144%, with cross-border mergers and acquisitions featuring strongly, while inflows to the European Union (EU) fell by 34%. Inflows to China increased (13%), mainly because of investment in services, while investment in other developing Asian countries increased by 27% compared to 2020.

Recovery plans in developed economies, most of them focused on the creation of new infrastructure, influenced the characteristics of this outcome, and indeed FDI inflows have risen considerably more sharply in developed countries than in developing ones, with almost three quarters of the global increase being due to the surge in FDI there.

One of the characteristics of the FDI recovery in 2021 was the strong dynamism of cross-border mergers and acquisitions, which historically have been more predominant in developed economies. The number of deals grew by 22% from 2020 to 6,486, and the amount involved increased by 51% to a total of US$ 1.1 trillion, a seven-year high.[1] There were several reasons for this growth in mergers and acquisitions. First, the crisis

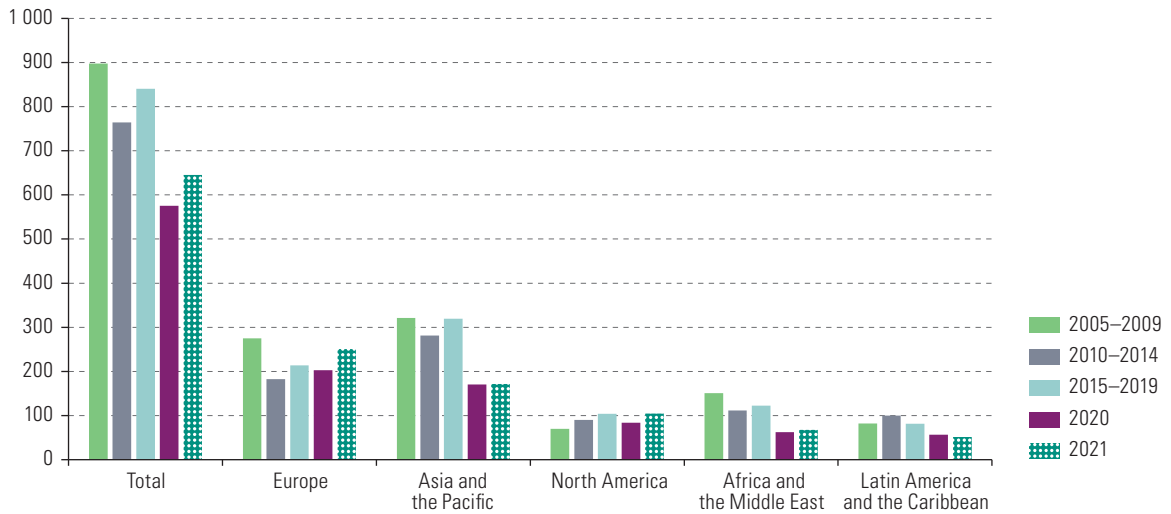
[1] Information prepared by the Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Orbis Crossborder Investment (see [online] https://orbisci.bvdinfo.com/).

of 2020 prompted companies to undertake a rigorous review of their assets to ascertain whether they needed to have cash available or whether some of those assets were no longer central to the business. Thus, in 2021, many assets became available at a time when demand was beginning to revive and numerous companies had favourable balance sheet positions and a need for growth (Loeb, 2022). Second, purchases to acquire digital capabilities and move forward with digital transformation intensified in 2021 because of the growth in online activities driven by lockdowns. High-technology sectors, along with finance, materials and health-care industries, were the main focus of interest for this type of investment (Irwin-Hunt, 2022; Loeb, 2022). Third, the market share of acquisitions by private equity firms and special purpose acquisition companies increased in 2021 (Irwin-Hunt, 2022).

Consistently with the 2021 FDI figures, by January 2022 investors in the core economies were beginning to be optimistic about the outlook for global FDI, while citing geopolitical tensions, inflation and high commodity prices as the biggest risks (Kearney, 2022). A month later, tensions escalated and the situation became one of high inflation and weak growth in which a positive investment outlook was difficult to sustain. In fact, an analysis of project announcements by transnationals in 2021 shows that companies remained cautious about investing in greenfield projects during the year, except in some technology-intensive sectors.

In 2021, the value of FDI project announcements worldwide grew by only 12% to around US$ 645 billion, still below the annual average of the 2010s (US$ 800 billion) (see figure I.2). Moreover, this recovery was mainly concentrated in developed regions, Europe and North America, while the amounts announced remained stable in most emerging regions and fell in Latin America and the Caribbean.

**Figure I.2**
Global foreign direct investment project announcements, by destination region, 2005–2009, 2010–2014, 2015–2019, 2020 and 2021
*(Billions of dollars)*

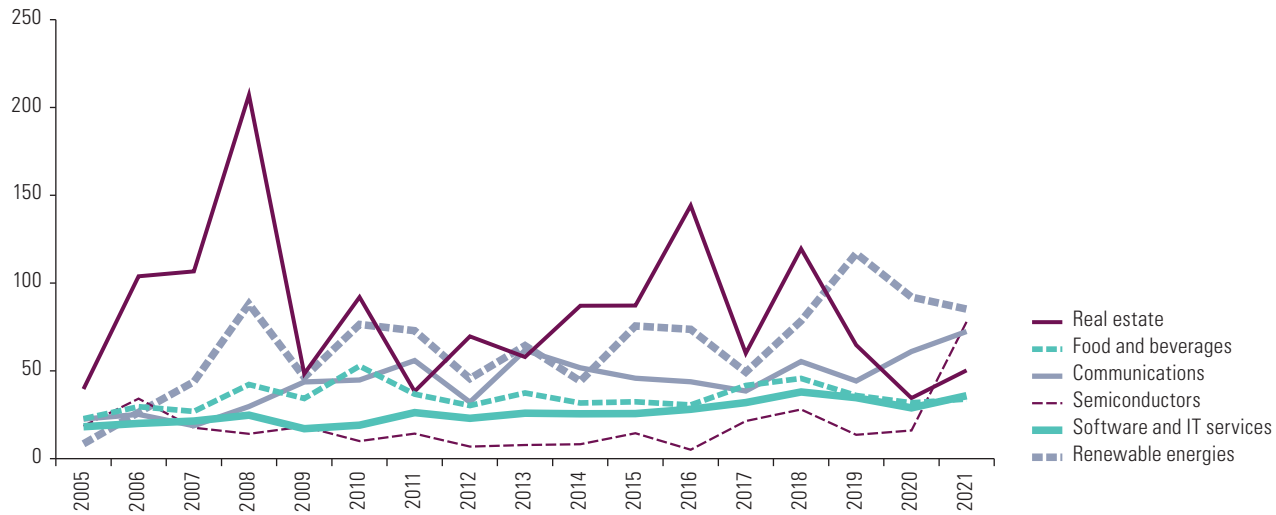



**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times,* fDi Markets [online database] https://www.fdimarkets.com/.
**Note**: Annual averages over five-year periods.

Thus, developed economies increased their share of the total global value of FDI project announcements from 45.1% in 2019 to 60.7% in 2021. Furthermore, developed economies' share of the value of investment projects exceeded 50% for the first time in 2020, and this situation was consolidated in 2021. This is particularly evident in the case of the EU countries, whose share increased from 19.2% of the total global value in 2019 to 27.0% in 2021. In contrast, the share of China including Hong Kong (Special Administrative Region (SAR) of China) in the total value of project announcements fell from an average of 11.0% between 2010 and 2019 to 5.4% in 2021. The drop in announcements of projects in China may also be linked to the quest for greater value chain resilience on the part of large transnational companies.

Interest in making new investments during the second year of the pandemic, in addition to centring on Europe and North America, was concentrated in a few sectors: renewable energy (13% of the total value), semiconductors (12%), communications (11%), real estate (8%), software and information technology services (5%) and food and beverages (5%), which accounted between them for 54% of the total value of announcements. Of these six sectors, the highest growth was in semiconductors (386%), which accounted for 73% of the year-on-year change, and the only one in the group for which the value of announcements was lower than in 2020 was renewable energies (-7%) (see figure I.3).

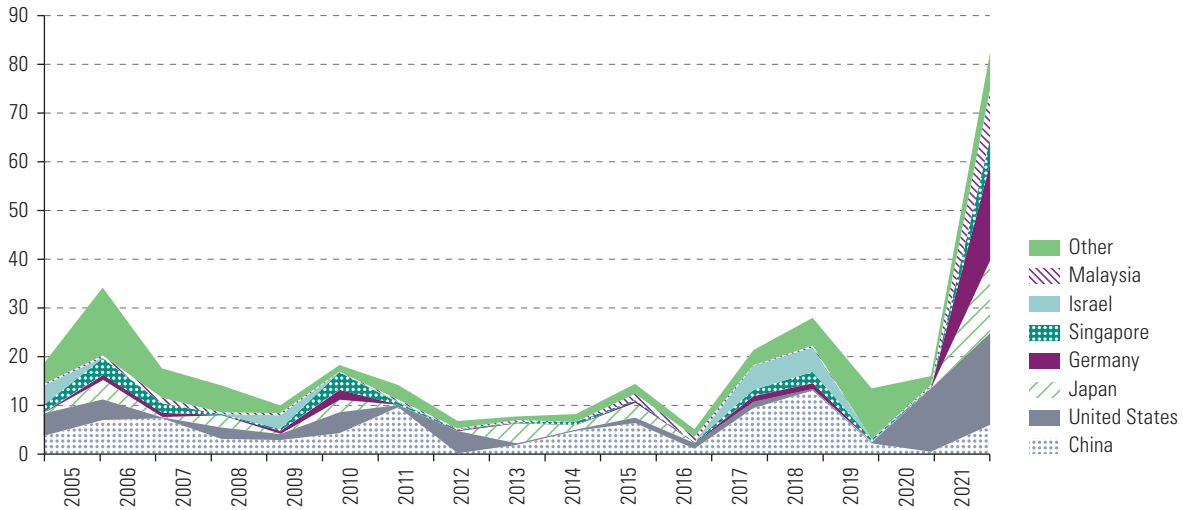
**Figure I.3**
Global foreign direct investment project announcements, selected sectors, 2005–2021
*(Billions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times,* fDi Markets [online database] https://www.fdimarkets.com/.

The dynamism of announcements in the semiconductor sector has been due partly to market dynamics, as demand for semiconductors has soared, and partly to geopolitical considerations that have led to this industry being identified as strategic. Until 2019, investment announcements for semiconductor manufacturing were largely concentrated in China, which was the destination for 33% by value of the FDI announced between 2005 and 2019, with the United States (11%) and Japan (8%) in second and third places (see figure I.4). This situation changed dramatically in 2020 and 2021. In the latter year, the three leaders in announcements by value in this industry were Germany (24%), the United States (23%) and Japan (18%), while investment announcements in China accounted for only 7%.

**Figure I.4**
Global foreign direct investment project announcements in the semiconductor sector, by destination country, 2005–2021
*(Billions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times*, fDi Markets [online database] https://www.fdimarkets.com/.

Intel of the United States made the biggest announcement, of the opening of a US$ 19.3 billion state-of-the-art semiconductor factory in Germany. This investment is part of the company's strategy to invest up to 80 billion euros in the EU over the next decade, right along the semiconductor value chain from research and development through manufacturing and foundry services to development of the most modern packaging technologies, with the aim of creating a next-generation European chip ecosystem, addressing the need for a more balanced and resilient supply chain (Intel, 2022). The Republic of Korea's Samsung, for its part, announced a new US$ 17 billion United States facility to manufacture advanced semiconductors for application in mobile telephony, 5G, high-performance computing and artificial intelligence (Samsung, 2021). It is Samsung's largest investment in the United States, where it has been operating for 25 years, and is intended to improve the resilience of the chip supply chain.

The announcement of new facilities in the United States and EU countries cannot be dissociated from the initiatives that both economies are pursuing to strengthen their position in the semiconductor industry and other industries they consider strategic, to counterbalance China. In the United States, two packages of legislation aiming for the creation of manufacturing opportunities and technological and economic strength, innovation and competition were discussed and resulted in August 2022 in the passing of the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act of 2022, which proposes the creation of a US$ 52 billion subsidy programme for private companies that set up semiconductor production facilities in the country. As for the EU, in 2021 the European Commission launched the Industrial Alliance on Processors and Semiconductor Technologies to bring together the public sector, the private sector and academia in an effort to identify current gaps in microchip production and the technological advances needed to make progress with this. In addition, a European chip law proposed in 2022 seeks the provision of 43 billion euros of public investment by 2030, from both the EU and national governments, to make the EU a more attractive place for technology companies to set up plants.

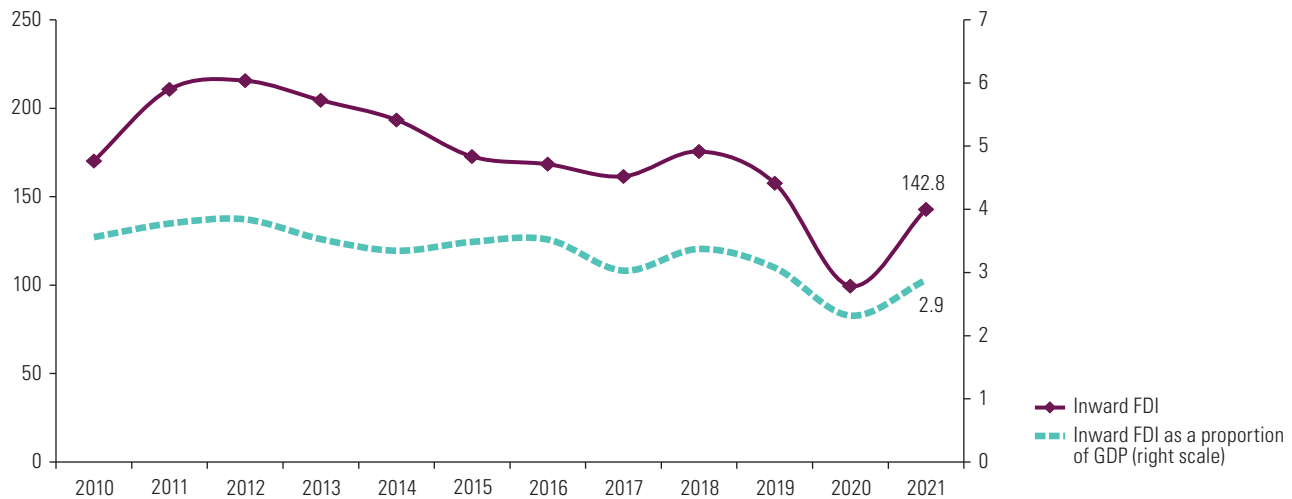
The international situation is therefore one of great uncertainty for FDI. For one thing, transnational companies have pursued a defensive strategy, channelling surplus liquidity into mergers and acquisitions to the detriment of new projects, with a strong focus on developed economies. For another, the war in Ukraine has led to a major shift in the world economic situation, the final effects of which are impossible to predict.

# B. Foreign direct investment has not returned to its pre-pandemic level in the region

## 1. Foreign direct investment in 2021 was up 40.7% on the year before

Much as in the rest of the world, FDI inflows to Latin America and the Caribbean rebounded in 2021 after dropping sharply the previous year. A total of US$ 142.794 billion was received, 40.7% more than in 2020. By contrast with the global situation, however, this growth was not sufficient to return investment to pre-pandemic levels (see figure I.5). Moreover, FDI inflows amounted to 2.9% of GDP, which was still below the figure for the 2010s (3.5%). Considering that FDI inflows had already been on a downward trend since 2014, this weak recovery indicates how difficult it has been for the region as a whole to reposition itself as an attractive destination for the establishment of new operations by transnational corporations since the cycle of booming commodity prices and high growth rates came to an end. Moreover, the Latin American and Caribbean share of total global inflows was 9% in 2021, one of the lowest proportions in the last 10 years and well short of the 14% recorded in 2013 and 2014.

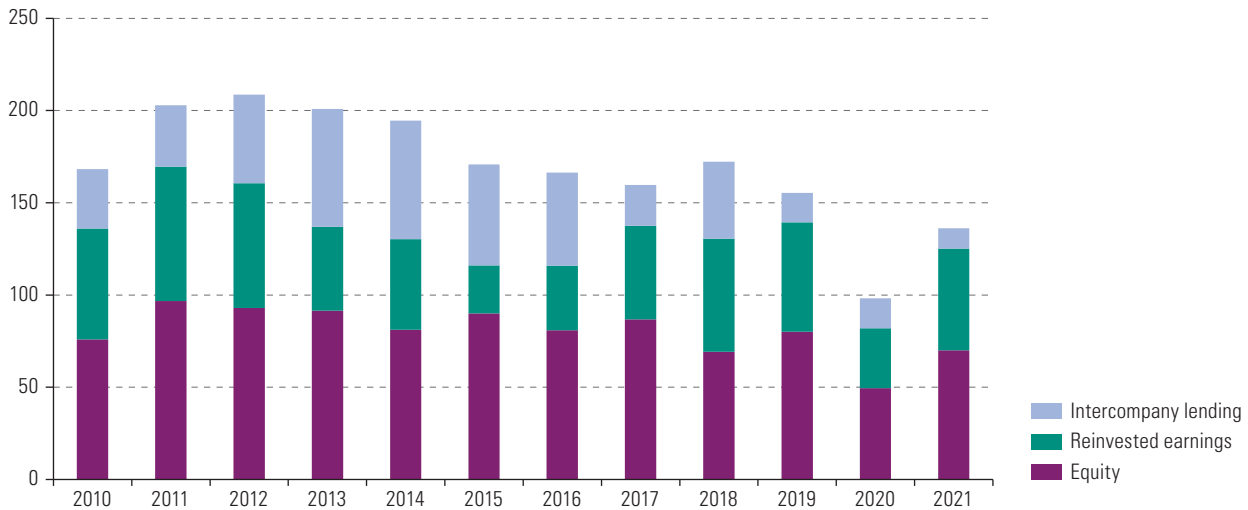
**Figure I.5**
Latin America and the Caribbean: inward foreign direct investment, 2010–2021
*(Billions of dollars and percentages of GDP)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: Information computed in accordance with International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, Washington, D.C., 2009, except Barbados, Ecuador, Guyana, Paraguay, Peru and Suriname. No information is available for the Bolivarian Republic of Venezuela from 2016 onward. 2021 data are not available for Haiti or Trinidad and Tobago.

An analysis of the components of FDI reveals certain features of this recovery. In 2021, the most dynamic component was reinvested earnings by transnational corporations (see figure I.6). The year-on-year change in inflows (71%, the highest in a decade) can be explained by the strong likelihood that companies retained profits in 2020 in the face of the extraordinary slowdown in economic activity caused by the pandemic, while in 2021 the gradual economic recovery (with an average growth rate of 6.3% in Latin America and the Caribbean) led them to reinvest these profits to restart their activities. Thus, reinvested earnings accounted for 40% of total inflows in 2021, the highest figure in the last decade. In addition to the effect of the year-on-year change, the high share of this component makes sense from a medium-term perspective: considering that the number of transnationals in the region increased during the years of strongest FDI growth, if these continued their activities in subsequent years and incentives for companies to reinvest their earnings arose, it is reasonable for this component to have risen.

**Figure I.6**
Latin America and the Caribbean: inward foreign direct investment, by component, 2010–2021
*(Billions of dollars)*

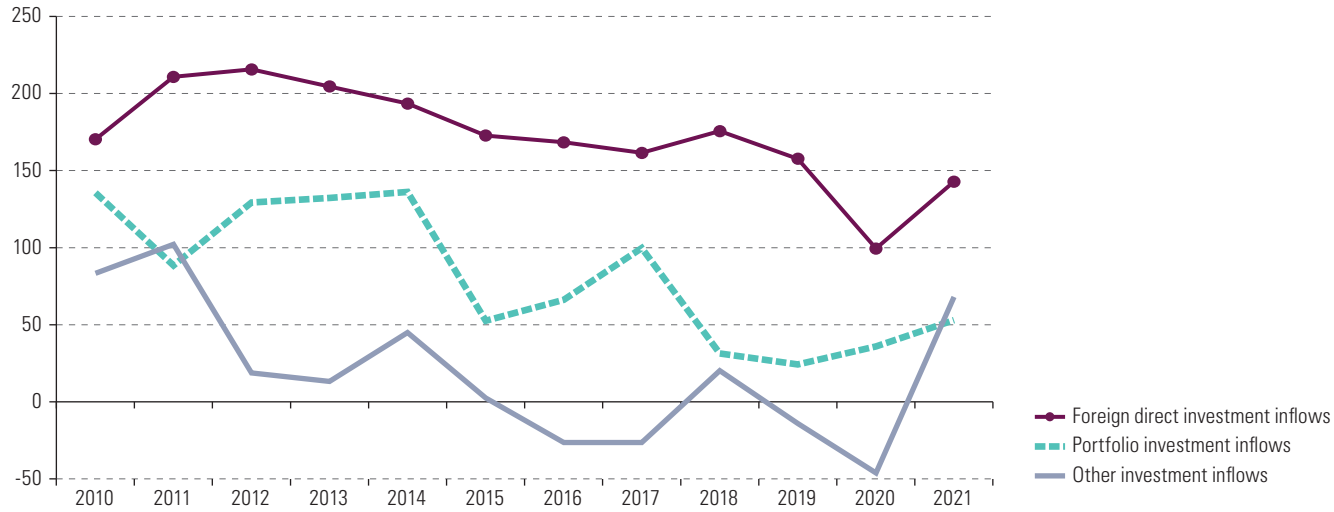



**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: The Bolivarian Republic of Venezuela is excluded because 2021 data are not available. El Salvador, Guyana, Haiti, Jamaica and Nicaragua are also excluded because data by component are not available. The data by component for the Plurinational State of Bolivia represent gross FDI inflows.

The situation with equity is different. Inflows increased in 2021 relative to 2020 (37%) and remained the largest component (50% of the total), although at levels below those seen before the pandemic. Meanwhile, intercompany lending inflows were lower than in 2020, making 2021 the third consecutive year in which this component had a very low share in the total (see figure I.6). The low level of foreign investment inflows in the form of intra-company movements can be explained by the fact that repayments abroad in recent years have been greater than lending from abroad.

Regarding cross-border capital inflows to the region, FDI remained the largest and least volatile source of capital in 2021 (see figure I.7). This lower volatility is related to the purpose of FDI, which is to establish long-term relationships involving control over assets abroad, as opposed to portfolio or other investments, which have shorter time horizons and are more sensitive to the business cycle. In 2021, there was a large increase in other investment inflows, which had been negative, and in portfolio inflows, and these movements meant that the FDI share of the total was smaller than in previous years (54% of the total in 2021, as against 62% on average in 2010–2019).

**Figure I.7**
Latin America and the Caribbean: cross-border capital inflows, by functional category, 2010–2021
*(Billions of dollars)*

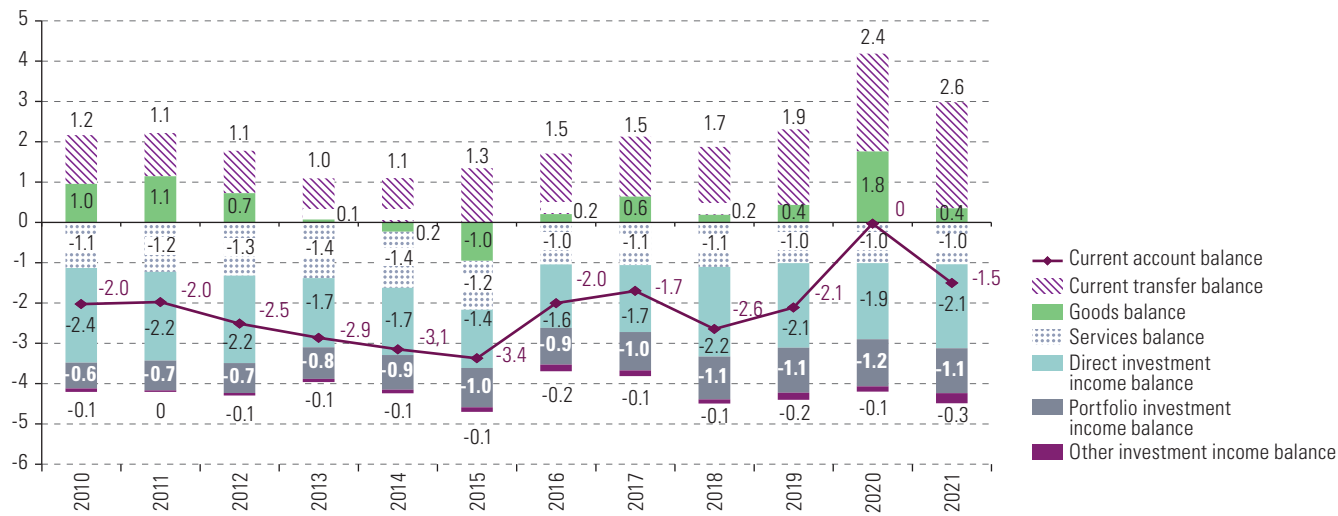



**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.

The FDI stock in the region in 2021 was US$ 2.4 trillion and was concentrated in Brazil (32%), Mexico (25%), Chile (10%), Colombia (9%) and Argentina (4%). The average return on FDI, measured as the ratio of FDI income (profits earned by transnationals) to FDI stock, was 5.7% in 2021, which represented a recovery from 2020 (when the average return was 4.4%). This was in line with pre-pandemic levels (6.0% in 2018 and 5.6% in 2019) and represented total income of US$ 132.899 billion in 2021.

This increase in average returns led to a higher amount of earnings being repatriated abroad by transnationals, which had a negative impact on the FDI income balance of the balance of payments. In 2021, capital outflows originating in income from FDI represented 2.1% of the region's GDP, a value higher than that of 2020 (1.9% of GDP) and similar to the levels seen prior to the pandemic (2.2% and 2.1% in 2018 and 2019, respectively) (see figure I.8).

**Figure I.8**
Latin America and the Caribbean: balance-of-payments current account, by component, 2010–2021
*(Percentages of GDP)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

With regard to the evolution of FDI inflows by country of destination (see section E for a country-by-country analysis), investment revived in all subregions in 2021. The countries receiving the most investment were Brazil (33% of the total), Mexico (23%), Chile (11%), Colombia (7%), Peru (5%) and Argentina (5%) (see table I.2).

**Table I.2**
Latin America and the Caribbean: inward foreign direct investment, by recipient country and subregion, 2005–2009, 2010–2014 and 2015–2021
*(Millions of dollars)*

| Country | 2005–2009[a] | 2010–2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Absolute change 2021–2020 | Relative change 2021–2020 *(Percentages)* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **South America** | **66 767** | **153 415** | **118 918** | **111 737** | **111 051** | **119 286** | **110 543** | **60 408** | **89 603** | **29 195** | **48.3** |
| Argentina | 6 204 | 10 477 | 11 759 | 3 260 | 11 517 | 11 717 | 6 649 | 4 723 | 6 782 | 2 060 | 43.6 |
| Bolivia (Plurinational State of) | 259 | 994 | 555 | 335 | 712 | 302 | -217 | -1 129 | 599 | 1 729 | -153.1 |
| Brazil | 32 331 | 88 062 | 64 738 | 74 295 | 68 885 | 78 163 | 69 174 | 37 786 | 46 441 | 8 655 | 22.9 |
| Chile | 10 571 | 23 934 | 17 766 | 11 363 | 5 237 | 7 943 | 13 579 | 9 205 | 15 252 | 6 046 | 65.7 |
| Colombia | 8 894 | 13 699 | 11 621 | 13 858 | 13 701 | 11 299 | 13 989 | 7 459 | 9 727 | 2 269 | 30.4 |
| Ecuador | 465 | 576 | 1 323 | 764 | 630 | 1 389 | 975 | 1 104 | 638 | -466 | -42.2 |
| Paraguay | 202 | 604 | 378 | 505 | 336 | 156 | 225 | 120 | 122 | 2 | 1.3 |
| Peru | 4 978 | 8 831 | 7 337 | 6 805 | 7 413 | 5 873 | 4 760 | 732 | 7 455 | 6 724 | 919.0 |
| Uruguay | 1 461 | 3 252 | 2 673 | -516 | 2 687 | 1 559 | 1 409 | 410 | 2 587 | 2 177 | 531.5 |
| Venezuela (Bolivarian Republic of) | 1 403 | 2 988 | 769 | 1 068 | -68 | 886 | ... | ... | ... | ... | ... |
| **Mexico** | **25 549** | **30 373** | **36 269** | **38 907** | **33 128** | **37 841** | **29 703** | **31 446** | **33 439** | **1 993** | **6.3** |
| **Central America** | **5 694** | **9 490** | **11 924** | **11 864** | **10 897** | **12 526** | **10 232** | **2 131** | **10 794** | **8 663** | **406.5** |
| Costa Rica | 1 584 | 2 757 | 2 956 | 2 620 | 2 925 | 3 015 | 2 719 | 2 103 | 3 563 | 1 460 | 69.4 |
| El Salvador | 662 | 189 | 396 | 348 | 889 | 826 | 636 | 281 | 313 | 33 | 11.7 |
| Guatemala | 621 | 1 214 | 1 231 | 1 174 | 1 130 | 981 | 976 | 932 | 3 472 | 2 540 | 272.6 |
| Honduras | 742 | 1 163 | 1 317 | 1 147 | 941 | 1 380 | 947 | 224 | 876 | 652 | 290.9 |
| Nicaragua | 292 | 792 | 967 | 989 | 1 035 | 838 | 503 | 747 | 1 220 | 474 | 63.4 |
| Panama | 1 792 | 3 375 | 5 058 | 5 585 | 3 977 | 5 487 | 4 451 | -2 155 | 1 350 | 3 505 | 162.7 |
| **The Caribbean** | **6 598** | **5 650** | **5 676** | **5 922** | **6 445** | **5 979** | **7 210** | **7 501** | **8 957** | **1 456** | **19.4** |
| Antigua and Barbuda | 237 | 91 | 114 | 97 | 151 | 205 | 128 | 74 | 104 | 31 | 41.9 |
| Bahamas | 1 265 | 1 736 | 713 | 1 260 | 901 | 947 | 611 | 897 | 1 185 | 288 | 32.1 |
| Barbados | 416 | 428 | 418 | 269 | 206 | 242 | 215 | 262 | 237 | -25 | -9.6 |
| Belize | 131 | 126 | 65 | 44 | 24 | 118 | 94 | 76 | 125 | 49 | 64.7 |
| Dominica | 45 | 35 | 7 | 42 | 23 | 78 | 63 | 22 | 44 | 22 | 100.1 |
| Dominican Republic | 1 782 | 2 328 | 2 205 | 2 407 | 3 571 | 2 535 | 3 021 | 2 560 | 3 102 | 542 | 21.2 |
| Grenada | 117 | 73 | 156 | 110 | 156 | 184 | 199 | 149 | 144 | -5 | -3.1 |
| Guyana | 135 | 242 | 122 | 32 | 212 | 1 232 | 1 695 | 2 060 | 4 453 | 2 393 | 116.1 |
| Haiti | 69 | 145 | 104 | 93 | 385 | 105 | 55 | ... | ... | ... | ... |
| Jamaica | 882 | 397 | 925 | 928 | 889 | 775 | 665 | 265 | 320 | 55 | 20.9 |
| Saint Kitts and Nevis | 136 | 127 | 128 | 121 | 48 | 40 | 48 | 14 | 40 | 26 | 188.8 |
| Saint Lucia | 183 | 93 | 152 | 162 | 90 | 46 | 73 | 35 | 47 | 12 | 33.1 |
| Saint Vincent and the Grenadines | 108 | 117 | 124 | 80 | 163 | 42 | 74 | 31 | 65 | 34 | 111.6 |
| Suriname | -141 | 69 | 267 | 300 | 96 | 131 | 84 | 1 | -133 | -134 | -12 861.4 |
| Trinidad and Tobago | 1 232 | -356 | 177 | -24 | -471 | -700 | 184 | 1 056 | -778 | -1 834 | -173.6 |
| **Total** | **104 609** | **198 928** | **172 787** | **168 429** | **161 521** | **175 632** | **157 689** | **101 486** | **142 794** | **41 307** | **40.7** |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: Information computed in accordance with International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, Washington, D.C., 2009, except Barbados, Ecuador, Guyana, Paraguay, Peru and Suriname.
[a] Simple averages. Owing to methodological changes, data from before 2010 are not directly comparable with later data.

South America was the region that contributed the most to the increase in FDI inflows between 2020 and 2021, accounting for 71% of it, followed by Central America. Besides Brazil, which always features prominently, strong FDI growth in Chile (66%) and Peru (919%) in South America, and in Guatemala (273%) and Panama (163%) in Central America, accounted for most of the year-on-year change. In Argentina, Brazil and Colombia, the recovery was not sufficient to restore pre-pandemic levels, while Chile and Peru recorded the highest inflows since 2015. Mexico was among the countries where FDI inflows were least affected in 2020, and with 6% growth in 2021 its share of the increase was small. In Central America, Costa Rica ranked as the subregion's top recipient for the second year in a row, while in Guatemala a large telecommunications acquisition accounted for the substantial increase, and Panama managed to recover after a major hit to investment in 2020. In the Caribbean, Guyana was the country with the highest growth, and this took it past the Dominican Republic, which in previous years had been the leading recipient of investment in the subregion.

Thus, in a region with a very high degree of heterogeneity between and within countries, there were very few cases in 2021 where FDI inflows did not recover. However, the weight of FDI in economies and in gross fixed capital formation varies greatly, so the challenge of reviving investment and ensuring that it contributes to the Sustainable Development Goals (SDGs) will require a regional approach that takes into account the specificities of each case.

## 2. Investment in services recovered most quickly

Information on inward FDI by sector in 2021 is only available for 14 countries, which accounted for 86% of total inflows that year.[2] Although this information is partial, it provides an indication of the sectors where investment recovered the most during the second year in which the pandemic continued to afflict the countries of Latin America and the Caribbean. Services were the sector with the second highest growth (39%) (see figure I.9), and this increase was observed in almost all the countries analysed. In general, service sector FDI is market-seeking, so the recovery of the region's economies in 2021 may explain this behaviour. Investments by transnational corporations in Brazil, mainly in financial services and ancillary activities, commerce, electricity and gas and information technology services accounted for much of the increase.

In manufacturing, the great weight of Brazil and Mexico as investment destinations makes it necessary to analyse their particular circumstances in order to understand the fall in FDI inflows in this sector in 2021 (-14%). First, FDI inflows in manufacturing recovered in 2021, both in Mexico and in the other countries of the region. In the case of Mexico, although inflows were 7% higher than in 2020, they did not match the average levels of the 2010s. The manufacture of auto parts, iron and steel products and household appliances were the sectors that accounted for the dynamism of the country. Aggregate manufacturing FDI inflows into the other countries increased and even exceeded the annual averages of the 2010s, which represents a contribution to the achievement of SDGs 8 (decent work and economic growth) and 9 (industry, innovation and infrastructure), considering that this is a key sector for job creation and the dissemination of technical knowledge. Costa Rica and Colombia, in that order, ranked next among the countries with the most

[2] The countries included are Belize, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico and the Plurinational State of Bolivia. The information for Brazil does not include the reinvested earnings component. That for the Plurinational State of Bolivia is for gross investment (without divestment). Sectoral data for Costa Rica and Mexico are computed using the approach of the *Balance of Payments and International Investment Position Manual: Fifth Edition (BPM5)* (IMF, 1993). The countries analysed represented 86% of total FDI inflows into the region in 2021.

investment in the sector. Brazil is therefore the reason for the regional decline. There, manufacturing activities received less FDI than in 2020, with some exceptions such as food and beverages and the automotive industry. The largest negative impact came from operations in the petroleum and coal products industry, where capital outflows in the inter-company lending component were not offset by an increase in inflows of equity.

**Figure I.9**
Latin America and the Caribbean (14 countries):[a] sectoral distribution of inward foreign direct investment, 2010–2021
*(Billions of dollars)*


**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: Annual averages for the five-year periods.
[a] The countries included, which are those with sectoral information for 2021, are Belize, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico and the Plurinational State of Bolivia. The information for Brazil does not include the reinvested earnings component. That for the Plurinational State of Bolivia is for gross investment (without divestment). Sectoral data for Costa Rica and Mexico are computed using the approach of International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Fifth Edition (BPM5)*, Washington, D.C., 1993. The countries analysed represented 86% of total FDI inflows into the region in 2021.

Lastly, natural resource investments were 62% higher than in 2020, which is mainly explained by an increase in inflows to Mexico, where the sector received its second-highest amount since 2013, mainly because of an increase in inflows in metal mining and by an increase in Guyana, as a result of FDI in hydrocarbons. The other countries as a group also experienced a recovery relative to 2020, with Chile, Colombia and the Dominican Republic increasing their shares, while Brazil received less investment than in 2020. Much as in manufacturing, capital outflows in the form of lending between companies in hydrocarbon extraction and metal mining accounted for the year-on-year decline in Brazil. However, investments in oil extraction remained substantial. Considering four hydrocarbon FDI recipient countries for which there are official statistics by sector, namely Brazil, Colombia, Guyana and Mexico, 10% of the FDI received in 2021 went into oil extraction. In Guyana, the oil and gas sector's share of FDI is even larger, averaging 71% of inflows since 2016, when investments linked to discoveries in the Stabroek Block began. Progress with the green transition and the quest for "net zero" emissions could affect investment in the sector in the medium term (see box I.1).

**Box I.1**
Hydrocarbon investment and the quest for net zero

Traditionally, fossil fuel extraction in Latin America and the Caribbean has attracted investment from transnational companies. In the last decade, investors have been attracted by the potential of so-called unconventional hydrocarbon exploration in the region, especially in relation to discoveries in Brazil's pre-salt fields, deepwater blocks in Guyana and Argentina's Vaca Muerta shale reserves. A greater deployment of resources and expertise is required to make oil and gas extraction feasible in this context, meaning that it is a viable investment in a context of continuing growth in demand for fossil fuels (Gordon, 2012).

On the path to a green transition, however, demand for fossil fuels is being called into question. The fossil fuel emissions trajectory needed to comply with the Paris Agreement and the goal of "net zero" by 2050 require oil demand to be reduced from 90 million barrels per day in 2020 to 24 million barrels per day by 2050. The implication is that additional investments in new oil exploration areas are not needed and existing exploration projects should be sufficient to meet global demand in the long term (IEA, 2021). For Latin America, it is estimated that oil production in 2035 should be 60% below pre-pandemic levels, implying a drastic reduction of current volumes even in the medium term (Vogt-Schilb, Reyes-Tagle and Edwards, 2021).

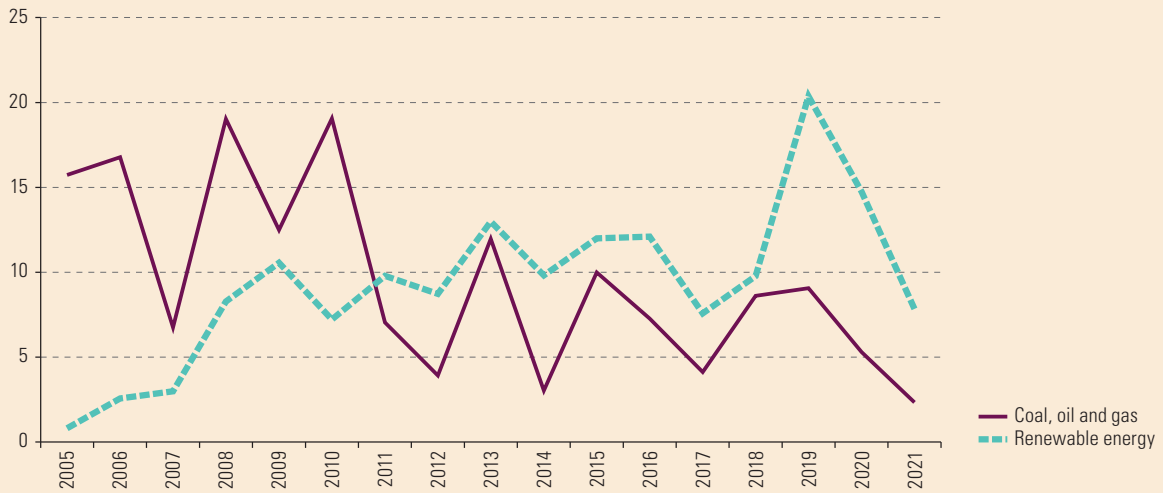
These targets have major implications for the sector and for the region, requiring business and government attention to the energy transition. It is not possible to achieve the goal of net zero emissions by 2050 without the involvement of the private sector, especially in emerging and developing economies, where it is estimated that more than 70% of the resources for the development of low-carbon energy sources will have to come from business (Bordoff and O'Sullivan, 2022). Although leading companies in the sector are now actively participating in the debates, there is still a large gap between rhetoric and practice (Li, Trencher and Asuka, 2022). Despite efforts to decarbonize the sector, such as the development of carbon capture, use and storage (CCUS) technologies and initiatives to reduce methane emissions and flaring, there is little discussion about the future of current reserves and divestment plans, or about the transfer of investments and the oil industry's technical framework when it comes to activities associated with the renewable energy sector.

From the point of view of the origin of resources, the investor and shareholder community has often been under pressure from public opinion to make its portfolios "less brown". Large investment funds, banks and shareholders have been publicly committed to investing in the energy transition for years, examples being the 700 signatories of the Climate Action 100+ initiative and the 680 signatories of the CDP organization (Climate Action 100+, 2022; CDP, 2022). In addition, there is conclusive evidence that the total shareholder return of the average oil and gas company has been 7 percentage points lower than the average return on Standard & Poor's S&P 500 index over the last 15 years (McKinsey & Company, 2021). This, coupled with the sharp decline in the cost of electricity from renewable sources such as solar and wind over the last decade (IRENA, 2021), makes the long-term scenario for large-scale investment in the fossil fuel sector less attractive and even more uncertain.

**Box I.1 (concluded)**

The oil sector has been important for employment and incomes in the region, and in some countries there is heavy fiscal dependence on the fossil fuel sector (Vogt-Schilb, Reyes-Tagle and Edwards, 2021). Looking ahead, however, Latin America is well positioned to become a global hub for renewable energy, with emphasis on the potential for developing technologies such as green hydrogen (ECLAC, 2021), and is receiving investment in the sector. International investors are interested in the region: since 2005, more than US$ 158 billion of FDI projects in renewable energy have been announced. Although the cumulative value of announced investments in the hydrocarbon sector is still higher, at US$ 162 billion, renewable energy announcements have outstripped hydrocarbon announcements since 2011 (see chart). Despite the enormous challenges, there are also opportunities, especially if the energy transition is properly planned and managed by States and companies.

Latin America and the Caribbean: foreign direct investment announcements, selected sectors, 2005–2021
*(Billions of dollars)*

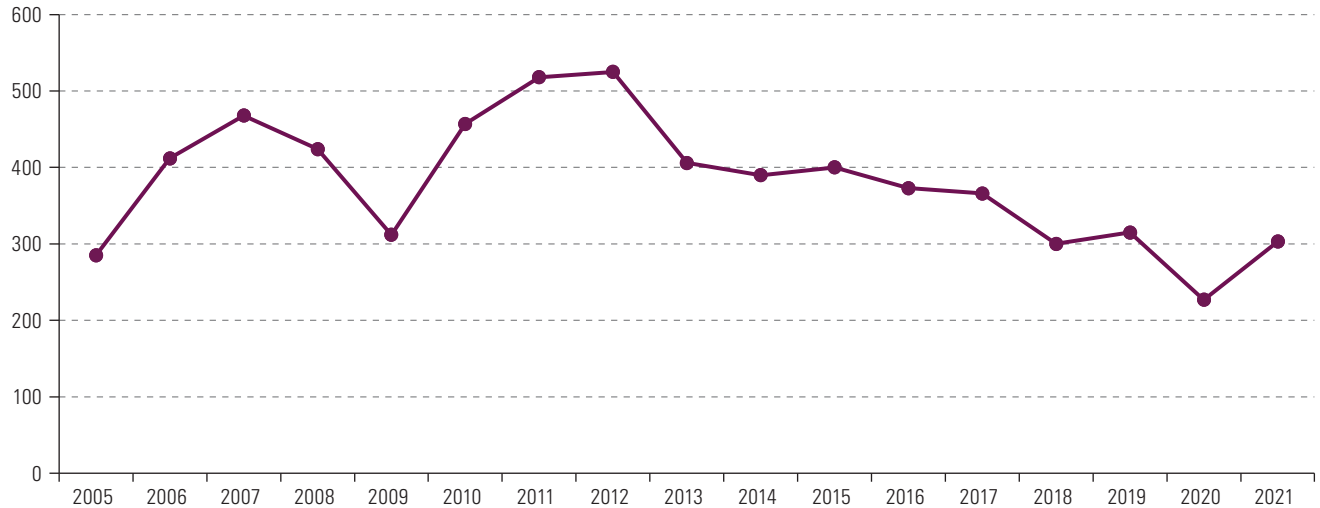



**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times,* fDi Markets.

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of International Energy Agency (IEA), *Net Zero by 2050: A Roadmap for the Global Energy Sector,* Paris, 2021 [online] https://iea.blob.core.windows.net/assets/ad0d4830-bd7e-47b6-838c-40d115733c13/NetZeroby2050-ARoadmapfortheGlobalEnergySector.pdf; A. Vogt-Schilb, G. Reyes-Tagle and G. Edwards, "Are Latin America's fossil fuels at risk of becoming stranded assets this decade?", Inter-American Development Bank (IDB), 21 September 2021 [online] https://blogs.iadb.org/sostenibilidad/en/are-latin-americas-fossil-fuels-at-risk-of-becoming-stranded-assets-this-decade/; J. Bordoff and M. L. O'Sullivan, "The new energy order: how governments will transform energy markets", *Foreign Affairs*, July/August 2022 [online] https://www.foreignaffairs.com/articles/energy/2022-06-07/markets-new-energy-order; M. Li, G. Trencher and J. Asuka, "The clean energy claims of BP, Chevron, ExxonMobil and Shell: a mismatch between discourse, actions and investments", *PLOS ONE*, vol. 17, No. 2, 16 February 2022 [online] https://doi.org/10.1371/journal.pone.0263596; Climate Action 100+, "Initiative snapshot", 2022 [online] https://www.climateaction100.org/; CDP, "CDP Capital Markets", 2022 [online] https://www.cdp.net/en/investor; McKinsey & Company, "The big choices for oil and gas in navigating the energy transition", 2021 [online] https://www.mckinsey.com/industries/oil-and-gas/our-insights/the-big-choices-for-oil-and-gas-in-navigating-the-energy-transition; International Renewable Energy Agency (IRENA), *Renewable Power Generation Costs in 2020,* Abu Dhabi, 2021 [online] https://www.irena.org/publications/2021/Jun/Renewable-Power-Costs-in-2020; ECLAC, "Latin America and the Caribbean has all the right conditions to become a renewable energy hub with great potential in green hydrogen", 22 June 2021 [online] https://www.cepal.org/en/news/latin-america-and-caribbean-has-all-right-conditions-become-renewable-energy-hub-great; and D. Gordon, Understanding Unconventional Oil, 2012 [online] https://carnegieendowment.org/files/unconventional_oil.pdf.

At the same time, there were more mergers and acquisitions in the region in 2021 (33%), but this was still one of the lowest levels of the last decade (see figure I.10). In a global context where mergers and acquisitions grew very strongly, in the region they only recouped the decline of 2020. The largest deals were concentrated in the service sector, which may also have contributed to this sector's increasing share of FDI inflows.

**Figure I.10**
Latin America and the Caribbean: cross-border mergers and acquisitions targeting companies in the region, 2005–2021
*(Number of operations)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bloomberg.

In particular, the largest deals were in the electricity, gas and water supply and telecommunications sectors (see table I.3). The biggest operation of the year was the purchase of Chile's Compañía General de Electricidad (CGE), which operates mainly in the electricity generation, transmission and distribution business, by the State-owned State Grid Corporation of China for US$ 3.025 billion. The Spanish company Naturgy Energy Group S.A. was the owner of CGE, so this acquisition does not necessarily have to involve an inflow of capital to Chile, but it is an operation that reflects the sustained interest of transnational companies, and particularly Chinese companies, in the region's energy market (the Spanish group explained that the Chinese State-owned enterprise offered between US$ 1.7 and US$ 2.3 more per share than the valuation set on the company by the market and analysts). The 20 largest deals include others related to energy infrastructure. In Mexico, the United States company Sempra Energy acquired a new stake in Mexico's Infraestructura Energética Nova (IEnova), one of the country's largest private sector energy companies, for a total of US$ 1.768 billion, becoming the owner of 96.4% of the company (Sempra, 2021). Sempra Energy is thus consolidating its position in the North American market and seeking to contribute to the global energy transition through growth in clean energy, energy infrastructure and liquefied natural gas (*El Economista*, 2021a). In Chile, Colbún S.A., owned by the Matte Group, sold its electricity transmission business, Colbún Transmisión, for US$ 1.295 billion. It was acquired by Alfa Desarrollo, 80% controlled by APG Energy of the Netherlands and Infra Investments (part of the Dutch pension fund), while the remaining 20% is held by Celeo Redes, a subsidiary of Spain's Celeo Concesiones e Inversiones. Alfa Desarrollo thus specializes in power transmission and in the operation and maintenance of electricity installations (Colbún, 2021). Also in Chile, the United States investment fund Global Infrastructure Partners (GIP) acquired 49% of the renewable energy portfolio owned by AES Andes, a subsidiary of United States-based AES Corporation, for US$ 441 million. The deal includes the transfer of the Los Cururos SPA wind farm and, according to AES Andes, this transaction secures the financing of a 2.3 gigawatt (GW) renewable energy expansion plan by 2024 (AES, 2021).

**Table I.3**
Latin America and the Caribbean: 20 largest cross-border mergers and acquisitions, 2021

| Firm | Country of origin | Assets acquired | Percentage | Country of assets | Country of seller | Sector | Value *(Millions of dollars)* |
|---|---|---|---|---|---|---|---|
| State Grid Corporation of China | China | Compañía General de Electricidad (CGE) | 100 | Chile | Spain | Electricity, gas and water supply | 3 025 |
| Millicom International Cellular S.A. | Luxembourg | Comunicaciones Celulares S.A. | 45 | Guatemala | Guatemala | Telecommunications | 2 200 |
| Mubadala Investment Company | United Arab Emirates | Landulpho Alves refinery | 100 | Brazil | Brazil | Manufacture of coke and refined oil products | 1 800 |
| Sempra Energy | United States | Infraestructura Energética Nova S.A.B. de C.V. | 23.26 | Mexico | Mexico | Electricity, gas and water supply | 1 768 |
| GIC Private Limited, Itaúsa S.A., Grupo Equipav, Aegea Saneamento e Participações S.A. | Singapore, Brazil | Block 1 of the Companhia Estadual de Águas e Esgotos (CEDAE) public tender, Rio de Janeiro | 100 | Brazil | Brazil | Electricity, gas and water supply | 1 514 |
| GIC Private Limited, Itaúsa S.A., Grupo Equipav, Aegea Saneamento e Participações S.A. | Singapore, Brazil | Block 4 of the Companhia Estadual de Águas e Esgotos (CEDAE) public tender, Rio de Janeiro | 100 | Brazil | Brazil | Electricity, gas and water supply | 1 329 |
| APG Groep NV, Celeo Redes S.L. | Netherlands, Spain | Colbún Transmisión S.A. | 100 | Chile | Chile | Electricity, gas and water supply | 1 295 |
| Hypera S.A. | Brazil | Takeda Pharmaceutical Company Limited pharmaceutical assets | 100 | Argentina, Brazil, Mexico, Colombia, Ecuador, Panama and Peru | Japan | Manufacture of pharmaceuticals | 825 |
| Essity | Sweden | Productos Familia S.A. | 45.8 | Colombia | Colombia | Manufacture of personal care products | 695 |
| I Squared Capital LLC | United States | KIO Networks | 100 | Mexico | Mexico | Data centre operator | 700 |
| Live Nation Entertainment, Inc. | United States | OCESA Entretenimiento S.A. de C.V. | 51 | Mexico | Mexico | Telecommunications | 444 |
| Global Infrastructure Partners (GIP) | United States | AES Andes renewable energy portfolio | 49 | Chile | Chile | Electricity, gas and water supply | 441 |
| ICL Group Ltd. | Israel | Compass Minerals América do Sul | 100 | Brazil | Brazil | Chemicals manufacture | 420 |
| Brookfield Asset Management, Inc. | Canada | Corporate buildings in São Paulo | 100 | Brazil | Brazil | Real-estate assets | 318 |
| IHS Holding Limited | United Kingdom | FiberCo Soluções de Infraestrutura Ltda. | 51 | Brazil | Brazil | Telecommunications | 318 |
| Patria Investments Ltd. | Brazil | Moneda Asset Management SpA | 100 | Chile | Chile | Financial and insurance activities | 315 |
| Interconexión Eléctrica S.A. E.S.P. | Colombia | Piratininga Bandeirantes Transmissora de Energia (PBTE) | 100 | Brazil | Brazil | Electricity, gas and water supply | 304 |
| GTIS Partners LP | United States | Warehouses and distribution centres in São Paulo | 100 | Brazil | Brazil | Transport and storage | 248 |
| I Squared Capital LLC | United States | Sociedad Portuaria Regional de Barranquilla S.A. | 78 | Colombia | Colombia | Transport and storage | 220 |
| Canada Pension Plan Investment Board, Alberta Investment Management Corporation, IG4 Capital Investimentos Ltda. | Canada and Brazil | Iguá Saneamento S.A. | 45 | Brazil | Brazil | Electricity, gas and water supply | 218 |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bloomberg and Bureau van Dijk, "Orbis Crossborder Investment Database" [online] https://orbisci.bvdinfo.com/version-202277/CBII/Projects/Login?returnUrl=%2Fversion-202277%2FCBII%2FProjects.

The second-largest deal of the year was in the telecommunications sector, where Millicom International Cellular S.A., a firm of Swedish origin based in Luxembourg, acquired the equity it lacked to take full ownership of Tigo Guatemala for a total of US$ 2.2 billion (GlobeNewswire, 2021). Interest in communications infrastructure has been reflected in a handful of large merger or acquisition deals in recent years, as well as smaller data centre deals. In Mexico, for example, United States investment fund I Squared Capital, which specializes in infrastructure investments, acquired all the equity of Mexico's KIO Networks, considered the largest data centre operator in the country. The transaction, estimated at US$ 700 million, is expected to give further impetus to the company's strategy of growing its operations; it also has a presence in Central American and Caribbean countries.

There were other major deals in the development of water and sanitation infrastructure in Brazil. The concession of two of the four blocks of the drinking water and sanitation system of the state of Rio de Janeiro (CEDAE) to a consortium made up of the Singaporean sovereign wealth fund GIC Private Limited, Itaúsa S.A., Grupo Equipav and Aegea Saneamento e Participações S.A., for a total of US$ 2.843 billion, was one of the largest operations in the sector. The tender covers the provision of water supply and sanitation services to 35 municipalities in the state, including the execution of infrastructure works, improvements, maintenance and operation of the systems.

With respect to investments in manufacturing industry, there were significant deals in refining and personal care, while there was divestment in pharmaceuticals. The main operation in the sector was the sale of assets belonging to the State-owned enterprise Petrobras. On this occasion, the firm sold the Landulpho Alves refinery and associated logistics assets to the United Arab Emirates sovereign wealth fund Mubadala Investment Company for US$ 1.8 billion. This is the first of eight refineries Petrobras is looking to sell, with the aim of creating a more competitive market; the firm will concentrate on five refineries in the south-east, for which it announced investment plans aimed at improving efficiency and operational performance (Agência Brasil, 2021b). Agreed in 2019 and regarded as the first sale to the private sector of one of the eight refineries, the transaction was challenged in the Federal Supreme Court, which in 2020 decided to authorize the sale of Petrobras subsidiaries without the approval of the National Congress (Coelho, 2020).

There was a divestment in the pharmaceutical industry, with the Japanese company Takeda Pharmaceutical Company Limited selling a portfolio of over-the-counter and prescription drugs marketed in Argentina, Brazil, Colombia, Ecuador, Mexico, Panama and Peru to Brazil's Hypera S.A. for a total of US$ 825 million (Takeda, 2021). In contrast, in the personal care sector the Swedish group Essity finalized the acquisition of Colombia's Productos Familia S.A., with the aim of expanding regionally into growth markets. The Familia group has been active in the hygiene, cleaning and personal care products sector for more than 60 years, and Essity, which had been a shareholder since 1985, consolidated a controlling interest (95.8%) with the purchase of 45.8% of the Colombian company's equity for US$ 695 million.

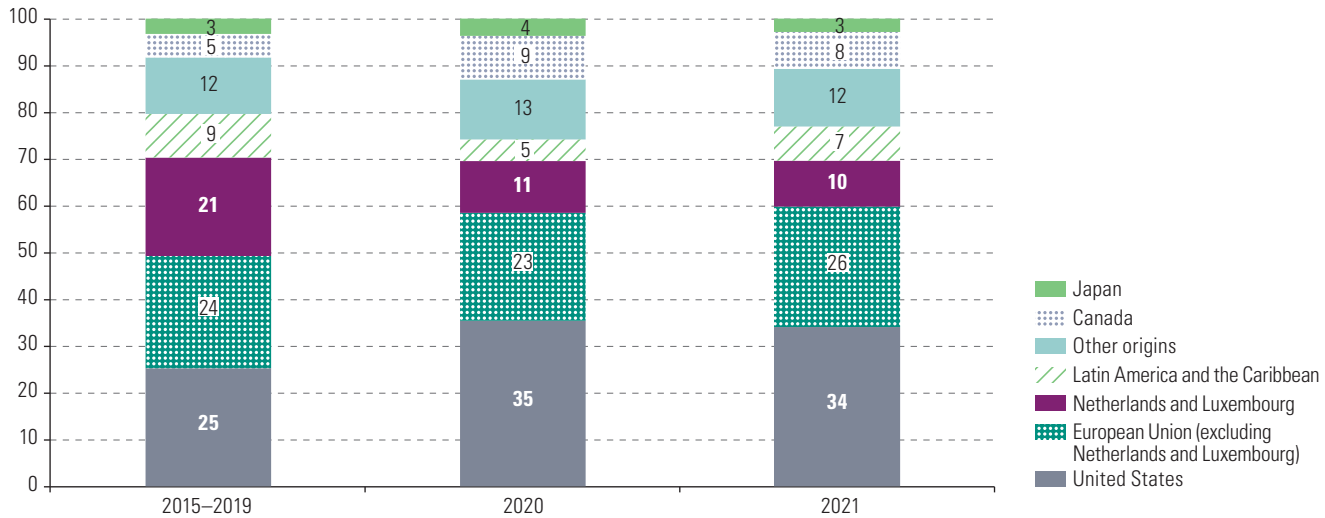
In the entertainment sector, lastly, Live Nation Entertainment, Inc. of the United States acquired 51% of Mexico's OCESA Entretenimiento, an organizer of large events and the operator of the Ticketmaster ticketing franchise in Mexico, for a total of US$ 444 million; this percentage was acquired from Televisa (40%) and Corporación Interamericana de Entretenimiento (CIE) (11%) (Bloomberg Línea, 2021).

## 3. The United States and the European Union: leading investors in the region

In the national accounts statistics for Latin America and the Caribbean, it is not possible at present to identify the ultimate origin of FDI inflows. For this reason, and because few countries publish their data by origin, analysis of the origin of inward investment in the region must be supplemented with statistics from non-official sources, such as announcements of new FDI projects or cross-border mergers and acquisitions.

Information from the 11 countries that present data by country of origin, excluding funds entering from tax havens, shows that inward investment from the United States and the European Union, the main sources of investment in Latin America and the Caribbean, was higher than in 2020. Investment from the European Union (27%) increased by more than that from the United States (17%), driving up the United States share (see figure I.11). Investments from Latin America and the Caribbean and Canada also increased in 2021 (94% and 4% respectively), while inflows from Japan were down (-7%).

**Figure I.11**
Latin America and the Caribbean (11 countries):[a] distribution of foreign direct investment inflows, by origin, 2015–2021
*(Percentages)*

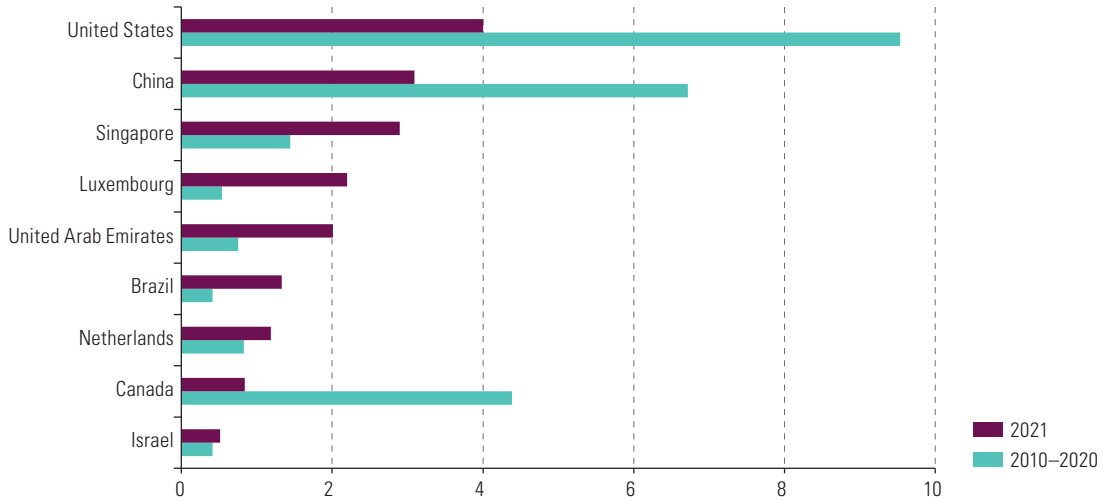



**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
[a] Countries for which information by origin up to 2021 is available are included: Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras and Mexico. The figures for Brazil do not include the reinvested earnings component. Funds whose origin could not be determined because they entered through tax havens are excluded in all cases.

The biggest loss of share between the second half of the 2010s and 2021 was in investments from the Netherlands and Luxembourg. The ultimate origin of these investments cannot be identified; the tax benefits granted by the two countries mean that they are often used by transnationals to invest in third countries. For example, much of the investment by Chinese companies in Brazil in previous years had its immediate origin in Luxembourg. Thus, the drop in the share of investments from these countries cannot be interpreted straightforwardly.

When the origin of the companies involved in the largest mergers and acquisitions and the largest investment project announcements is analysed, the United States is found to have led in 2021. In mergers and acquisitions, other countries with large shares were China, Singapore, Luxembourg and the United Arab Emirates (see figure I.12). The leading position of the United States was due to acquisitions in the energy sector and acquisitions by investment funds from that country. China ranked second, mainly because of the purchase of the CGE electricity company in Chile.

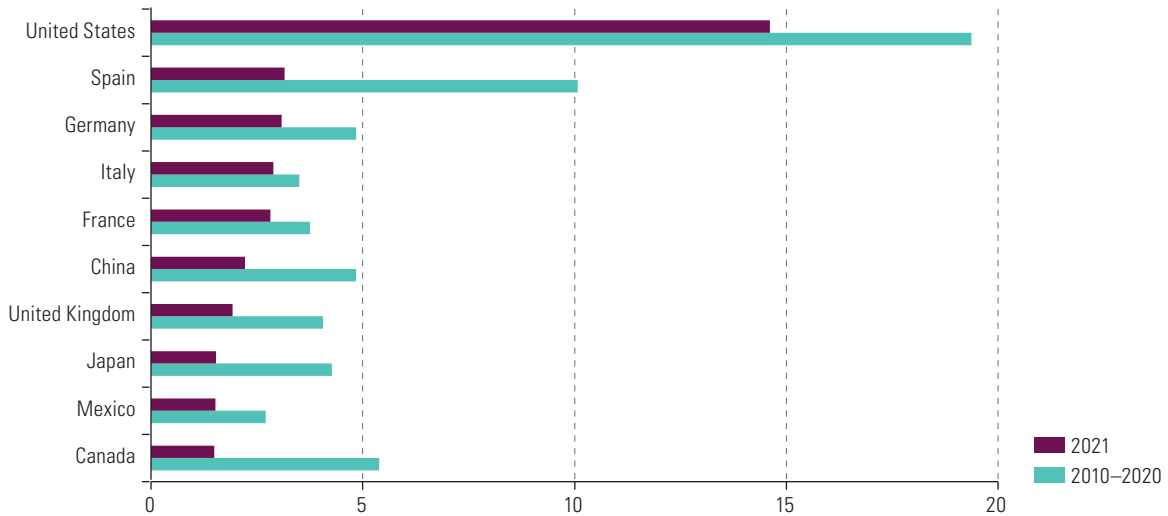
**Figure I.12**
Latin America and the Caribbean: mergers and acquisitions, by purchaser's country of origin, 2010–2021
*(Billions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bloomberg.

The United States was also the leading source when it came to investment announcements by value in 2021, followed by EU countries (see figure I.13). A US$ 1 billion General Motors project in Mexico, together with announcements in the energy and communications sectors, positioned United States companies as the most dynamic. EU companies have remained strategic partners, announcing new investments in renewable energy and the automotive industry, with France, Germany, Italy and Spain among the main countries of origin. Companies from France, Italy and Spain made major announcements in renewable energy, and 75% of announcements in this sector by value in 2021 were made by EU companies. German projects were concentrated in the automotive and auto parts industry, essentially in Mexico.

**Figure I.13**
Latin America and the Caribbean: foreign direct investment project announcements, by country of origin, 2010–2021
*(Billions of dollars)*

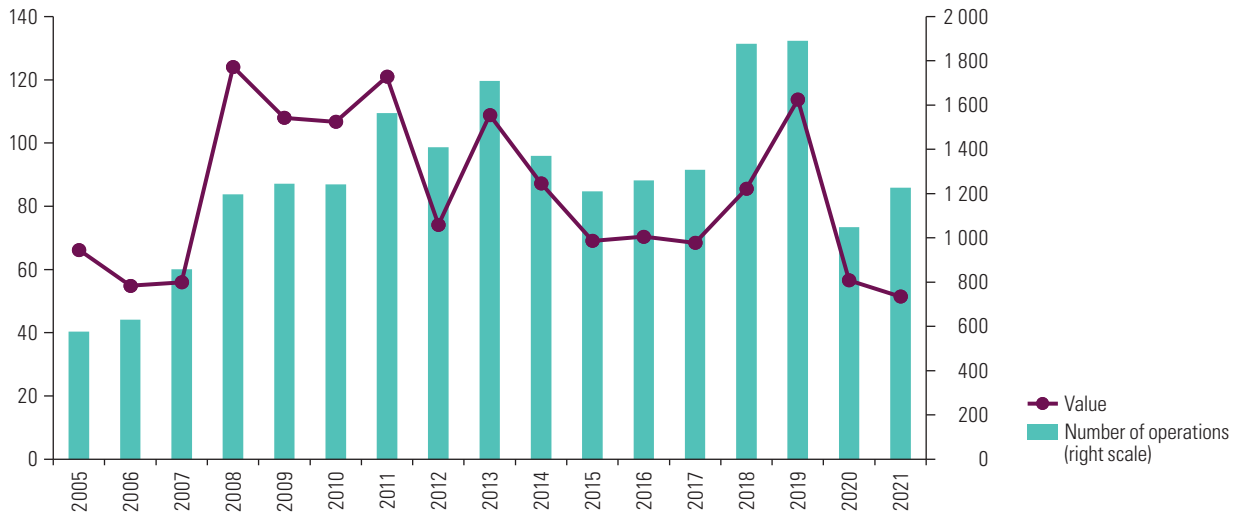



**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times*, fDi Markets [online database] https://www.fdimarkets.com/.

## 4. New investment announcements did not revive in 2021

The recovery in FDI inflows shown in the national accounts of the region's countries in 2021 did not coincide with an improvement in the outlook for future investment, as measured by announcements of new investment projects. After falling sharply in 2020, the value of new FDI projects in Latin America and the Caribbean declined by 9.1% in 2021, with project announcements estimated at around US$ 51.5 billion (see figure I.14). The number of announcements did recover (16%), but both the number and value of announcements were still below the averages for the past 10 years.

**Figure I.14**
Latin America and the Caribbean: foreign direct investment project announcements, 2005–2021
*(Billions of dollars and numbers of operations)*



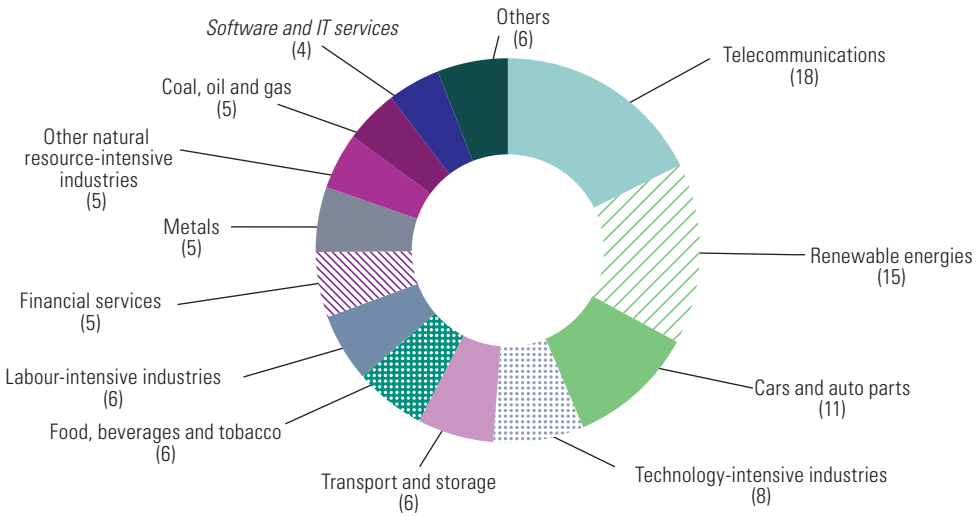

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times*, fDi Markets [online database] https://www.fdimarkets.com/.

The sectors in which the largest project announcements were made in 2021 were telecommunications, renewable energies, cars and auto parts, technology-intensive industries (led by consumer electronics, medical devices and the manufacture of non-automotive transport equipment) and transport and storage (see figure I.15A). Telecommunications announcements, which had shown a slight downward trend between 2014 and 2020, rebounded in 2021, with 113 new project announcements worth an estimated US$ 9 billion, led by data centre projects and mobile Internet infrastructure projects. These infrastructure investments are necessary for the development of the region's technology industry and contribute directly to connectivity and accessibility, enabling the countries of the region to make progress towards the SDGs.

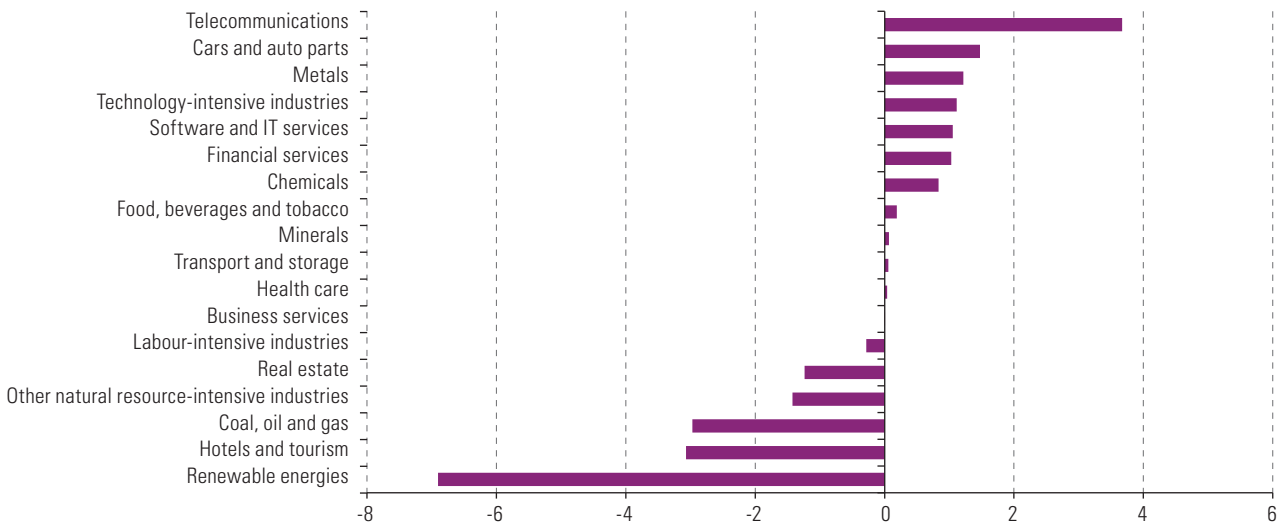
The value of renewable energy project announcements was down from 2020 (see figure I.15B); nonetheless, with 54 announcements worth an estimated US$ 7.8 billion, this was the sector with the second-largest number of announcements during the year, with solar and wind energy projects at the forefront. Despite the drop in investments in 2021, there is great potential for the sector in the region, which is considered one of the most dynamic markets for renewable energy in the world (IRENA, 2019). The sector is of great importance for reducing emissions across all electricity uses, so that it contributes directly to SDG 7 (affordable and clean energy) and SDG 13 (climate action).

**Figure I.15**
Latin America and the Caribbean: foreign direct investment project announcements, by sector, 2021 and changes 2020–2021
*(Percentages and billions of dollars)*

A. Announcements by sector, 2021
*(Percentages of total value)*




B. Year-on-year changes, 2020–2021
*(Billions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times*, fDi Markets [online database] https://www.fdimarkets.com/.

Lastly, investment announcements in the automotive and auto parts sector grew to an estimated total of around US$ 5.5 billion. Projects related to electromobility (manufacture of vehicles and batteries) were particularly prominent, with investors showing interest in this sector. The largest project announcement in 2021 came from General Motors, which will invest more than US$ 1 billion in the Ramos Arizpe manufacturing complex in Mexico to commission a new plant enabling it to move towards electric vehicle production. The United States company has three electric vehicle plants in the United States and one in Canada and is expected to produce General Motors-branded electric vehicles from 2023 at the new plant in Mexico, as well as batteries and electrical components, starting with the manufacture of the electric vehicle propulsion system (General Motors, 2021).

## 5. Impact investments: new tools for financing sustainable projects in the region

The current stagnation of FDI provides an opportunity for governments to reorient their inward investment strategy and make it more sustainable, taking advantage of the potential of their economies. Since 2011, FDI project announcements in the region have been contributing to a low-carbon economy by offsetting carbon-intensive activities, with substantial growth in project announcements in the renewable energy sector, notwithstanding that in 2021 the negative impact of the pandemic, among other factors, was more in evidence in investment announcements in the renewable energy sector than in the coal, oil and gas sector.

Despite this, more action is needed to address the challenges posed by the climate crisis. It is estimated that between 2016 and 2030, Latin America and the Caribbean will need to have invested approximately US$ 176 billion per year to meet voluntary emission reduction commitments under the Paris Agreement, the so-called nationally determined contributions (NDCs) (Herrera, 2017). In the cases of Chile, Colombia and Costa Rica, countries that have set themselves ambitious emission reduction targets in their NDCs, a significant increase in investments that contribute directly to the achievement of these targets will be required.[3] It is therefore essential to take advantage of new market mechanisms that can provide sources of green or impact finance and investment.

The COVID-19 pandemic left the countries of the region with very limited fiscal space. Coupled with the need to address climate risks, this has spurred governments and companies to use new debt financing instruments to meet their needs (ECLAC, 2021a). In December 2014, in Chile, a company from the region (Peru) issued the first green (environmental or social) bond. "Green" bonds subsequently broadened the investor base to those with specialized environmental, social and governance (ESG) mandates, a category which includes green, social, sustainability and sustainability-linked (GSSS) bonds. From 2015 to April 2022, the international sustainable debt market in Latin America and the Caribbean was worth a total of US$ 93 billion (Núñez, Velloso and Da Silva, 2022)4 (see figure I.16). Globally, according to data from the United Nations Conference on Trade and Development (UNCTAD, 2022), the total value of sustainable financial instruments (sustainable funds and bonds) has now reached US$ 5.2 trillion.

The Global Impact Investing Network (GIIN, 2020) defines impact investments as those made with the intention to generate positive, measurable social and environmental impact alongside a financial return. This is a nascent but growing market in Latin America and the Caribbean, and it has emerged as a way of raising capital and addressing the region's pressing challenges in sectors such as sustainable agriculture, renewable energy, conservation, housing, basic services, health care and microfinance (GIIN, 2020).

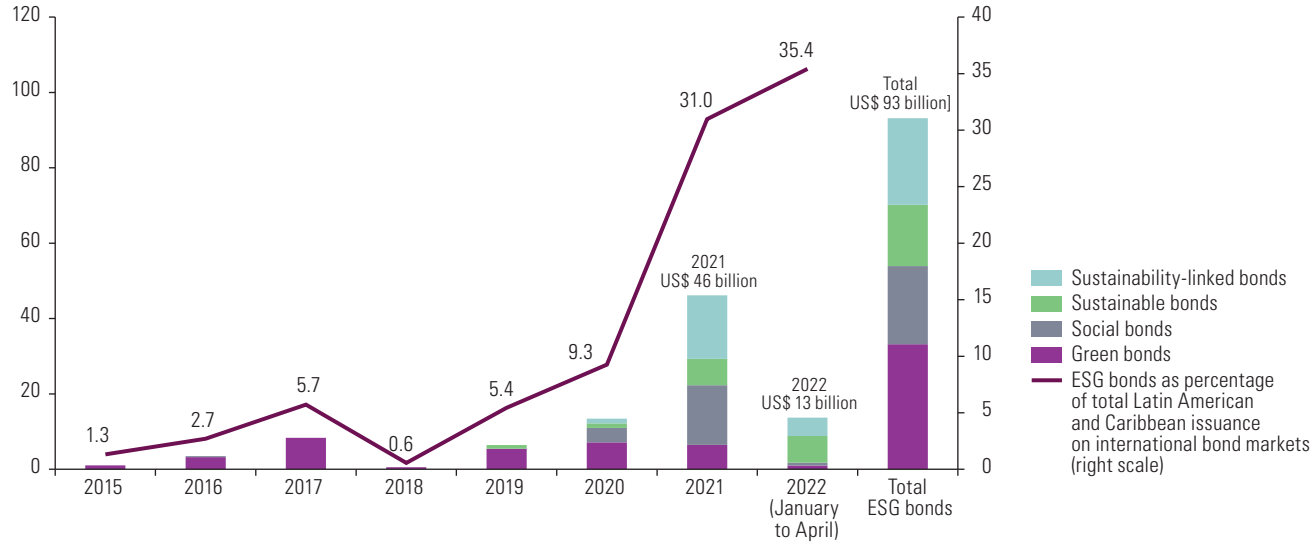
In recent years, countries such as Chile and Mexico have been very active in sustainability debt markets. Chile, for example, was the first country in the world to issue a sustainability-linked bond, in 2019.[5] In addition to choosing a performance indicator associated with its NDC to reduce carbon emissions, for example, Chile has set itself the ambitious target of deriving 60% of the energy consumed in the country from non-conventional renewable sources by 2032 (in 2021, the country obtained 27% of that energy from such sources).

3 Despite having ratified its commitment to reduce its emissions by 37% by 2025 and 43% by 2030, according to Observatório do Clima (2020), Brazil has lowered its reduction ambitions by changing its NDC baseline. This may represent a big loss in terms of green investments for Latin America and the Caribbean, considering that Brazil is the largest economy in the region.

4 Information updated by the authors to April 2022.

5 See Ministry of Finance (2020).

**Figure I.16**
Latin America and the Caribbean: issuance of environmental, social and governance (ESG) bonds on international debt markets, by type of instrument, 2015 to April 2022
*(Billions of dollars and percentages)*




**Source**: G. Núñez, H. Velloso and F. Da Silva, "Corporate governance in Latin America and the Caribbean: using ESG debt instruments to finance sustainable investment projects", *Project Documents* (LC/TS.2022/23), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2022, figure 2 (information updated by the authors to April 2022); Economic Commission for Latin America and the Caribbean (ECLAC), *Capital flows to Latin America and the Caribbean: 2021 year-in-review and first four months of 2022* (LC/WAS/TS.2022/1), Santiago, 2022, chart 3 [online] https://repositorio.cepal.org/bitstream/handle/11362/47917/S2200485_en.pdf?sequence=1&isAllowed=y.

Of the nearly US$ 31 billion raised by Chile in the markets for environmental, social and governance (ESG) bonds,[6] including US$ 7.5 billion from green bonds, US$ 8.7 billion has already been allocated to eligible green expenditures (in 2019, 2020 and 2021). These funds were mainly allocated to clean transport and renewable energy projects, e.g., the extension of commuter rail lines, the purchase of electric buses, the construction of electromobility infrastructure and the installation of solar panels.[7]

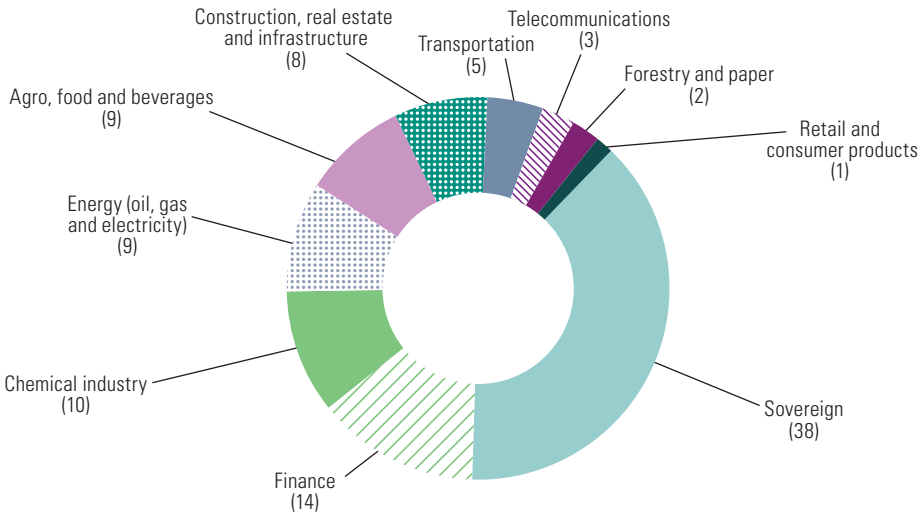
Mexico has also been very active in sovereign issuance of sustainable or ESG debt. Among the objectives of this strategy is the creation of a yield curve for sustainable bonds and swaps issued on the domestic market[8] so that market participants can better price debt products over different time horizons (Yorio and others, 2022).[9] By issuing sovereign bonds, Mexico and Chile seek to encourage private participation in sustainability debt markets.

The current high interest rate environment contributed to a 42% reduction in international issuance of Latin American and Caribbean fixed-income instruments between January and April 2022, compared to the same period in 2021. In these less favourable conditions, ESG bonds accounted for 35.4% of the total amount issued by the region in international bond markets in the first four months of 2022, up from 25.3% in the

6 Data compiled by the ECLAC office in Washington, D.C. on the basis of information from Dealogic, Bloomberg and LatinFinance.
7 See documents on green bond project portfolios for 2019, 2020 and 2021 [online] https://www.hacienda.cl/areas-de-trabajo/finanzas-internacionales/oficina-de-la-deuda-publica/bonos-sostenibles/bonos-verdes.
8 Swaps related to ESG criteria (and designed to meet these) in sustainability-linked lending, or sustainability-linked derivatives that typically include, for example, carbon credits or credits related to catastrophic events (financial materiality) or to the cash flows of a conventional swap in the market, or hedging transactions that allow actors to hedge risks associated with fluctuations in renewable energy production or fuel production and direct capital to renewable energy projects.
9 In addition, the Mexican government is consolidating a new interbank funding equilibrium interest rate (TIIEF) and encouraging its use through its sovereign issues with long-term maturities (Yorio and others, 2022).

same period in 2021 and from an annual share of 31% in 2021 (ECLAC, 2022b). These bonds could represent an opportunity for the region to finance investment projects with a sustainability impact. Figure I.17 shows the main economic sectors benefiting from resources raised in the international sovereign and corporate ESG bond market between December 2014 and April 2022.

**Figure I.17**
Latin America and the Caribbean: environmental, social and governance (ESG) bond issuance on international debt markets, sectoral distribution, December 2014 to April 2022
*(Percentages)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of G. Núñez, H. Velloso and F. Da Silva, "Corporate governance in Latin America and the Caribbean: using ESG debt instruments to finance sustainable investment projects", *Project Documents* (LC/TS.2022/23), Santiago, ECLAC, 2022 (information updated by authors to April 2022).

**Box I.2**
A taxonomy of sustainable investment

During the twenty-sixth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 26), held from 31 October to 12 November 2021, the International Financial Reporting Standards Foundation announced the launch of the International Sustainability Standards Board. The standards concerned address sustainable investment metrics and disclosure mechanisms and are intended to develop a global sustainability baseline to meet investors' need for information on companies' environmental, social and governance (ESG) strategies, which impact the value of their businesses. Given the growth trend in sustainable investment and the fact that investors are demanding more and more sustainability information that is globally comparable and consistent with companies' financial statements, the creation of standards proposed by the International Sustainability Standards Board represents a process of international harmonization similar to that carried out by the International Accounting Standards Board (IASB) at an earlier date (Núñez, Velloso and Da Silva, 2022).

Thus, the trend in markets towards greater impact investment requires the harmonization of standards and the creation of taxonomies and sustainability-related regulatory frameworks, as shown by the Chilean experience with the Framework Law on Climate Change.[a] Adapting current regulatory and institutional frameworks to new market conditions that demand greater transparency and accountability from the different actors and related publics is essential to meet the commitments of the 2030 Agenda for Sustainable Development, the Sustainable Development Goals (SDGs) and the Paris Agreement.

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of G. Núñez, H. Velloso and F. Da Silva, "Corporate governance in Latin America and the Caribbean: using ESG debt instruments to finance sustainable investment projects", *Project Documents* (LC/TS.2022/23), Santiago, ECLAC, 2022.

[a] The bill establishing the Framework Law on Climate Change was passed unanimously in the Chilean Senate in March 2022, and it became law in May 2022 (see [online] https://dos.gob.cl/gobierno-promulgo-ley-marco-de-cambio-climatico-en-el-dia-mundial-del-medio-ambiente/).

# C. Latin American investment abroad has reached pre-pandemic levels

After the investment lull in the first year of the pandemic, regional economic growth of 6.3% in 2021 meant that companies in Latin America and the Caribbean began to invest abroad again. The revival of the activities of the region's transnationals resulted in FDI outflows of US$ 43.046 billion, a figure almost four times as high as in 2020. This recovery brought outward FDI to a level close to that of 2019, representing a better performance than that of the second half of the 2010s (see table I.4).

**Table I.4**
Latin America and the Caribbean (selected countries): outward foreign direct investment, 2010–2014 and 2015–2021
*(Millions of dollars and percentage rates of change)*

| | 2010–2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Absolute change 2020–2021 | Relative change 2020–2021 *(Percentages)* |
|---|---|---|---|---|---|---|---|---|---|---|
| Argentina | 1 264 | 875 | 1 787 | 1 156 | 1 726 | 1 523 | 1 292 | 1 363 | 70 | 5 |
| Brazil | 16 233 | 3 134 | 14 693 | 21 341 | 2 025 | 22 820 | -3 467 | 19 157 | 22 624 | 652 |
| Chile | 12 958 | 15 851 | 7 876 | 2 535 | 1 847 | 10 345 | 6 705 | 14 454 | 7 749 | 116 |
| Colombia | 4 969 | 4 218 | 4 517 | 3 690 | 5 126 | 3 153 | 1 686 | 3 181 | 1 495 | 89 |
| Mexico | 14 374 | 10 978 | 7 870 | 3 083 | 12 121 | 5 969 | 5 614 | 396 | -5 218 | -93 |
| Panama | 112 | 1 091 | 933 | -338 | 570 | 725 | -2 800 | -285 | 2 515 | 90 |
| Uruguay | 800 | 1 898 | 1 308 | 4 724 | 2 268 | 12 | -582 | 1 385 | 1 967 | 338 |
| Venezuela (Bolivarian Republic of) | 1 638 | -399 | -1 041 | -2 234 | -661 | ... | ... | ... | ... | ... |
| All other countries | 2 279 | 730 | 3 033 | 2 055 | 652 | 1 144 | 2 258 | 3 397 | 1 139 | 50 |
| Latin America and the Caribbean | 54 627 | 38 377 | 40 975 | 36 011 | 25 673 | 45 690 | 10 705 | 43 046 | 32 341 | 302 |

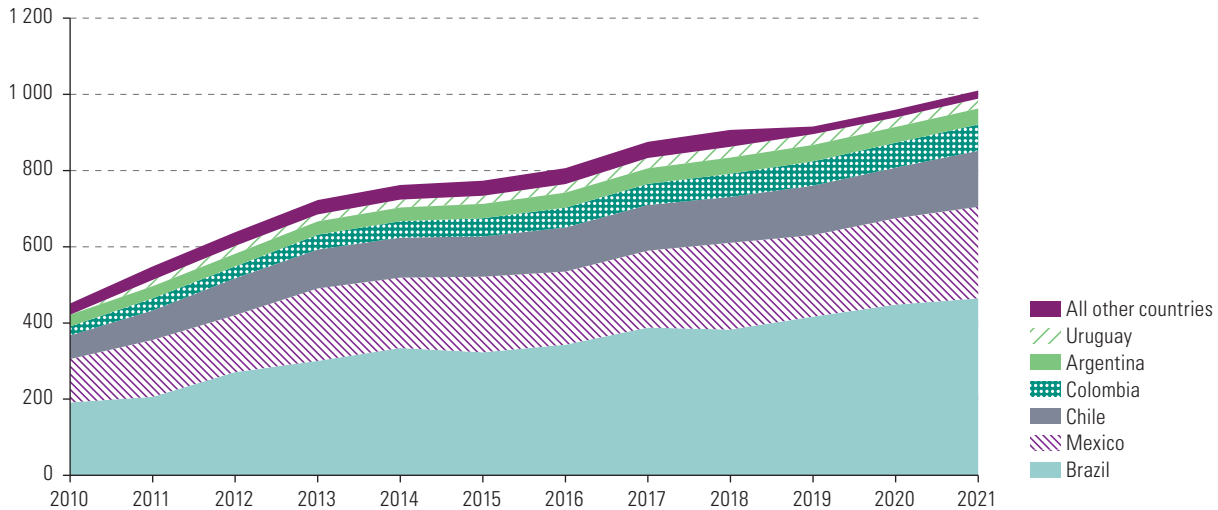
**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: Information computed in accordance with International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, Washington, D.C., 2009, except Barbados, Ecuador, Guyana, Paraguay, Peru and Suriname.

The countries that have accounted for the largest amounts of outward FDI in recent years, namely Brazil, Chile, Colombia and Mexico, were responsible for 86% of the total in 2021, but there was a divide between the performance of the South American countries and Mexico. Brazil was the source of US$ 19.157 billion of FDI outflows in 2021 and presented the highest growth rate (652%), having recorded negative outflows during the first year of the pandemic. In second place was Chile, with outward investment of US$ 14.454 billion (a 116% increase over 2020), which was also one of the highest figures of the last decade. FDI outflows from Colombia were almost twice as high as the previous year, at US$ 3.181 billion. Mexico, having been the source of 24% of the region's outward FDI in the 2010s, accounted for only 1% of FDI originating in Latin America and the Caribbean in 2021, with US$ 396 million of FDI recorded in its national accounts, a decline of 93% from 2020.

In 2021, the stock of Latin American and Caribbean companies' investments abroad totalled US$ 1.01 trillion. The largest transnationals, and those with the most outward investments, are from Brazil and Mexico, and these were the countries that accounted for the largest shares of the region's outward investment stock in 2021 (46% and 24%, respectively) (see figure I.18). In third place is Chile, with 15%. Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile and Mexico were home to the first wave of trans-Latins investing abroad (ECLAC, 2014). They were later joined by Colombia,

which currently accounts for 7% of the region's FDI stock abroad. Uruguay and Panama also have significant volumes of outward investment, but the source of their investment outflows are more usually companies from third countries using them as a base for financial operations than companies from the countries themselves.

**Figure I.18**
Latin America and the Caribbean: stocks of outward foreign direct investment, 2010–2021
*(Billions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.

While analysis of the evolution of FDI outflows and stocks abroad yields a picture of recovery in the activity of Latin American and Caribbean transnationals, it is incomplete. In previous editions of this report, the Economic Commission for Latin America and the Caribbean (ECLAC) has pointed out that to better capture the behaviour of companies, national accounts information needs to be supplemented with unofficial sources of data, since the more the region's companies engage with international capital markets and the more complex the sources of financing for their operations become, the harder it is to capture their investments from the FDI figures alone.

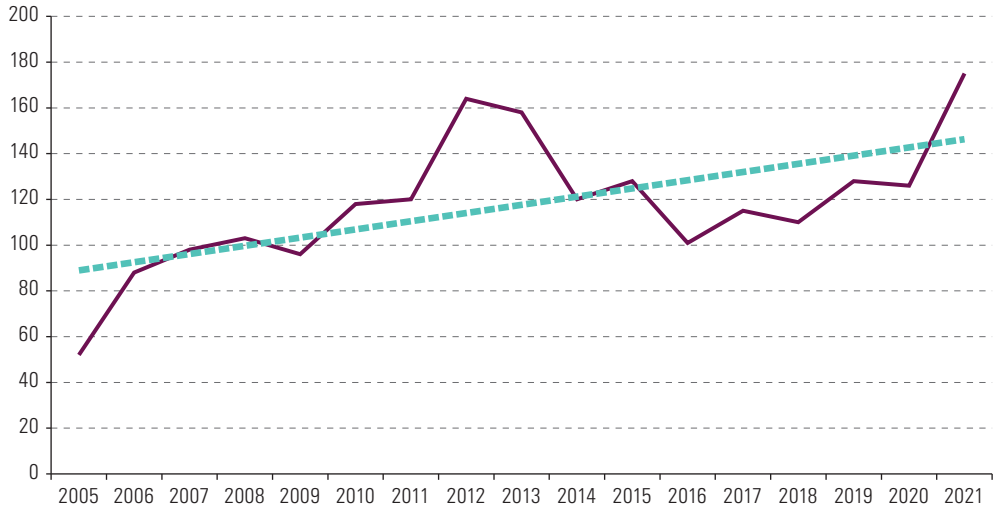
Cross-border mergers and acquisitions are one of the methods used by transnationals to internationalize. In line with the international trend, the number of transactions increased considerably (40%) in 2021, reaching their highest level since 2005. In addition, the number of mergers and acquisitions abroad undertaken by companies in the region has been on an upward trend generally (see figure I.19), tripling in 15 years. On average, Latin American and Caribbean companies carried out 118 foreign mergers and acquisitions annually during this period. The amounts associated with these transactions fluctuated considerably, with years in which very large deals were completed throwing out the trend.[10] If transactions worth over US$ 1 billion are eliminated, the average amount between 2005 and 2021 was US$ 8.15 billion per year.[11]

[10] Information on the value of operations is available for 56% of observations in the period analysed (2005-2021). Fifty-three transactions worth more than US$ 1 billion are excluded.

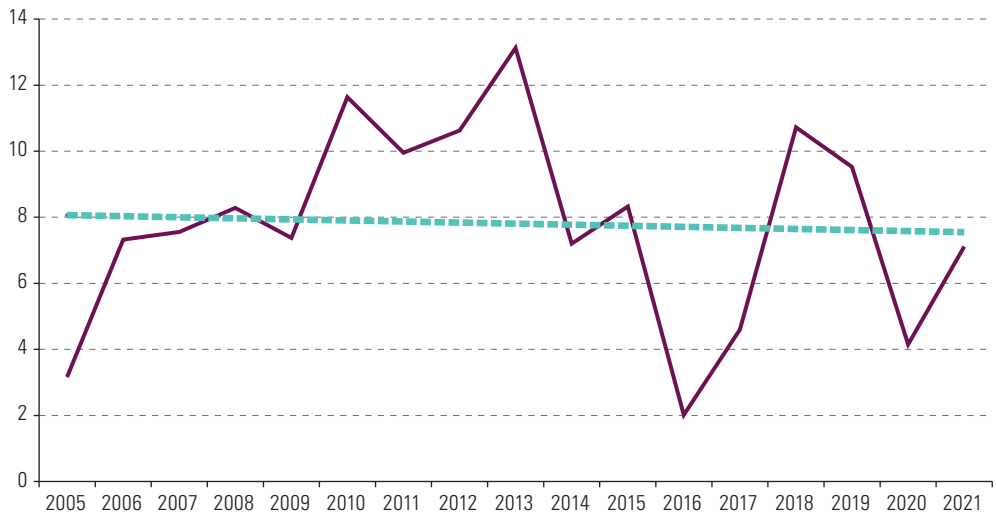
[11] If all observations are included, the annual totals average US$ 16.13 billion and decrease year by year.

**Figure I.19**
Cross-border mergers and acquisitions by Latin American and Caribbean firms, 2005–2021
*(Numbers of operations and billions of dollars)*

A. Numbers of operations[a]




B. Amounts in billions of dollars[b]




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bloomberg.
[a] The total number of operations was 2,000.
[b] Calculated from 1,035 operations, including only those whose value is known and excluding 53 worth more than US$ 1 billion.

In addition to the purchase of the pharmaceutical sector assets of Japan's Takeda Pharmaceutical Company Limited by Hypera S.A. of Brazil for US$ 825 million, as noted earlier, mention should be made of some other merger and acquisition transactions by companies in the region during 2021 (see table I.5). These include the purchase of the United States Smart & Final chain of self-service shops for US$ 620 million by Grupo Comercial Chedraui, which has thus positioned itself as Mexico's second-largest retailer, with operations in that country and in the United States (Santiago, 2021).

**Table I.5**
Largest cross-border mergers and acquisitions by Latin American and Caribbean firms, 2021

| Firm | Country of origin | Assets acquired | Percentage | Country of assets | Sector | Value *(Millions of dollars)* |
|---|---|---|---|---|---|---|
| Hypera S.A. | Brazil | Takeda Pharmaceutical Company Limited pharmaceutical assets | 100 | Argentina, Brazil, Colombia, Ecuador, Mexico, Panama and Peru | Pharmaceutical industry | 825 |
| Grupo Comercial Chedraui S.A.B. de C.V. | Mexico | Smart & Final Holdings LLC | ... | United States | Retail | 620 |
| JBS S.A. | Brazil | Huon Aquaculture Group Ltd. | 100 | Australia | Agriculture, stockbreeding, forestry and fisheries | 517 |
| JBS S.A. | Brazil | Vivera B.V. | 100 | Netherlands | Manufacturing | 400 |
| Interconexión Eléctrica S.A. E.S.P. | Colombia | Piratininga Bandeirantes Transmissora de Energia (PBTE) | 100 | Brazil | Electricity supply | 304 |
| Grupo Lamosa S.A.B. de C.V. | Mexico | Cerámicas Belcaire S.A., two plants | 100 | Spain and Brazil | Manufacturing | 261 |
| Ambipar Participações e Empreendimentos S.A. | Brazil | Disal Ambiental Holding S.A. | 100 | Chile | Environmental services | 162 |
| IG4 Capital Investimentos Ltda. | Brazil | Aenza S.A.A. | 33.9 | Peru | Manufacturing | 140 |
| Alsea S.A.B. de C.V., Alia Capital Partners SL, Bain Capital Credit LP | Mexico | Food Service Project S.A. | 21.1 | Spain | Accommodation and food service activities | 128 |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bloomberg.

The world's largest protein producer, JBS of Brazil, completed two major deals in 2021, further diversifying its business. The largest of these, worth US$ 517 million, was the purchase of 100% of the assets of Huon Aquaculture, Australia's second-largest salmon producer, and marks the company's entry into aquaculture (White, 2021). The second was the purchase of all the assets of Vivera B.V. of the Netherlands for US$ 400 million. Vivera, Europe's third-largest producer of plant-based foods, is present in 25 European countries and represents an important expansion platform for the Brazilian company in the growing vegetable protein market (JBS, 2021).

Also in the manufacturing sector, Mexico's Grupo Lamosa S.A.B. de C.V. spent US$ 261 million to acquire the flat ceramics division of the Spanish company Roca Corporación Empresarial S.A. The assets acquired consist of two plants in Brazil and one in Spain, expanding the Mexican company's area of activity (Europa Press, 2021).

The most significant acquisition in the energy sector was the purchase of Piratininga Bandeirantes Transmissora de Energia (PBTE) by Interconexión Eléctrica S.A. E.S.P. of Colombia for US$ 304 million. The latter has thus consolidated its leading position in transmission in the state of São Paulo (Brazil), where it transmits 94% of all energy consumed, 33% of the total produced in the country (ISA, 2021).

In the infrastructure sector, Brazilian alternative fund manager IG4 Capital Investimentos Ltda., which specializes in ESG-related investments, bought 33.87% of the total equity of Peruvian infrastructure company Aenza S.A.A. for US$ 140 million. With this transaction, IG4 became the company's largest shareholder (IG4 Capital, 2021). IG4 also participated in another important transaction in the region in 2021, the purchase of the Brazilian water and sewerage operator Iguá Saneamento S.A., as part of a consortium with Canadian investors. The transaction was valued at US$ 218 million.

In the service sector, the Brazilian group Ambipar Participações e Empreendimentos S.A., acting through its subsidiary ESG Participações, acquired 100% of the Chilean environmental management company Disal Ambiental Holding S.A. for US$ 162 million. The purchase of the Chilean company, which specializes in industrial waste management,

allows Ambipar to expand its services to other countries and sectors, mainly in the areas of mining and civil construction, while also increasing its ability to generate certifiable carbon credits (*Diario Financiero*, 2021).

Announcements of new outward investment projects by Latin American and Caribbean firms also recovered in 2021, when 313 projects were announced (13% more than in 2020), with an estimated total value of some US$ 9.6 billion, which is an increase of 27% over 2020, although it still falls short of the high figures recorded in the two years prior to the pandemic (see figure I.20). The steady growth in the number of project announcements by companies in the region in recent decades was not matched by any evolution in the size of the projects concerned, which fluctuated around an average of US$ 12.322 billion during the period under review.[12]

**Figure I.20**
Foreign direct investment project announcements by Latin American and Caribbean firms, 2003–2021
*(Numbers of announcements and billions of dollars)*

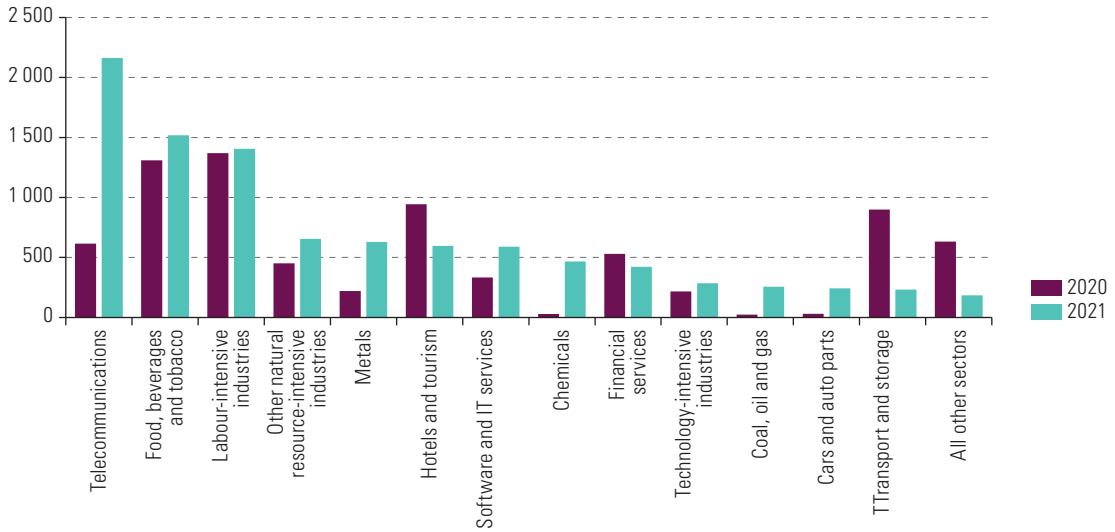

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times,* fDi Markets [online database] https://www.fdimarkets.com/.
**Note**: Twenty-three projects worth more than US$ 1 billion were announced; since these investments are sporadic (and in some cases uncertain), the "adjusted value" indicator, which omits them, was calculated.

[12] Twenty-three projects worth more than US$ 1 billion were announced; since these investments are sporadic (and in some cases uncertain), the "adjusted value" indicator, which omits them, was calculated so that the behaviour of the variable without distorting shocks could be observed. The average invested each year between 2003 and 2021 then comes out at US$ 10.04 billion.

However, this situation has to be seen in the current global context. Asia and the Pacific was the only region to increase the amount of its outward investment between 2003 and 2021, while Latin America and the Caribbean was the only other region not to show a negative trend over the period.

The largest announcements of 2021 were in telecommunications, food and beverages and labour-intensive industries (particularly textiles, consumer products and construction materials), which accounted for 53% of the total value announced in the year (see figure I.21).

**Figure I.21**
Foreign direct investment project announcements by Latin American and Caribbean firms, by sector, 2020 and 2021
*(Millions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of *Financial Times*, fDi Markets [online database] https://www.fdimarkets.com/.

In the telecommunications sector, 52% of the value of announcements in 2021 was accounted for by the Mexican company América Móvil, which not only announced expansion projects in the region (Argentina, Brazil, Colombia and Peru) and in nearby markets such as the United States, but also planned to increase its operations in Europe (Austria and Croatia). In the food, beverages and tobacco sector, the companies deciding to expand their activities beyond their borders were more fragmented. One of the largest was Brazil's JBS, which accounted for 17% of the value of projects announced during the year and planned to invest outside the region, in the United Kingdom and the United States.

In the labour-intensive industries category, the company with the largest share was Brazil's BRS Comercio e Industria de Material Esportivo (36% of the total), with its announcement of the expansion of the Topper sports footwear factory in Argentina. The company plans to invest US$ 500 million to increase local manufacturing capacity, the second-largest project announced in the region in 2021. Mexico's CEMEX was also prominent in this sector (11% of the total), with projects in the region (the Dominican Republic, Guatemala and Jamaica) and beyond (Spain, the United Kingdom and the United States). In third place was Chile's Falabella (11% of the total), which announced new Falabella department stores and branches of Sodimac, the home improvement retailer (Brazil, Colombia, Mexico, Peru and Uruguay).

Empresas CMPC, also from Chile, was responsible for the largest announcement by a Latin American company in 2021, with a value representing 81% of the total for projects in the other natural resource-intensive sectors category. The company is continuing to expand in Brazil and announced a project to modernize and expand capacity at its pulp mill in Guaíba worth US$ 530 million.

In the metals sector, the biggest announcement was made by Brazil's Companhia Siderúrgica Nacional (CSN), which unveiled a global expansion plan in 2021 after a process of divestment in previous years, including the announcement of a steel production plant in the United States to supply the local market, involving investment estimated at US$ 350 million.

Growth in the chemical industry was explained by the announcement by Braskem Idesa, a petrochemical subsidiary of Brazilian conglomerate Odebrecht, of an expansion of its facilities in Mexico. The company announced that it would invest US$ 400 million to build a new ethane import terminal, which is expected to be ready by the end of 2024.

In conclusion, 2021 saw a revival in the activities of Latin American and Caribbean companies, manifested by FDI outflows in their national accounts, their acquisition activities in other countries and the outlook for future investments as indicated by project announcements. This picture, however, may change in the context of events in early 2022. The war in Ukraine, high regional and global inflation and rising interest rates in both the United States and the countries of the region make for a macroeconomic outlook of great uncertainty and rising financing costs, which is not favourable to medium- and long-term investment decisions.

## D. Conclusions

In contrast to the first year of the pandemic, 2021 saw strong growth in global FDI inflows, mainly associated with an increase in mergers and acquisitions, with investment in developed countries being particularly buoyant. The predominance of asset acquisitions would indicate that the high level of liquidity accumulated by large transnational corporations in 2020 has been used more to prioritize the resilience of supply chains, improve supplier networks and make strategic acquisitions than to launch new projects, which is indicative of a defensive strategy.

Moreover, despite this high level of liquidity and an increased rate of return, which doubled in 2021 to 8.2% (the highest since 2010) (UNCTAD, 2022), the strategies of transnational corporations maintained a degree of continuity that year with the previous year's slowdown. Two years after the start of the COVID-19 pandemic, projects associated with new investments have not yet fully recovered (their value remains 22% lower than in 2019 and 33% lower than in 2018). In addition, the shares of the EU and the United States as destinations for announced projects grew very substantially (to 27% and 13%, respectively, of the total value of announcements in 2021), while the share of China including Hong Kong (SAR) fell to just 5% of the total value of announcements (compared to an average of 12% between 2003 and 2019).

At least three factors may be influencing this dynamic: (i) recovery plans in Europe and the United States, which have resulted in substantial sums being funnelled into the market; (ii) the orientation of larger transnationals towards markets with greater opportunities

and growth prospects, in the context of the still partly defensive strategies mentioned above; and (iii) the reorganization of supply chains and the development of strategic sectors (e.g., semiconductors, as shown in figure I.4) in a changing geopolitical context.

At the same time, the change in the global political and economic landscape following the outbreak of the war in Ukraine will have an effect on global FDI flows. The new situation, in addition to generating expectations that global flows will stagnate or fall in 2022 and that large transnationals will revert to even more defensive strategies, may also have an impact on the sectoral orientation of both mergers and acquisitions and new investments. While it is true that increases in international fossil fuel prices may favour the development of non-conventional renewable energy sources in the medium term, it is worth considering that the search for very short-term solutions, necessary as they may be to control inflation and avoid energy shortages, may lead to the opposite effect: an increase in investment in oil, natural gas and even coal exploitation, especially in the Middle East and North Africa, but also in Latin America and the Caribbean.

In this context, the recovery of FDI inflows into Latin America and the Caribbean in 2021, while stronger than expected, has been insufficient to position the region as an increasingly attractive destination. The rise in inflows to the region in 2021 (41%) was lower than the global average (64%), so that Latin America and the Caribbean's share of global flows has continued to fall, despite the fact that two of the top FDI destinations are in the region (Brazil and Mexico, which were the world's sixth and tenth largest recipients of FDI, respectively, in 2021) (UNCTAD, 2022).

FDI inflows were higher in almost all countries of the region in 2021 than in 2020 and even exceeded the level of 2019, before the pandemic, although there were exceptions, as some large recipients have not yet recovered to their pre-pandemic level, among them Brazil, Colombia and Panama and, in the Caribbean, Jamaica. If the region as a whole is considered, however, the 2021 value was still lower than the 2019 value (by 9%), which in turn was the lowest value of the decade before the 2020 collapse. In other words, even if 2021 is considered a recovery year, it did not change the almost uninterrupted downward trend observed in Latin America and the Caribbean since 2012 (see figure I.6), and given the global outlook for 2022, this decline is likely to continue.

There are two phenomena that must be addressed through targeted policies framed as part of an inclusive and sustainable development strategy if the countries of the region want to use FDI to support processes of structural change and capacity-building and to increase the technological sophistication of their production mix. The first of these is the decade-long decline in the manufacturing share of FDI inflows, from 40% in 2010–2019 to 23% in 2021. While some countries have shown a certain resilience (e.g., Mexico, which remains a destination for FDI in large-scale manufacturing, albeit with investments fairly concentrated in the automotive and auto parts production chain, and Costa Rica, with a specialization in health-related industries), manufacturing FDI has been on the decline in most. The second phenomenon is the decline in the value of new investment project announcements, which continued during the second year of the pandemic and is a worrying sign for future investment inflows. The value of FDI project announcements in the region in 2021 was the lowest since 2007, representing 8% of global announcements by value (also the lowest percentage since 2007). This could indicate that the region has become less important for international investors' projects.

As for the sectors in which announcements have been made, for some years now Latin America and the Caribbean has been an attractive market for the implementation of transnational projects geared towards the green transition, especially in renewable energies, consistent with the pursuit of SDG 7 (affordable and clean energy). In 2021, the value of investments announced in this sector failed to sustain an upward trajectory, but it was the sector with the second-highest announced project value after telecommunications. In contrast, the value of announcements in the telecommunications sector did increase, which is interesting because it reverses the trend observed in 2020 and represents an opportunity to modernize digital infrastructure. Progress with digitalization in the region, which is critical to achieving the SDGs related to industry, innovation, inclusion and the establishment of "smart cities", among others, cannot be separated from investments by transnational corporations. In 2021, this was the sector where the most FDI projects were announced, with the most dynamic areas being the development of Internet infrastructure and data centres.

At the same time, there is still a great need for resources if the region is not only to meet its climate commitments under the Paris Agreement, but also to make progress on the implementation of the 2030 Agenda for Sustainable Development. New forms of sustainable finance, especially those involving environmental, social and governance bonds, are already proving to be a reality for the region and have the potential to attract more private investment, including foreign investment, to SDG-related sectors.

In any case, a large proportion of FDI flows have traditionally gone to sectors unrelated to the SDGs, especially those linked to the extraction and production of minerals and hydrocarbons, which, given the rise in energy prices, may regain the investor interest they forfeited in previous years.

With regard to the origin of the companies that have invested the most in recent years, in 2021 the United States positioned itself as the main country of origin for investments in most countries of the region, in terms both of the flows identified in national accounts and mergers and acquisitions, and of the future prospects that can be gleaned from new project announcements. The European Union, for its part, continues to be a strategic partner, while investments from China have not had the dynamism of previous years, although Chinese companies have carried out operations in line with their strategy of investing through large-scale acquisitions in strategic sectors, such as electricity.

Meanwhile, the outlook for 2022 is one of enormous uncertainty. Deteriorating expectations, accelerating inflation (in the region and globally) and, more generally, the great uncertainty regarding the duration and consequences of the war in Ukraine make it extremely difficult to estimate the behaviour of FDI inflows to Latin America and the Caribbean. It can only be pointed out that in 2021, when global expectations were more optimistic, announcements of greenfield investments were already down in the region. In 2022, data for the first half show a small increase (6%) in the value of announcements in Latin America and the Caribbean, and the expectation, considering the international outlook, must be that this slowdown in new investment announcements will continue throughout the year. This creates a troubling picture, given the region's need for investment in new projects to drive forward productive transformation, the green transition and sustainable and inclusive development.

In this context, it is worth considering whether the region is undergoing a reconfiguration of its role in the global FDI landscape, in which, although some sectors and countries have consolidated themselves in specialized niches within global value chains, the region as a whole plays only a marginal role in the decision-making processes of transnational capital. Moreover, part of the recovery of FDI in 2021 took the form of asset sales in service industries and of mergers and acquisitions and reinvestment of earnings by established firms, which reinforces the existing production structure and does not in itself foster the development of new capacities.

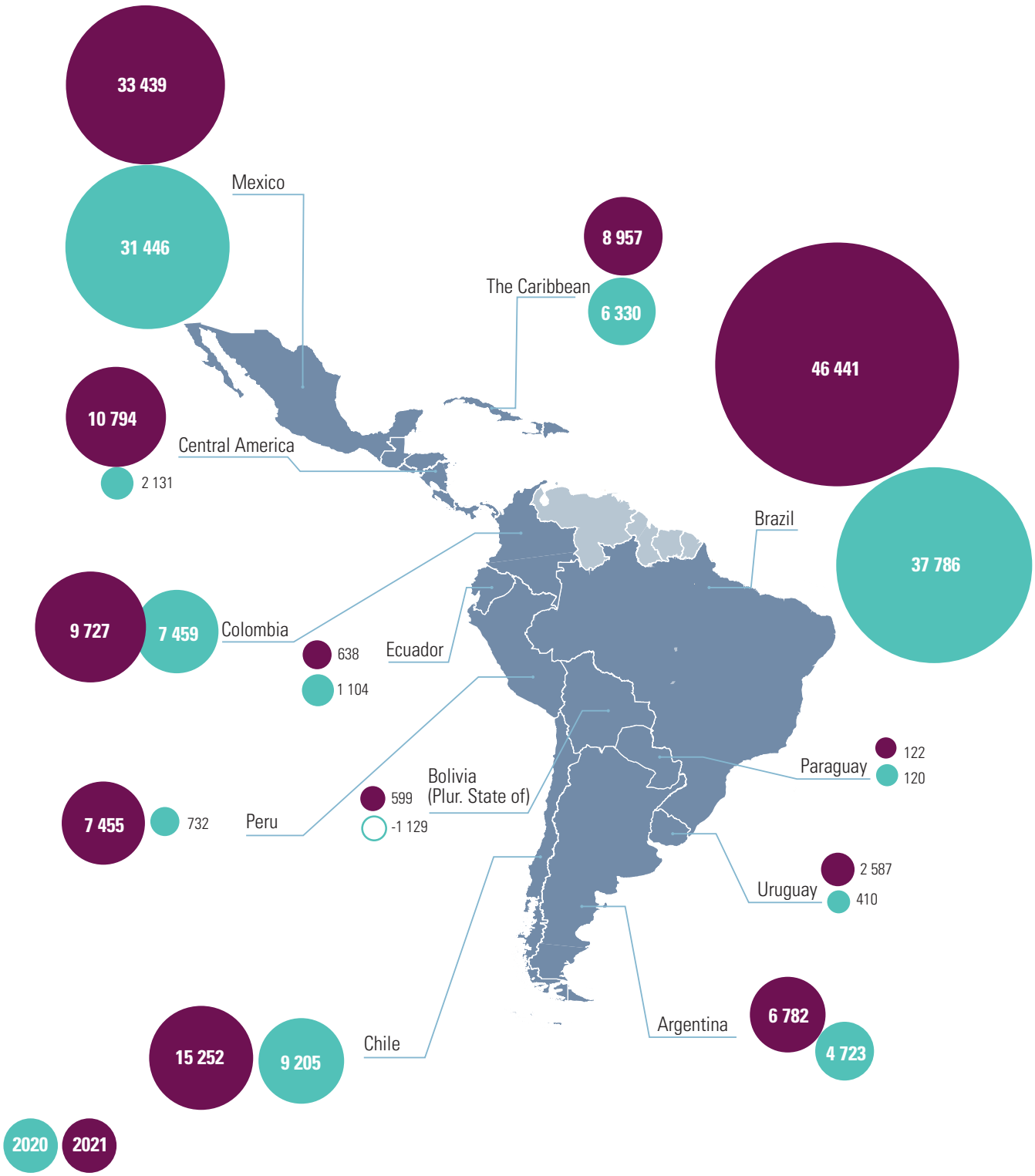
The situation thus faced by the region could be further entrenched by the reconfiguration of global FDI flows. The global crisis of 2020 strongly impacted global value chains and investment decisions. In 2021, the recovery of the global economy was characterized by national or regional recovery plans that differed greatly by geographical area and attracted investor interest to the core economies; this process could intensify in the coming years (not only in 2022) as a result of the profound transformation of international equilibria, relations and alliances triggered by the war in Ukraine.

This being so, the role of policies is increasingly important, not so much (or not only) those specifically geared towards attracting FDI as those designed to shape a new development model. FDI can support the investments needed for countries to move towards more inclusive and sustainable development, but, as ECLAC has argued in successive editions of this report, that does not happen automatically. Policies are needed to provide the necessary framework so that FDI entering the region is directed towards activities that support virtuous development in respect of inclusiveness, employment quality, environmental sustainability, innovation and technological sophistication. Considering also that the countries of the region face major budgetary constraints, if resources are to be allocated to attract investment then it is imperative for these resources to be consistent with a broader development strategy and to be targeted on the investments best calculated to address the development challenges prioritized at the national or even multilateral level. Given the growing complexity of the international landscape, it is becoming increasingly necessary to establish national and multilateral development strategies in the region and to coordinate public and private efforts so that Latin America and the Caribbean can position itself in the global economic landscape in a way that helps it to move towards inclusive and sustainable development, rather than being relegated to a marginal role determined by exogenous strategies.

## E. Analysis by country: all subregions received more foreign direct investment

In 2021, the second year of the COVID-19 pandemic, FDI inflows rebounded in all subregions of Latin America and the Caribbean (see map I.1). The highest year-on-year growth rate was in Central America. Despite the weakening of investment in tourism, there was a particularly strong increase in FDI inflows to the Caribbean. In South America, lastly, the largest changes were in Peru, Uruguay, Chile and Argentina, whose growth rates exceeded the average for the region.

**Map I.1**
South America (9 countries), Mexico, Central America and the Caribbean: inward foreign direct investment, 2020 and 2021
*(Millions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: Information computed in accordance with International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, Washington, D.C., 2009, except Barbados, Ecuador, Guyana, Honduras, Paraguay, Peru and Suriname. In the case of the Caribbean, there is no 2021 information for Haiti.

## 1. The recovery of FDI in Brazil is explained by investment in services

FDI inflows into Brazil totalled US$ 46.441 billion in 2021, equivalent to 2% of the country's GDP for that year. While this represented quite high growth (22.9%) over the previous year, when inward FDI was heavily impacted by the COVID-19 pandemic, inflows were still below their average for the previous 10 years (US$ 72.491 billion), showing that the crisis caused by the pandemic and the slowdown of the country's economy in recent years are still affecting foreign investment.

Equity again accounted for the bulk of inflows (69%), growing by 15% over 2020, while reinvested earnings accounted for the remaining 31% and presented an increase of 161% on 2020. Inter-company lending, on the other hand, fell for the third consecutive year and closed 2021 with a negative value of US$ 29 million. Negative lending had not been observed since 2004; this result arose after three years in which repayments abroad grew by more than credit inflows from abroad until, in 2021, they surpassed them.

In sectoral terms,[13] services performed best, receiving 83% more inflows in 2021 and increasing their share of inward FDI to 70% (compared to 38% in 2020). This strong performance was mainly due to the financial services and ancillary activities segments, whose inflows accounted for about 20% of capital inflows into the sector in 2021, followed by the commerce (except vehicles) (17%) and electricity and gas (12%) sectors.

In fact, the energy and utilities sector saw the largest mergers and acquisitions deals in 2021. In the water and sanitation sector, in addition to the Rio de Janeiro state concession mentioned earlier, the Canada Pension Plan Investment Board acquired 45% of Iguá Saneamento for US$ 218 million in partnership with Canada's Alberta Investment Management Corporation and the Brazilian investment fund IG4.

As regards the transfer of CEDAE assets to the private sector, this was provided for in the tax recovery agreements signed by the state of Rio de Janeiro with the federal government in 2017. The privatization proposal, however, was subjected to legal challenges over fears that the operation would result in mass layoffs of the company's employees and was even debated in Brazil's highest court. The sale was also challenged by the Rio de Janeiro State Legislative Assembly, but finally took place in April 2021 (Agência Brasil, 2021a).

In the energy sector, the Colombian group Interconexión Eléctrica S.A. E.S.P., acting through its subsidiary ISA CTEEP, acquired the transmission company PBTE for US$ 304 million. In this way, the Colombian group has strengthened its presence in the electricity transmission sector in Brazil, where it has operations involving more than 18,000 kilometres of transmission lines in 17 of the 26 states (*América Economía*, 2021). In the area of renewable energy, a subsidiary of the Canadian fund Brookfield Asset Management acquired the family-owned Brazilian company Aldo, the leading photovoltaic products distributor and system installer, which has more than 13,000 resellers and installers in the country (Aldo, 2021).

FDI inflows in the information technology services sector were also strong, growing by 155% from 2020. Despite this, and in contrast to other years, there were no major mergers and acquisitions deals in the telecommunications sector. The largest deal was the sale of 51% of FiberCo Soluções de Infraestrutura Ltda. by TIM Brasil to IHS Holding Limited, a United Kingdom-based company of Nigerian origin, for US$ 318 million. IHS Holding is a telecommunications infrastructure operator and developer specializing in

[13] The sectoral data do not include reinvested earnings.

emerging markets that entered the Latin American market with the acquisition of towers in Brazil, Colombia and Peru in 2020. The purchase in Brazil includes the secondary fibre network and assets of TIM, as well as the provision of fibre optic infrastructure services as an open fibre network service provider (Businesswire, 2021).

At the same time, less investment was received in the natural resources and manufacturing sectors (declines of 57% and 51%, respectively), so that their shares of the total fell to 7% and 22%, respectively, in 2021. This change in the sectoral composition of capital inflows to Brazil has been mainly due to capital outflows in the form of inter-company lending in the oil and natural gas extraction and metal ores sectors.

Regarding mergers and acquisitions in the manufacturing sector, the State-owned enterprise Petrobras progressed in its divestment strategy with the aforementioned sale of the Landulpho Alves refinery and associated logistics assets to the United Arab Emirates sovereign wealth fund Mubadala Investment Company for US$ 1.8 billion.

Another important, albeit smaller, mergers and acquisitions deal in manufacturing was the purchase of plant nutrition company Compass Minerals América do Sul by Israel-based ICL Group for US$ 420 million. The product portfolio acquired includes fertilizers, foliar and soil micronutrients, secondary nutrients, biostimulants and adjuvants (ICL, 2021).

As regards the origin of investments,[14] the United States was again the leading source, with flows to the country continuing to increase (by 15% over 2020) and its share of the total rising from 32% in 2020 to 37% in 2021. United States investments consist predominantly (90%) of equity. Luxembourg emerges as the second-largest source of funds and presents growth of 168% over the previous year. However, given Luxembourg's tax structure, no further conclusions can be drawn about these transactions, nor can they be said to come strictly from Luxembourg companies.

Where flows from Europe are concerned, investments from Norway, mainly in the form of inter-company loans, performed particularly strongly, increasing by 126% over 2020 to US$ 2.219 billion in 2021. Spain, Austria and Italy expanded their investments in Brazil by 2.5%, 8.7% and 3.5%, respectively, and kept their shares of total investments in Brazil almost constant compared to the previous year. After net divestment in 2020, flows from Germany grew again in 2021 to total US$ 922 million, mainly in the form of equity.

Investments originating in Hong Kong (SAR) were also strong performers: whereas capital from this economy was almost unrepresented in foreign investment flows to Brazil in 2020, in 2021 it accounted for almost 7% of the total, mainly through inter-company lending. Staying with Asian capital, there was a very sharp 55% drop in resources from Singapore, although they remained substantial (3% of the total received by Brazil in 2021).

As for investment from Latin America into Brazil, Chile once again emerges as the main source. Its flows were 53% higher than in 2020 and consisted largely of equity inflows by Chilean companies operating in the country.

Prospects for future investment growth do not look favourable if new investment announcements are used as an indicator. The value of projects announced by transnationals in Brazil fell by 21% in 2021, maintaining the downward trend recorded in 2020. The country thus relinquished the lead in new investment intentions to Mexico in 2021. Looking at the full series, there is a downward trend in the value of announcements from 2011 to 2017 and then an abrupt drop in 2020 as a consequence of the COVID-19 pandemic, not fully reversed in 2021.

[14] The data by origin do not include reinvested earnings.

Against this background, announcements in the renewable energy sector led the way in 2021, with a 26% share of the total by value, despite a year-on-year drop of 43.3%. In any event, Brazil continues to be regarded by market analysts as the country with the greatest potential to attract renewable energy investment in Latin America (EY, 2021), and renewable energies led the way in the last four years as the sector with the greatest long-term dynamism, followed by telecommunications.

The share of telecommunications in the total value of announcements increased from 12% of the total in 2020 to 16% in 2021, and an increase in foreign capital inflows to this sector in Brazil is expected for the coming years, following commitments made by foreign telecommunications firms during the 5G technology auction that took place in early November 2021. According to the Brazilian government, of the total of more than US$ 8 billion raised, 84% should be earmarked for investments to expand connectivity infrastructure in the country by 2028 (Brazil, 2021).

In the hydrocarbons sector, New Fortress Energy of the United States announced the construction of an onshore liquefied natural gas (LNG) facility and power plant on Brazil's north-east coast, at the port of Suape. The investment is estimated at around US$ 800 million and, according to the company, the facility will be strategically located with access to a major pipeline network to bring clean, affordable energy to a rapidly growing region of Brazil (New Fortress Energy, 2021). In metals mining, ArcelorMittal Brasil, a subsidiary of the Luxembourg-based company, announced new projects totalling US$ 786 million in several successive tranches. The company aims to double its steel production with the construction of blast furnaces (Corrêa, 2021). This is an important announcement in the sector after four years without new projects.

In the natural resource-intensive manufacturing sector, the most notable announcement was of a US$ 530 million investment by Empresas CMPC, a Chilean group operating in the wood, paper and pulp sector. The resources are aimed at expanding and modernizing the pulp and paper mill at Guaíba, southern Brazil, with a view to meeting the company's environmental objectives (Exame, 2022). Such investments are just part of the planned expansion of the company's operations in Brazil: in late 2021, the Chilean group initiated procedures for the acquisition of the Brazilian company Iguaçu Celulose, Papel S.A., which it expects to see completed in 2022 (Peña, 2021a).

## 2. South America: Chile, Peru and Uruguay were the countries showing the largest changes

In 2021, FDI inflows to Chile totalled US$ 15.252 billion, 65.7% more than in 2020 and the highest annual amount of the 2016–2021 period. This has positioned Chile once again as the third-largest FDI recipient country in the region, after Mexico and Brazil.

All FDI components showed a positive change compared to 2020. Equity grew the most (141%) and accounted for 63% of inflows. Reinvested earnings increased by 55.8% from 2020 and represented 30% of the total. The lowest growth was in inter-affiliate lending (29%), which was also the smallest component (7% of the total). Services and natural resources received the lion´s share of FDI (63% y 30% respectively), but the greatest increase was in natural resources (89%).

The number of mergers and acquisitions targeting companies in Chile increased by 50% in 2021, so that the total turnover of the companies involved was also greater, at around US$ 5.6 billion; 83% of this amount was for deals in the electricity sector, mostly relating to renewable energies and the transformation of the Chilean energy mix, an area in which more investments are expected in the coming years (Deloitte, 2022). The country expects foreign investment to contribute to an expanded effort to make the transition to a green economy (InvestChile, 2022).

An analysis of mergers and acquisitions shows that the energy sector attracts the most interest from international investors in Chile, where many of the deals are changes of ownership between foreign companies, such as the purchases of Compañía General de Electricidad (CGE) and AES Andes already referred to, or acquisitions from local groups, as in the case of Colbún Transmisión.

Lastly, there were also movements in the financial services sector. Patria Investments, a company of Brazilian origin based in the Cayman Islands, merged with Chile's Moneda Asset Management to create an investment platform with the aim of becoming the leader in private investment, infrastructure and credit operations in the region (Moneda Asset Management, 2021). The deal was completed for US$ 315 million.

The outlook for future investments in the country is weak for now, judging by the value of project announcements, which was around US$ 5.3 billion in 2021, 4.7% lower than in 2020. Mining and energy are the sectors with the largest share of new investment projects.

In the mining sector, the South African company Gold Fields announced an investment of US$ 860 million to start exploiting a gold deposit in Chile with the Salares Norte project in the Atacama region. It seeks to employ technologies with a smaller environmental footprint, such as photovoltaic solar energy and filtered tailings to optimise water use (Energiminas, 2021). Although the company is new to Chile, it arrived in Peru in 2003, signing an option agreement for the Cerro Corona deposit and obtaining its first processed ore in 2008 (Gold Fields, 2022).

In the renewable energy sector, Sonnedix, which is based in the Netherlands but describes itself as a "global solar Independent Power Producer (IPP)",[15] announced a number of new projects in Chile worth an estimated total of around US$ 570 million. In addition, Norway's Statkraft announced a US$ 500 million wind power generation project.

Colombia was the fourth-largest FDI recipient in Latin America and the Caribbean in 2021, with a total of US$ 9.727 billion, 30.4% more than in 2020. Despite this increase, the level is still well short of the average for the 2010s (US$ 13.296 billion).

The components of FDI presented a balanced distribution in 2021: reinvested earnings accounted for 39% of inflows, while equity and intercompany loans accounted for 36% and 26%, respectively. The component with a positive change (144%) was reinvested earnings. However, this result is not due to the 2021 figure being especially high, since it was still below those of 2018 and 2019, but to the fact that 2020 saw a 15-year low. Equity increased by only 2.3%, its lowest level of the period 2005–2021, which is consistent with the negative trend in this component since 2013. Intercompany lending, despite showing a negative change (-1.7%), remained at a level similar to that of the last three years.

As in 2020, the service sector received the bulk of FDI inflows (66%) in 2021, and the amount of investment was larger than in the previous year (17%). Financial and business services and the transport, storage and communication sector attracted the largest shares. While all three major sectors of the economy showed growth in FDI inflows in 2021, this was greatest in the natural resources sector (81%), which accounted for 20% of the total, driven by very strong growth in mining and quarrying (114%) and a smaller increase in the oil sector (72%). FDI in the Colombian oil sector has shown a downward trend from the peaks reached in the early 2010s, resulting in a decline in its share from 34% of FDI between 2010 and 2014 to 21% between 2015 and 2019 and 8% in 2021. Meanwhile, manufacturing received 14% of inflows, with growth of 51%.

[15] See [online] https://www.sonnedix.com/about.

Colombia typically receives most FDI inflows from six source countries, which accounted for 70% of the total received in 2021. Most of the capital came from the United States (19% of the total) and Spain (15%), although less investment was received from Spain than in 2020 (-14.1%). In contrast, more investment was received from the other four main source countries than in 2020; these are the Netherlands (12% of the total), Switzerland (11%), Panama (7%) and the United Kingdom (4%).

In 2021, the largest acquisition deal identified in Colombia was the sale of 45.8% of the equity of Productos Familia S.A. to the Swedish group Essity, as mentioned earlier. Another notable transaction was the sale of Sociedad Portuaria Regional de Barranquilla, owned by the Latin American investment fund Southern Cross Group, Ocensa and Grupo Empresarial Olímpica. The United States investment fund I Squared Capital Advisors LLC acquired 78% of the Colombian company for US$ 220 million. The driving force behind the sale was the need for new investment in infrastructure, as the port has siltation problems which have resulted in inbound and outbound traffic at the port falling by 80%.

Lastly, the value of new FDI project announcements recovered after dropping by 59% in 2020, with a 63% increase in announced investment giving a total of some US$ 4.5 billion. Renewable energy, coal, oil and gas and telecommunications are the sectors in which transnationals have expressed the most interest in future projects. In particular, investment announcements in renewable energies have grown substantially in the last three years and accounted for 30% of the total value of announcements in 2021, which is consistent with the Colombian government's policy of fiscal and tax incentives for renewable energy generation in the country (DNP, 2022). This was the context, in particular, for five new investment project announcements by the Italian company Enel Green Power, worth an estimated total of US$ 506 million.

FDI inflows to Peru recovered strongly from 2020, when they had fallen to their lowest level since 1992. In 2021, US$ 7.455 billion of FDI entered the country, which was the highest amount in eight years and represented a year-on-year change of 919%.

As regards the separate components of FDI, the same rebound from the low levels of 2020 was seen. Most FDI came as reinvested earnings (94% of the total), whose amount was not only almost 100 times as great as in 2020, but double the average since 2003. The change in intercompany lending was more subdued (232%), while equity inflows declined and actually turned negative (-US$ 84 million).

FDI statistics by sector are not available for the country. However, when the most important mergers and acquisitions are analysed, it can be seen that the mining and construction sectors are the main areas of interest for transnationals. The largest transaction in 2021 was carried out by a Brazilian investment fund, IG4 Capital Investimentos Ltda., which acquired 34% of the Peruvian construction company Aenza S.A.A. for US$ 140 million. In the mining sector, there were a dozen or so deals, the largest of which was the sale by Canada's Barrick Gold of the Lagunas Norte gold mine, which was acquired by Singapore's Boroo Pte. Ltd. for US$ 50 million.

Where the outlook is concerned, announcements of new investment projects recovered from 2020 (34%), totalling some US$ 2.3 billion, but there were no really major announcements as in other years. The largest announcements were in the telecommunications sector, where, for example, the Peruvian subsidiary of Spain's Telefónica announced the expansion of its fibre-optic service for homes in Lima and the Claro brand of Mexico's América Móvil announced the implementation of 5G services for fixed wireless Internet in certain regions of the country, with projects estimated at around US$ 140 million.

FDI inflows to Argentina were 43.6% higher than in 2020 and totalled US$ 6.782 billion. However, this value was lower not only than pre-pandemic inflows but also than the average inflows of the past 10 years (US$ 8.775 billion).

Reinvested earnings remained the largest component (72% of the total), and the 2021 value was 85% higher than that of 2020 after three consecutive years of decline. Thus, pre-pandemic levels were restored, and the relative importance of this component increased compared to previous years, when it averaged 63% of the total. This was due to the current fiscal and exchange-rate structure in Argentina, which favours this component over others.

Equity and intercompany loans accounted for similar shares of the total (13% and 15%, respectively). While inter-company loans grew by 33% compared to 2020, equity fell by 34% to their lowest levels since 2014.

Official statistics do not provide data for 2021 on the sectors that FDI goes to. However, the energy and natural resources sectors remain attractive to foreign investors. Thus, the largest mergers and acquisitions deal in the country in 2021 was the sale by Pampa Energía of 24% of Empresa Distribuidora y Comercializadora Norte (EDENOR), one of Argentina's main energy distributors, to a consortium led by the Swedish-based Securitas AB group for US$ 95 million (Infobae, 2021).

Where hydrocarbons are concerned, leading project announcements included two oil extraction initiatives in the Vaca Muerta area of the Patagonia region, most of which is located in the province of Neuquén. The largest is that of the Mexican company Vista Oil & Gas, which announced an investment of US$ 250 million in oil extraction in 2021 (Trafigura, 2021). The British company Shell, for its part, announced an expansion of its processing activities in the same province, with an investment of US$ 80 million. Despite the uncertainty surrounding the project because of the infrastructure problems and macroeconomic challenges facing Argentina, the global context of rising oil prices is expected to have a substantial impact on the sector (Rivas Molina, 2020).

In the natural resources sector, mention should also be made of projects related to lithium exploration. In 2021, Jiangxi Ganfeng Lithium Industry, through its subsidiary Litio Minera Argentina, announced a US$ 73.5 million investment in a project in Salta province (Reuters, 2021a). Meanwhile, Canada's Neo Lithium Corp. intends to expand its lithium production plants in the province of Catamarca with an investment of US$ 70.1 million (Editorial RN, 2021). The sector is expected to continue attracting foreign investment in the coming years owing to the growing global demand for the mineral, as already observed in 2022, when the Chinese-owned Zijin Mining Group Co., Ltd. obtained exploration rights and announced investments of US$ 380 million (Argentina, 2022).

As regards investment project announcements elsewhere, those in the telecommunications sector were particularly strong, at an estimated US$ 834 million. They included plans by Alphabet to install a new international submarine cable linking the east coast of the United States with Las Toninas (Argentina), with additional onshore extensions in Praia Grande (Brazil) and Punta del Este (Uruguay). The cable installation project, planned to be the world's largest and involving an investment of US$ 251 million, will increase the speed at which Latin American users can access Google's services (Reuters, 2021b). In addition, Alphabet announced that it was extending its operations in the country with the expansion of the Google Cloud Engineering and Services Centre, which will mean an investment of US$ 72.9 million, in order to provide support services to companies in their digital transformation processes. Announcements were also made regarding expansion of the Claro (América Móvil) mobile telephony network, with an investment of US$ 251.5 million, and installation of data centres by the Canadian company Omnillion, with an investment of the same amount.

However, the biggest investment project announcement was in the manufacturing sector, where the Brazilian sports shoe manufacturer Topper announced an expansion of its plant worth US$ 500 million (*El Cronista*, 2022). This comes on top of another, albeit smaller (US$ 26 million) announcement by Penalty, another Brazilian sports shoe manufacturer, which plans to operate out of three new facilities in Argentina.

Despite the projects described above, 2021 was not a good year for new project announcements, as the estimated total investment amount of approximately US$ 3.8 billion was 14% lower than in 2020.

FDI inflows to Uruguay in 2021 were 531% higher than in 2020 at US$ 2.587 billion, which is above the average of the last 10 years (US$ 2.256 billion). This was mainly due to inflows of reinvested earnings, which totalled US$ 2.565 billion in 2021 after two successive years of decline. On the other hand, the decline of intercompany lending seen in 2020 was not reversed, and inflows were negative (-US$ 768 million) and equity declined by 11%.

The Uruguayan information technology sector has also attracted the attention of foreign investors, with three major mergers and acquisitions deals during 2021. Of particular note was the sale of software company Overactive to Perficient of the United States for US$ 100 million. In addition, Uruguayan companies GeneXus Consulting and K2B were sold to Vesta Software Group, a Canadian subsidiary of Jonas Software (Larronda, 2021; Mesa, 2022).

There were also mergers and acquisitions between foreign firms in the fuel distribution sector. These included the sale of the Brazilian subsidiary Petrobras Uruguay Distribución S.A. to DISA Corporación Petrolífera S.A. of Spain for US$ 68 million, creating the country's second-largest fuel distributor. The sale of Argentine-owned AXION Comercialización de Combustibles y Lubricantes S.A. to Nexzur S.A., a conglomerate comprising Copetrol S.A. of Paraguay, Acodike Supergas S.A. of Uruguay and Elindur Investment, was also completed.

The resumption of FDI inflows could be sustained if the increased value of project announcements, which totalled an estimated US$ 1.1 billion, actually materializes. Of particular note is the US$ 455 million project announced by the Belgian company Katoen Natie to expand the main container terminal at the port of Montevideo. The company's main idea is to turn the existing port of the Uruguayan capital into a regional trade centre. The investment was part of an agreement that ended a dispute between the Belgian company and the Uruguayan government, which also included a 50-year extension of the concession granted to the Belgian operator. The agreement is not uncontroversial, as another company also acting as a port operator, Montecon, initiated a complaint procedure with international bodies alleging that it enshrines anti-competitive practices (Maritime South, 2021; MundoMaritimo, 2022).

FDI inflows to Ecuador totalled US$ 638 million in 2021, 42.2% less than in 2020 and the second-lowest value in the last 10 years. This decline was recorded across all FDI components. Equity was the component with the largest share (91%), although they registered a year-on-year decline of 31%. Reinvested earnings decreased by 10%, and intercompany lending showed the largest percentage decrease (-175%), turning negative (-US$ 82 million).

Three sectors that together accounted for more than 50% of total inflows, namely financial services (21% of the total), natural resources (18%) and construction (15%), received less investment than in 2020 (decreases of 33.2%, 77.9% and 47.1%, respectively). In contrast, inflows in the manufacturing and transport and communications sectors recovered after falling to three-year lows in 2020.

This drop was observed in FDI inflows from most of the main source countries, and a situation not seen since 2012 arose: there was no FDI inflow of more than US$ 100 million from any source country. Spain, one of the main origins of FDI received by Ecuador, recorded divestments of US$ 28 million. Less investment was also received from Uruguay (-97%), Canada (-90%), the United Kingdom (-63%), Germany (-36%) and the United States (-4%). The largest inflows came from Costa Rica, Switzerland and the United States, each with over US$ 80 million. Among the usual origins of FDI in Ecuador, only China presented growth relative to 2020 (32%), with inflows of US$ 76 million.

Mining and related activities continue to be an area of interest for transnationals. The largest of the mergers and acquisitions operations was between two foreign companies and so does not represent a capital flow into the country. This was the sale by Australia-based Titan Minerals Ltd. of the Zaruma mine concessions and an ore processing plant in Portovelo to British-based start-up Pelorus Minerals Ltd. for US$ 15 million.

With regard to future prospects, project announcements worth US$ 720 million were made in 2021, which is slightly lower than in 2020 (-1.4%). The expansion of activity at the El Mirador copper mine, operated by EcuaCorriente, whose owners are the Chinese conglomerate Tongling Nonferrous Metals Group Holding and China Railway Construction Corporation Ltd. (CRCC), was one of the biggest announcements of the year. Elsewhere, in the transport and storage sector, the United Arab Emirates logistics company DP World announced the expansion of operations at the Durán Logistics Centre.

FDI inflows to the Plurinational State of Bolivia totalled US$ 599 million in 2021, which represented an annual increase of 153% and reversed the negative inflows recorded in 2020. Information on FDI inflows by sector, country of origin and component is only available for gross FDI (excluding divestments). In terms of components, reinvested earnings accounted for 52% of the total and were 3.5 times as high as in 2020. Intercompany lending and equity performed less strongly but still positively, with increases of 26% and 93% respectively.

The sector that received the largest share of inflows in 2021 was manufacturing, with 36% of total FDI and a volume nine times as great as in the previous year. Mining and quarrying received 29% of total FDI, and volume was up fivefold from 2020. As for mergers and acquisitions, the largest deal, albeit the amount involved was small, was in the mining sector and was the acquisition of the lead mining rights for the Sunawayo project by the Canadian company Silver Elephant Mining Corp. for US$ 5 million.

As regards the origin of inflows, Sweden was the largest source, accounting for 27% of the total and almost three times the amount recorded in 2020. Investments from Peru and Spain represented 24% and 15% of total inflows, respectively, in 2021.

New project announcements did not pick up in 2021, and the total announced, at around US$ 240 million, was lower than in 2020 (-22%). Chile's Entel made the largest announcement, with an estimated investment of US$ 157 million as part of its plan to expand fibre optic infrastructure to homes.

Paraguay received US$ 122 million of FDI in 2021, only 1.3% more than in 2020 and 68% less than the average inflows recorded over the previous 10 years. Equity, which traditionally account for the largest share of inward FDI, fell by 28%. Moreover, reinvested earnings were negative for the third year in a row. On the other hand, more investment was received in the form of inter-company loans (154%), which has been the most volatile component of FDI inflows into the country.

There are no official FDI statistics by sector; however, some movement was observed in the fuel sales and distribution sector. The purchase by the Brazilian company

Raízen S.A. of 50% of the equity of the fuel retailer Barcos & Rodados, one of the leaders in the Paraguayan market, for US$ 122 million (LexLatin, 2021) was the largest transaction identified.

Where announcements are concerned, Chile's Empresa Nacional de Energía Enex S.A. announced new investments in the service station sector, confirming its interest in expanding into the Paraguayan market (*La Nación*, 2021a).

Although the value of project announcements was down from 2020, attention should be drawn to announcements worth US$ 38.4 million (half the total) of manufacturing projects clearly oriented towards exports to neighbouring markets, especially the Southern Common Market (MERCOSUR) countries. One such was the announced opening of a factory by the United States travel goods company Samsonite, a project estimated at US$ 23.4 million (*La Nación*, 2021b).

## 3. Mexico sustained growth in FDI inflows

Mexico was one of the few countries that managed to sustain FDI inflows during the first year of the pandemic, and this growth continued in 2021. The country received foreign investment of US$ 33.439 billion, up 6% from 2020, and ranked as the second-largest recipient in Latin America and the Caribbean. Inward FDI in the form of equity drove the growth in 2021, doubling in value compared to 2020 and accounting for 41% of the total. Inflows in the form of reinvested earnings and inter-company loans were lower than in 2020 (22.0% and 17.3% respectively) and accounted for 38% and 21% of total inward FDI, respectively.

Services and manufacturing were the sectors with the largest inflows, accounting for 47% and 37% of the total, respectively, in 2021.[16] Although FDI in services declined slightly (-5%) in 2021, it was higher than FDI in manufacturing, a pattern observed since 2017. Meanwhile, manufacturing inflows were up 7% on 2020. The strongest year-on-year growth was in natural resources, where inflows tripled. FDI in mining increased substantially, underpinned by investments in metal ore mining and oil and gas extraction, which accounted for 53% and 28%, respectively, of natural resources FDI.

In the service sector, one third of inward FDI went to financial services, which received less investment than in 2020 (-27%). In second place, with an increase of 11%, were investments in transport and storage, representing 21% of the sector's total. This growth was mainly due to the substantial increase in investments in piped natural gas and, to a lesser extent, in air transport-related services, which together accounted for 85% of inward investment in transport and warehousing.

The production of transport equipment remained important in manufacturing, accounting for 47% of FDI. Investments in auto parts manufacturing increased from 2020 (174%), while less investment was received in car and truck manufacturing than in 2020 (-43%). Other important industries that received more investment than in 2020 were the manufacture of iron and steel products, the manufacture of household electrical appliances and the manufacture of computer, communication, measuring and other electronic equipment, components and accessories.

Investment from the United States was preponderant in 2021, accounting for 47% of inflows and increasing by 38%. Investment from Canada decreased on the other hand (-40%), representing 8% of the total. In addition to the countries that are parties to the Agreement between the United States of America, the United Mexican States,

[16] FDI inflows by sector and origin are computed in accordance with the *Balance of Payments and International Investment Position Manual: Fifth Edition (BPM5)* (IMF, 1993).

and Canada (USMCA), investment from Europe has played an important role in Mexico. FDI from European countries accounted for 34% of total investment, increasing by 36% in 2021 from 2020. Investment from Spain represented 14% of capital in 2021 (up 6% on 2020), that from Germany 7% (up 68%) and that from the United Kingdom 6% (up 103%). In the case of FDI originating in Asia, the main investors were Japan, whose investments increased by 22% in 2021 and accounted for 5% of the total, followed by the Republic of Korea, whose investments rose by 15% and accounted for 2% of the total, and China, whose investments rose by 102%, although they only accounted for 1% of the total.

Although FDI inflows into the power generation sector were not large in 2021 (just US$ 588 million), one of the region's largest mergers and acquisition deals, the acquisition of IEnova by Sempra Energy of the United States, mentioned earlier, targeted a Mexican firm.

Something similar happened in the information technology services sector, where the country received only US$ 592 million in FDI (52% less than in 2020), although the acquisition of KIO Networks by the investment fund I Squared Capital referred to earlier was completed.

The value of new FDI project announcements increased in 2021 by 13%, with an estimated total of around US$ 15.5 billion. Although this growth did not return the value of announcements to pre-pandemic levels (an average of around US$ 30 billion per year between 2013 and 2019), the figure places Mexico ahead of Brazil for project announcements by value.

The biggest announcements were in the automotive sector, where transnational companies have undertaken major projects over the past decade. General Motors of the United States announced that it would invest more than US$ 1 billion in the Ramos Arizpe manufacturing complex to inaugurate a new paint plant with innovative technology. This investment will allow the company to start expanding its assembly and propulsion system plants so that the Ramos Arizpe complex can become the fifth to produce electric cars in North America. General Motors currently has three plants in the United States and one in Canada for this purpose. It is expected to produce electric vehicles under General Motors brands from 2023, as well as batteries and electrical components, starting with the manufacture of the electric vehicle propulsion system (General Motors, 2021).

In telecommunications, the United States company CloudHQ, which specializes in the development of hyperscale data centres, announced the establishment of a data centre campus with multiple buildings and a power substation that will serve the needs of different companies in Querétaro, for an estimated investment of US$ 600 million. This campus is expected to generate 1,000 specialized jobs, thus helping to strengthen the information technology cluster in the area, which involves 152 companies, and to contribute to the consolidation of economic relations with the United States, the main trading partner (*El Economista*, 2021b). Another major player in the cloud computing market already active in Mexico, the Chinese company Huawei, has announced the opening of a second region of its cloud services division, Huawei Cloud, in the municipality of Tultitlán, in Mexico state (Huawei, 2021). This indicates the dynamism of the data centre and cloud computing market in Mexico, one of the fastest-growing in the region (Megaport, 2021).

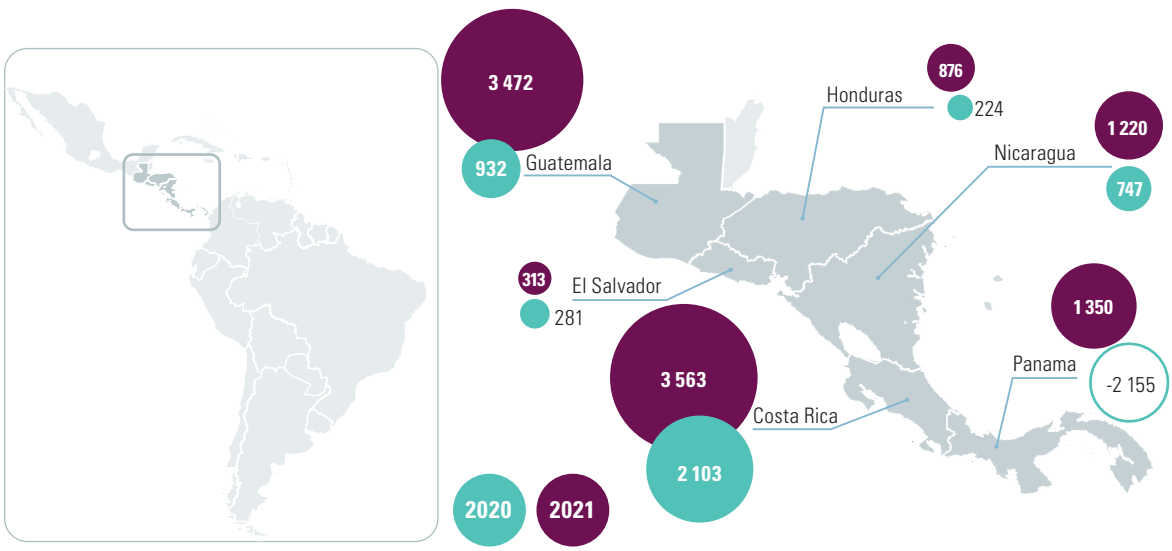
In Jalisco, meanwhile, the British company Diageo announced the expansion of its tequila production plant and the construction of new facilities, a US$ 500 million project that is expected to generate more than 1,000 direct jobs. In the petrochemical industry, Braskem Idesa, formed by the association of Braskem (Brazil), a petrochemical

company producing thermoplastics, and the Mexican petrochemical firm Grupo Idesa, announced the construction of a new terminal for the import of ethane on a global scale. This project will require an investment of around US$ 400 million and will be located in the port of Coatzacoalcos, near the Etileno XXI polyethylene plant, inaugurated in 2016 (Braskem Idesa, 2021).

## 4. FDI inflows recovered in all the countries of Central America

After a large drop in the first year of the pandemic, investment inflows to Central American countries recovered in 2021. Overall, the region received five times the inflows of 2020, totalling US$ 10.794 billion and representing 7.6% of total inflows to Latin America and the Caribbean. FDI increased across all countries, with the top three recipients being Costa Rica (33% of the subregional total), Guatemala (32%) and Panama (13%) (see map I.2), accounting between them for 87% of the year-on-year increase.

**Map I.2**
Central America (6 countries): inward foreign direct investment, 2020 and 2021
*(Millions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: Information computed in accordance with International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, Washington, D.C., 2009, except Honduras.

FDI inflows to Costa Rica totalled US$ 3.563 billion in 2021, a 69% increase over 2020 and above the average received over the last decade. This increase was observed across all FDI components. Much as in previous years, reinvested earnings were the largest component (53% of the total), with 69% more inflows received than in 2020, while 25% of inflows were of equity, this being the component that grew most (95%).

Since 2013, there has been an upward trend in manufacturing investment in the country and a decline in inflows into services (mainly explained by real estate and construction), which has resulted in manufacturing being the main recipient of FDI since 2017.[17] The same was true in 2021, with 75% of FDI inflows going to this sector, which

[17] FDI inflows by sector and origin are computed in accordance with the *Balance of Payments and International Investment Position Manual: Fifth Edition (BPM5)* (IMF, 1993).

received 107% more investment than in 2020. Inflows into services also increased (by 22%, bringing their share to 25% of the total), while inflows into natural resource sectors were close to zero. Meanwhile, the United States remained the main source of capital, accounting for 79% of inflows, and its investments grew by 111% over 2020. The second-largest source of capital was Colombia, albeit with a minor share (6%), while Spain ranked third (2%).

As regards prospects, Costa Rica was among the countries reporting an increase in new project announcements in 2021, with a record 142 announcements worth an estimated US$ 1.8 billion, 12% more than in 2020, maintaining the upward trend of the last five years. New investment announcements in technology-intensive industries explain this dynamism, with projects in medical devices industries and in information and communications technologies at the forefront.

This sectoral specialization of announcements is in tune with the country's investment attraction strategy, led by the Costa Rican Investment Promotion Agency (CINDE), whose priority sectors include knowledge-intensive services, smart manufacturing and health and wellness. In fact, one of the largest announcements in 2021 was made by the German company Bayer, which already has plants operating in the country and announced the construction of a new pharmaceutical plant for the production of long-acting reversible contraceptives, such as hormonal implants and intrauterine systems. With an investment of US$ 200 million, the project involves the construction of a state-of-the-art plant in the Coyol Free Trade Zone, and production is expected to start in 2024.

Guatemala received FDI worth US$ 3.472 billion in 2021, an extraordinary amount for a country where annual FDI inflows averaged US$ 1.156 billion over the last decade. This figure represents an increase of 273% over 2020. Growth was seen in all components of FDI, but the largest rise was in equity, which accounted for 65% of the total (compared to an average of 25% in the past decade). Reinvested earnings also increased (38%) and were the second-largest component of FDI (33% of the total).

This extraordinary investment volume was due to FDI inflows in the service sector, particularly in the area of information and communications, owing to the aforementioned acquisition of Tigo Guatemala by Millicom International Cellular S.A. Inflows in the financial services sector represented 10% of the total and were up by 1% year on year. Manufacturing investment inflows accounted for only 7% of the total and were lower than those received in 2021 (down 5%).

In this situation, it is not surprising that the main country of origin for investment in 2021 was Luxembourg (65% of the total). As in previous years, the other countries of origin with the largest shares were in the American continent: Colombia (7% of the total), Mexico (6%), Panama (5%) and the United States (4%). More investment was received from all these origins than in 2020.

Lastly, foreign investment projects worth around US$ 400 million were announced in 2021, three times the 2020 amount. The most dynamic sector was transport and warehousing, with the United States company Intcomex opening a new electronics distribution centre. In the food and beverage industry, Costa Rica's Cooperativa de Productores de Leche Dos Pinos opened its first production plant in the country, with an estimated investment of some US$ 70 million. In paper manufacturing, GrandBay Paper and Care Products, a Venezuelan company with plants in Colombia, Guatemala, Panama and Trinidad and Tobago, announced the construction of a new plant to increase output and to supply the Central American and Caribbean market, with an investment of around US$ 70 million, including the commissioning of a solar power plant that will reduce the company's carbon footprint.

FDI inflows into Panama started to recover in 2021, although without yet returning to pre-pandemic levels. Investments of US$ 1.35 billion were received, 163% more than in 2020. Increased inflows in the form of reinvested earnings, which totalled US$ 1.938 billion in 2021, accounted for this growth and were enough to offset the outflow of capital due to inter-company lending (negative inflows of US$ 638 million).

No 2021 information is available on FDI inflows by sector, but in previous years services attracted the largest amounts, and it was in this sector that the largest investments were announced in 2021. Announcements of new investment projects remained at low levels, with the total estimated at US$ 210 million (84% less than in 2020). The largest announcement was by Italy's Enel Green Power and concerned the construction of Madre Vieja, a 30.88 megawatt (MW) photovoltaic power project involving an investment of an estimated US$ 43 million that will increase renewable energy capacity in the country and contribute to the energy transition of the entire region.

Nicaragua received US$ 1.22 billion of FDI in 2021, 63% more than in 2020. This increase lifted investment above the average level of the past decade and positioned the country as the fourth-largest recipient in the subregion, with 11% of total inflows. Reinvested earnings were confirmed as the main component (50% of the total), with inflows 29% higher than in 2020, while equity accounted for 29% of the total, with an increase of 59%. This was the first year of growth in inflows of equity, a component that had been on a downward trend since 2018. Unfortunately, there is no information available on investment by sector for the last two years, so it is not possible to identify the sectors in which this recovery occurred.

With regard to the outlook for new investments, new announcements declined yet further in 2021 to a figure of around US$ 76 million, 75% less than in 2020 and barely 15% of the nearly US$ 470 million announced on average in the country annually between 2010 and 2019. The largest project was announced by the Mexican company Rotoplas, which stated that it was beginning operations at its manufacturing plant in Nicaragua to supply water storage products in order to meet demand in the southern part of Central America, with an estimated investment of some US$ 56 million.

Although Honduras received four times as much foreign investment as in 2020, the recovery was not sufficient to bring it back to pre-pandemic levels. The total of US$ 876 million received in 2021 was 76% of what the country received annually on average in the 2010s. Reinvested earnings have been the main component of FDI inflows for more than two decades, and 2021 was no exception. Indeed, reinvested earnings inflows were up by 205% over 2020 at US$ 957 million, serving to offset capital outflows in the form of inter-company loans (US$ 81 million) and equity (US$ 1 million).

Services were the sector receiving the most investment (84% of the total), followed by manufacturing (14%), and both sectors received more investment than in 2020 (up 71% and 40%, respectively).[18] Financial establishments, insurance and business services received the largest amount of FDI, followed by electricity, gas and water services.

Investments from the Americas have predominated. The three main origins of FDI in 2021 were Colombia (24% of the total), Guatemala (24%) and Panama (23%), with more capital being received from all of them than in 2020. In contrast, investment from the United States declined (-70%), falling to 11% of the total.

[18] FDI inflows by sector and origin are computed in accordance with the *Balance of Payments and International Investment Position Manual: Fifth Edition (BPM5)* (IMF, 1993).

New investment announcements continued the downward trend that had started in 2017, with a value of some US$ 60 million, 87% below the amount announced in 2020. The largest new project announcement was by the United States company ABCO, a manufacturer of cleaning tools and materials, which inaugurated a new injection moulding manufacturing plant for the production of cleaning tools such as mop buckets, dish racks, floor brushes, squeegees and others, with an estimated investment of US$ 38 million.

In El Salvador, FDI inflows were 11.7% higher in 2021 than in 2020, totalling US$ 313 million. This increase still left inflows lower than in the two years prior to the pandemic. Inflows in the form of equity and reinvested earnings together increased very substantially to total US$ 699 million in 2021. However, negative inter-company loan inflows meant that the overall balance was lower.

The growth was explained by larger FDI inflows in services (79% of the total), going mainly to financial and insurance activities and secondarily to commerce, which offset lower manufacturing inflows. Panama was the main source of investment, followed by the United States, with more investment coming from both origins than in 2020.[19] The third-placed country was Spain, flows from which declined. The FDI from these countries offset divestment by others, including financial centres in the Caribbean (-US$ 127 million), Guatemala (-US$ 85 million) and Mexico (-US$ 49 million).

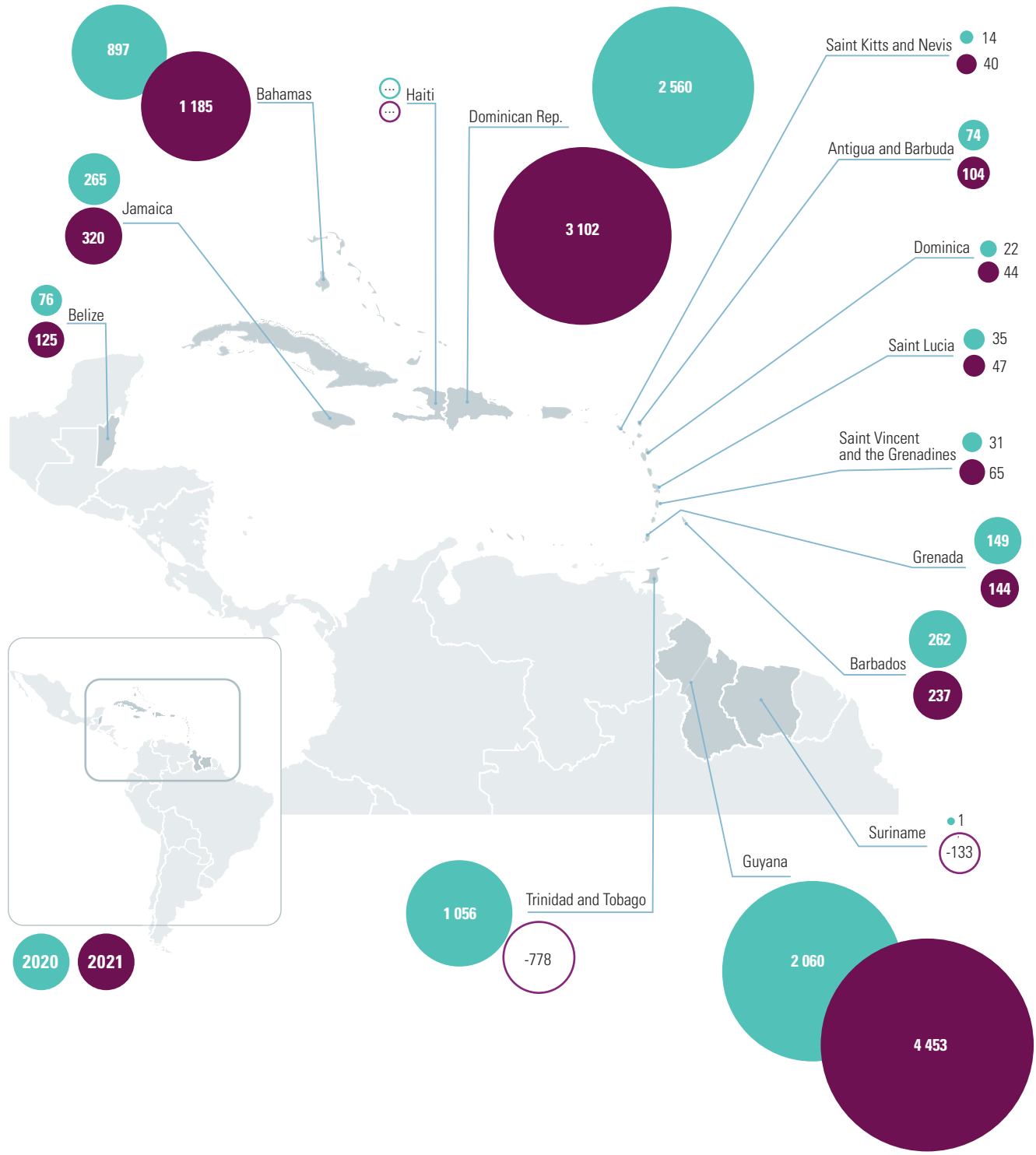
New investment announcements were dynamic in 2021. The value of projects increased from the previous year (74%) to total around US$ 300 million. The sector with the largest share of announcements was telecommunications, and within this Tigo El Salvador, a subsidiary of the Luxembourg-based firm, made the largest announcement, which concerned a project to provide connectivity in rural areas worth an estimated US$ 100 million.

## 5. The Caribbean: the Dominican Republic and Guyana consolidated their position as largest FDI recipients

FDI inflows into the Caribbean in 2021 totalled US$ 8.957 billion, a 19.4% increase on 2020, accounted for mainly by capital inflows in Guyana's hydrocarbon sector and increased FDI in the Dominican Republic. Guyana has positioned itself for the first time as the leading FDI destination in the subregion, accounting for 50% of inflows, followed by the Dominican Republic (35%). The tourism-driven economies of the Caribbean were hit hard by the COVID-19 crisis, but foreign investment levels there are now 24% higher than in 2019. While investment in the tourism and hotel sector has started to pick up in the Dominican Republic, other countries such as Jamaica and Barbados have shown their potential in business process outsourcing, attracting investment from companies in the sector.

[19] Since Panama is a financial centre, the ultimate country of origin of these investments cannot be identified.

**Map I.3**
The Caribbean (selected countries): inward foreign direct investment, 2020 and 2021
*(Millions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
**Note**: Information computed in accordance with International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, Washington, D.C., 2009, except Barbados, Guyana and Suriname. No information is available for Haiti.

Guyana, which has been showing exponential growth in FDI inflows since 2018, consolidated its position as the leading recipient of inward investment in the Caribbean in 2021, reporting an inflow of US$ 4.453 billion (116% more than in 2020). According to the Bank of Guyana (2022), this growth was mainly due to the hydrocarbon sector and the oil exploration project in the Liza field. The sector is expected to continue to attract FDI in the coming years. One of the main players in oil production in the country, ExxonMobil of the United States, announced that it planned a US$ 10 billion increase in its oil investment in the Stabroek Block off the Guyanese coast, which is to include 6 drilling centres and 26 production wells (Valle and Kumar, 2022).

The dynamism of the hydrocarbon sector was also responsible for announcements in other related sectors. In 2021, new FDI projects worth US$ 180 million were announced, an increase of 397% over 2020. The sector with the largest share was telecommunications, owing to an announcement by Jamaican company Digicel of a project to lay a submarine cable to provide the country with high-technology telephone and Internet services, with an estimated value of US$ 137 million. The project, however, is associated with oil and gas exploration in the area, as the intention is to connect oil platforms off the coast of Guyana with other territories and countries in the region, such as French Guiana, Suriname and Trinidad and Tobago (Digicel, 2021).

FDI inflows to the Dominican Republic increased by 21% in 2021, totalling US$ 3.102 billion, the highest level since 2017. This reversed the decline of 2020 and brought FDI inflows above the average of the previous 10 years. This growth was mainly explained by higher inflows in services and natural resources, while manufacturing inflows declined.

Services received 8% more FDI than in 2020 and accounted for 74% of total inflows. The commerce, hotels and restaurants sector was predominant, as investment in it accounted for 40% of total inflows to the country and was up by 5.2% over the previous year, returning to levels close to those reached before the pandemic. Announcements of new investments in the sector were also made. The Spanish company Karisma Hotels & Resorts plans to build a new five-star hotel near Punta Cana, with an estimated investment of US$ 193 million. The project is one of several initiatives by the hotel industry to revive tourism and investment in the sector after the impact of the COVID-19 pandemic. The industry is optimistic and expects to invest US$ 500 million in the country by 2024 (Molina, 2021).

In addition to the hotel industry, leading sectors were construction, where investment increased by 9.7% over 2020, and transport and communications, which recovered after posting a negative value in 2020. Looking ahead, United Arab Emirates-based DP World announced a project estimated at US$ 248 million for the construction of a refrigerated warehouse at DP World's facilities, in partnership with temperature-controlled warehousing and logistics provider Emergent Cold Latin America. According to the company, the construction of this state-of-the-art refrigerated warehouse will mean that manufacturing and logistics firms can set up operations there to serve the region (*Mercado*, 2022).

As for the natural resources sector, after successive falls in investment inflows, 2021 saw the largest inflow since 2016, accounting for 15% of the total. Conversely, the manufacturing sector received less investment than in 2020 (-25%) and accounted for 11% of total inflows.

With respect to the origin of capital, the United States continued to be the main source of FDI in the Dominican Republic. In 2021, after year-on-year growth of 87%, it became the source of 44% of inflows, which is well above the average of the last 10 years (20%). The other countries that are parties to USMCA also increased their

investment in the Dominican Republic and ranked second and third among the main countries of origin for investment capital: in the case of FDI from Mexico, the growth rate was 16% and the country provided 13% of total inflows, while in the case of FDI originating in Canada, the increase was higher, at 326%, and the country accounted for 11% of total inflows. Among European countries, Spain was the leading source of funds (7% of the total), and investment from there was 8% up on 2020.

FDI inflows to the Bahamas were 32% higher in 2021 than in 2020 at US$ 1.185 billion, the highest amount since 2016. This result was mainly due to 67% growth in inter-company loans, which were the largest component of FDI for the second year running (67%). Equity inflows fell by 8% and accounted for the remaining 33%. FDI project announcements in 2021 totalled US$ 43 million, compared to a total absence of announcements in 2020. The sector with the largest share was financial services, where the most notable announcement was of an expansion of the Royal Bank of Canada's private banking operations in the country, worth a total of US$ 33 million.

In Jamaica, FDI inflows totalled US$ 320 million in 2021, 21% up on 2020 but still below pre-pandemic levels or even the average of the last 10 years (US$ 631 million). Foreign investments in tourism were dynamic (up 43%), while inflows in the natural resources sector declined (-63%). In 2021, there was a recovery in project announcements, which totalled around US$ 200 million (509% more than in 2020). The sector with the greatest share was business services, where, most notably, the United States financial company Ibex, which has been present in Jamaica since 2016, announced the opening of its fifth centre in the country in five years (Ibex, 2021). The company provides process outsourcing and customer engagement services, and the project value is estimated at US$ 125 million. The Jamaican government also expects to see more investment in the sector in the coming years, especially given the projections of near-term economic recovery (Ministry of Industry, Investment and Commerce, 2021; JAMPRO, 2022).

In Barbados, FDI inflows totalled US$ 237 million in 2021, 9.6% less than the previous year. This value was lower than the average for the last 10 years (US$ 322 million), and the decline was mainly due to a fall in two components: equity (-31%), which traditionally account for the bulk of FDI, and reinvested earnings (-7%). Inter-company lending consisted for the ninth year running of capital outflows from Barbadian-based companies to other countries (-US$ 27 million). In pursuit of greater economic diversification, the country has sought to attract investment into more knowledge-intensive sectors (Invest Barbados, 2022). Thus, in 2021, the Canadian human resource management company Organizational Solutions Inc. decided to extend its business services and invest in expanding its offices in the country following active efforts by Barbados's investment promotion agency (*NationNews*, 2021).

The countries that make up the Organisation of Eastern Caribbean States (OECS), namely Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines, received FDI inflows of US$ 445 million in 2021. This represents a 37% increase from the previous year, when there was a 45% decline. Although all the countries of the Organisation except Grenada showed growth over the previous year, none of them recovered their pre-pandemic FDI inflow volumes. Overall, inward foreign investment was 24% lower than in 2019.

In 2021, Grenada received US$ 144 million of FDI, a decrease of 3% from the previous year. Equity accounted for 88% and decreased by less than the total (-1.8%), while the largest decrease was in reinvested earnings (-23%), which accounted for 12% of FDI. A notable development was the announcement of the opening of offices in Grenada by the legal services firm Dentons, which is positioning itself strategically in the country in expectation of a growing volume of international business from China, the United States and the United Kingdom (Dentons, 2021).

FDI in Antigua and Barbuda was 42% higher in 2021 than in 2020, totalling US$ 104 million. Equity was the largest component (US$ 107 million) and offset negative inflows in the reinvested earnings component (-US$ 8 million), which has not seen positive figures since 2015. Inflows in the form of intercompany loans held steady at US$ 5 million. Saint Vincent and the Grenadines ranked second in the OECS, with US$ 65.3 million of FDI inflows in 2021, representing growth of 112% over previous years; equity again accounted for almost all of this. Saint Lucia received US$ 47 million of FDI, 33% more than in 2020. Equity was the largest source of investment (US$ 48 million), although inflows were lower than in 2020 (-12%). The reinvested earnings component totalled US$ 2 million, and inter-affiliate lending was negative (-US$ 3 million). Foreign investment in Dominica was twice as high in 2021 as in 2020, at US$ 44 million. Saint Kitts and Nevis saw 189% growth in inward FDI to US$ 40 million in 2021, although this was still short of pre-pandemic levels.

FDI inflows to Belize totalled US$ 125 million in 2021, 64.7% up on 2020 and the highest value since 2014. This growth was mainly due to capital inflows in the service sector, which increased by 78% and represented 93% of all capital inflows into the country, being mainly associated with construction linked to the tourism sector and real estate activities (Central Bank of Belize, 2021). The revival of GDP growth in Belize (2.7% in 2021), mainly owing to the resumption of activities in the service sector and civil construction, was reflected in the announcement of the construction of a new cement plant by the Guatemalan company Cementos Rocafuerte, at a cost of US$ 8 million.

Suriname recorded negative FDI inflows in 2021 for the first time since 2010 (-US$ 173 million). In the context of recovery efforts following the COVID-19 pandemic (the country's GDP fell by 15.9% in 2020 and 2.8% in 2021), corporate divestments in the equity component (-US$ 295 million) explained this result. The reinvested earnings figure for companies in the country was positive (US$ 131 million), but lower than in 2020 (-56%).

Trinidad and Tobago also posted a negative FDI inflow of US$ 778 million in 2021, falling by 174% from the 2020 level. Equity and intercompany lending both declined, with negative equity inflows (US$ 954 million), which were largely due to outflows in the hydrocarbon sector, accounting for the negative FDI values.

# Bibliography


AES (2021), "A new step in the execution of its strategy. AES Andes incorporates GIP as a strategic partner in its renewable growth" [online] https://www.aesandes.com/en/aes-andes-incorporates-gip-strategic-partner-its-renewable-growth.

Agência Brasil (2021a), "Recursos da venda da Cedae serão divididos entre 29 municípios", 16 June [online] https://agenciabrasil.ebc.com.br/geral/noticia/2021-06/recursos-da-venda-da-cedae-serao-divididos-entre-29-municipios.

___(2021b), "Petrobras completa la venta de la Refinería Landulpho Alves, en Bahía" [online] https://agenciabrasil.ebc.com.br/es/economia/noticia/2021-11/petrobras-completa-la-venta-de-la-refineria-landulpho-alves-en-bahia.

Aldo (2021), "Saiba detalhes sobre a aquisição da Aldo Solar pela Brookfield", 11 August [online] https://www.aldo.com.br/blog/aquisicao-da-aldo-solar-pela-brookfield/.

*América Economía* (2021), "Grupo ISA compra a SF Energía y Kavom Energía todas las acciones de la brasileña PBTE por US$277M", 3 March [online] https://www.americaeconomia.com/negocios-industrias/fusiones-adquisiciones/grupo-isa-compra-sf-energia-y-kavom-energia-todas-las.

Argentina (2022), "La minera Zijin invertirá US$380 millones para producir litio en Catamarca", 4 February [online] https://www.argentina.gob.ar/noticias/la-minera-zijin-invertira-us380-millones-para-producir-litio-en-catamarca.

Bank of Guyana (2022), *Bank of Guyana Annual Report 2021* [online] https://bankofguyana.org.gy/bog/images/research/Reports/ANNREP2021.pdf.

Bloomberg Línea (2021), "Televisa y CIE venden interés en Ocesa; Live Nation es el dueño mayoritario" [online] https://www.bloomberglinea.com/2021/12/07/televisa-y-cie-venden-interes-en-ocesa-live-nation-es-el-dueno-mayoritario/#:~:text=Ocesa%2C%20que%20conformaba%20la%20divisi%C3%B3n,de%20la%20compa%C3%B1%C3%ADa%20en%202019.

Bordoff, J. and M. L. O'Sullivan (2022), "The new energy order: how governments will transform energy markets", *Foreign Affairs*, July/August [online] https://www.foreignaffairs.com/articles/energy/2022-06-07/markets-new-energy-order.

Brasil (2021), "Leilão do 5G confirma expectativas e arrecada R$ 47,2 bilhões", 5 November [online] https://www.gov.br/mcom/pt-br/noticias/2021/novembro/leilao-do-5g-confirma-expectativas-e-arrecada-r-46-7-bilhoes.

Braskem Idesa (2021), "Braskem Idesa anuncia un acuerdo con Pemex para el suministro de etano e implementación de una terminal para importación" [online] https://www.braskemidesa.com.mx/noticia/braskem-idesa-anuncia-un-acuerdo-con-pemex-para-el-suministro-de-etano-e-implementacion-de-una-terminal-para-importacion.

Businesswire (2021), "IHS Towers cierra la transacción con TIM S.A. y crea I-Systems para prestar servicios de infraestructura de fibra óptica", 17 November [online] https://www.businesswire.com/news/home/20211117006150/es/.

CDP (2022), "CDP Capital Markets" [online] https://www.cdp.net/en/investor.

Central Bank of Belize (2021), *Quarterly Review: September 2021*, Belize City [online] https://www.centralbank.org.bz/docs/default-source/4.2.3-quarterly-reviews/september-2021-quarterly-review.pdf?sfvrsn=19c8d35_2.

Central Bank of Trinidad and Tobago (2021), *Annual Economic Survey 2021: Review of Economic and Financial Developments*, Port of Spain [online] https://www.central-bank.org.tt/sites/default/files/page-file-uploads/2021-annual-economic-survey-20220605.pdf.

Climate Action 100+ (2022), "Initiative snapshot" [online] https://www.climateaction100.org/.

Coelho, G. (2020), "STF autoriza venda de refinarias pela Petrobras sem aval do Congresso", CNN Brasil, 1 October [online] https://www.cnnbrasil.com.br/business/stf-autoriza-venda-de-refinarias-pela-petrobras-sem-aval-do-congresso/.

Colbún (2021), "Colbun agrees to sale 100% of its subsidiary of Transmission un US $ 1,295 million" [online] https://denuncias.colbun.cl/en/colbun-agrees-to-sale-100-of-its-subsidiary-of-transmission-in-us-1295-million/.

Corrêa, F. (2021), "ArcelorMittal vai investir R$ 4,3 bilhões para expansões em Minas", O Tempo, 11 November [online] https://www.otempo.com.br/economia/arcelormittal-vai-investir-r-4-3-bilhoes-para-expansoes-em-minas-1.2568789.

Darvas, Z. and G. Wolff (2022), "How to reconcile increased green public investment needs with fiscal consolidation", 7 March [online] https://voxeu.org/article/how-reconcile-increased-green-public-investment-needs-fiscal-consolidation.

Deloitte (2022), *Chile – 2022: perspectivas y tendencias de M&A*, Santiago [online] https://3222615.fs1.hubspotusercontent-na1.net/hubfs/3222615/Anuario%202021.pdf.

Dentons (2021), "Dentons opens in Grenada, continuing Caribbean expansion", 22 April [online] https://www.dentons.com/en/about-dentons/news-events-and-awards/news/2021/april/dentons-opens-in-grenada-continuing-caribbean-expansion.

*Diario Financiero* (2021), "Grupo brasileño Ambipar compra 100% de firma chilena de gestión ambiental Disal por 800 millones de reales", 28 June [online] https://www.df.cl/empresas/multinacionales/grupo-brasileno-ambipar-compra-100-de-firma-chilena-de-gestion.

Digicel (2021), "Digicel builds deep blue one subsea cable connecting French Guiana, Suriname, Guyana and Trinidad & Tobago", 29 September [online] https://www.digicelgroup.com/en/news/2020/digicel-builds-deep-blue-one-subsea-connection.html.

DNP (National Planning Department) (2022), "Colombia multiplicará 100 veces su producción energética a partir de Fuentes No Convencionales de Energía Renovables en 2023", 13 May [online] https://www.dnp.gov.co:443/Paginas/Colombia-Energia-Renovables-en-2023.aspx.

ECLAC (Economic Commission for Latin America and the Caribbean) (2022a), *Repercussions in Latin America and the Caribbean of the war in Ukraine: how should the region face this new crisis?*, Santiago, 6 June [online] https://www.cepal.org/en/publications/47913-repercussions-latin-america-and-caribbean-war-ukraine-how-should-region-face-new.

___(2022b), *Capital flows to Latin America and the Caribbean: 2021 year-in-review and first four months of 2022* (LC/WAS/TS.2022/1), Santiago [online] https://repositorio.cepal.org/bitstream/handle/11362/47917/S2200485_en.pdf?sequence=1&isAllowed=y.

___(2021a), "An innovative financing for development agenda for the recovery in Latin America and the Caribbean", *COVID-19 Special Report*, No. 12, Santiago [online] https://www.cepal.org/en/publications/47490-innovative-financing-development-agenda-recovery-latin-america-and-caribbean.

___(2021b), "Latin America and the Caribbean has all the right conditions to become a renewable energy hub with great potential in green hydrogen", 22 June [online] https://www.cepal.org/en/news/latin-america-and-caribbean-has-all-right-conditions-become-renewable-energy-hub-great.

___(2014), *Foreign Direct Investment in Latin America and the Caribbean, 2013* (LC/G.2613-P), Santiago.

Editorial RN (2021), "Neo Lithium amplía su planta en Catamarca", 5 April [online] http://www.editorialrn.com.ar/index.php?option=com_content&view=article&id=33456:neo-lithium-amplia-su-planta-en-catamarca&catid=14&Itemid=599.

*El Cronista* (2021), "Topper invierte $ 500 millones para hacer más zapatillas en su planta de Tucumán", 13 May [online] https://www.cronista.com/negocios/topper-hara-mas-zapatillas-con-500-millones-de-inversion/.

*El Economista* (2021a), "Concluye la fusión de IEnova y Sempra LNG" [online] https://www.eleconomista.com.mx/empresas/Concluye-la-fusion-de-IEnova-y-Sempra-LNG-20211103-0013.html.

___(2021b), "CloudHQ instalará un campus de data centers en Querétaro con inversión de 600 millones de dólares" [online] https://www.eleconomista.com.mx/estados/CloudHQ-instalara-un-campus-de-data-centers-en-Queretaro-con-inversion-de-600-millones-de-pesos-20210222-0089.html.

Energiminas (2021), "Gold Fields: Comienza construcción de mina Salares Norte, de US$860 millones, en Chile" [online] https://energiminas.com/gold-fields-comienza-construccion-de-mina-salares-norte-de-us860-millones-en-chile/.

Europa Press (2021), "Grupo Lamosa compra la división de cerámica plana de Roca Group, incluyendo Cerámicas Belcaire," 2 August [online] https://www.europapress.es/economia/noticia-grupo-lamosa-compra-division-ceramica-plana-roca-group-incluyendo-ceramicas-belcaire-20210802193802.html.

Exame (2022), "CMPC terá uma das plantas mais sustentáveis do país no setor de celulose", 9 March [online] https://exame.com/negocios/cmpc-tera-plantas-sustentaveis-no-setor-de-celulose/.

EY (2021), "Does the need for energy security challenge the quest for net zero?" [online] https://www.ey.com/en_gl/recai.

General Motors (2021), "General Motors realiza una inversión en su Complejo de Ramos Arizpe" [online] https://media.gm.com/media/mx/es/gm/news.detail.html/content/Pages/news/mx/es/2021/apr/2021-04-06-Anuncio-Ramos-Arizpe.html.

GIIN (Global Impact Investing Network) (2020), *Annual Impact Investor Survey 2020. The Tenth Edition [online]* https://thegiin.org/assets/GIIN%20Annual%20Impact%20Investor%20Survey%202020.pdf.
GlobeNewswire (2021), "Millicom (Tigo) to acquire full control of Tigo Guatemala" [online] https://www.globenewswire.com/en/news-release/2021/11/12/2333057/0/en/Millicom-Tigo-to-acquire-full-control-of-Tigo-Guatemala.html.
Gold Fields (2022), "Operación en Perú. Operación Hitos" [online] https://www.goldfields.com.pe/operacion-hitos/.
Groves, D. G. and others (2020), *The Benefits and Costs of Decarbonizing Costa Rica's Economy: Informing the Implementation of Costa Rica's National Decarbonization Plan under Uncertainty*, Washington, D.C., Inter-American Development Bank (IDB) [online] https://publications.iadb.org/en/benefits-and-costs-decarbonizing-costa-ricas-economy-informing-implementation-costa-ricas-national.
Herrera, C. (2017), "Scaling up climate finance in Latin America", Natural Resources Defense Council (NRDC), 23 June [online] https://www.nrdc.org/experts/scaling-climate-finance-latin-america.
Huawei (2021), "Abre Huawei en México segunda región de HUAWEI CLOUD", 2 November [online] https://www.huaweicloud.com/intl/es-us/news/20211102111908485.html.
Ibex (2021), "Ibex opens fifth Jamaican site in Portmore adding 1,200 production seats", 27 January [online] https://investors.ibex.co/news-releases/news-release-details/ibex-opens-fifth-jamaican-site-portmore-adding-1200-production/.
ICL (2021), "ICL completes acquisition of Compass Minerals' South American Plant Nutrition business", 1 July [online] https://investors.icl-group.com/reports-news-and-events/press-releases/press-releases-details/2021/ICL-Completes-Acquisition-of-Compass-Minerals-South-American-Plant-Nutrition-Business/default.aspx.
IEA (International Energy Agency) (2021), *Net Zero by 2050: A Roadmap for the Global Energy Sector*, Paris [online] https://iea.blob.core.windows.net/assets/ad0d4830-bd7e-47b6-838c-40d115733c13/NetZeroby2050-ARoadmapfortheGlobalEnergySector.pdf.
IG4 Capital (2021), "IG4 Capital finalizes tender offer to become largest shareholder of one of the largest infrastructure players in Peru" [online] https://ig4capital.com/media/highlights-en/ig4-capital-finalizes-tender-offer-to-become-largest-shareholder-of-one-of-the-largest-infrastructure-players-in-peru/.
IMF (International Monetary Fund) (2009), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, Washington, D.C.
___(1993), *Balance of Payments and International Investment Position Manual: Fifth Edition (BPM5)*, Washington, D.C.
Infobae (2021), "Los accionistas de Pampa Energía aprobaron la venta de Edenor", 17 February [online] https://www.infobae.com/economia/2021/02/17/los-accionistas-de-pampa-energia-aprobaron-la-venta-de-edenor/.
Intel (2022), "Intel announces initial investment of over €33 billion for R&D and manufacturing in EU", 15 March [online] https://www.intel.com/content/www/us/en/newsroom/news/eu-news-2022-release.html#gs.y7yufc.
Invest Barbados (2022), "Barbados' economy poised for additional growth in 2022", 28 January [online] https://www.investbarbados.org/news/barbados-economy-poised-for-additional-growth-in-2022/.
InvestChile (2022), "Minister of Economy and InvestChile Director meet with Chamber of Commerce Representatives from 17 countries", 3 June [online] https://investchile.gob.cl/minister-of-economy-and-investchile-director-meet-with-chamber-of-commerce-representatives-from-17-countries/.
IRENA (International Renewable Energy Agency) (2021), *Renewable Power Generation Costs in 2020*, Abu Dhabi [online] https://www.irena.org/publications/2021/Jun/Renewable-Power-Costs-in-2020.
_____ (2019), "Regional Action Plan: Accelerating Renewable Energy Deployment in Latin America" [online] https://www.irena.org/lac#:~:text=Latin%20America%20hosts%20some%20of,renewables%2C%20twice%20the%20global%20average.
Irwin-Hunt, A. (2022), "Cross border M&A reaches all-time high of $2.1tn in 2021", fDi Intelligence, 18 January [online] https://www.fdiintelligence.com/article/80599.
ISA (2021), "ISA Group formalized the purchase of Piratininga-Bandeirantes Transmissora de Energia (PBTE) in Brazil", 2 March [online] https://www.isa.co/es/press/grupo-isa-formalizo-la-compra-de-la-compania-piratininga-bandeirantes-transmissora-de-energia-pbte-en-brasil/.

JAMPRO (Jamaica Promotions Corporation) (2022), "IMF predicts economic growth in excess of four per cent for Jamaica", *Do Business Jamaica*, 18 February [online] https://dobusinessjamaica.com/news/2022/02/10900/.

JBS (2021), "JBS acquires European Company to expand its global plant-based food platform", 19 April [online] https://jbs.com.br/en/press/releases-en/jbs-acquires-european-company-to-expand-its-global-plant-based-food-platform/.

Kearney (2022), "Optimism dashed: the FDi Confidence Index" [online] https://www.kearney.com/foreign-direct-investment-confidence-index/2022-full-report.

*La Nación* (2021a), "Enex Paraguay sigue creciendo y habilitó una nueva estación en San Antonio", 31 December [online] https://www.lanacion.com.py/negocios/2021/12/31/enex-paraguay-sigue-creciendo-y-habilito-una-nueva-estacion-en-san-antonio/.

___(2021b), "La marca internacional Samsonite instalará una planta de producción en Paraguay", 8 September [online] https://www.lanacion.com.py/negocios/2021/09/08/la-marca-internacional-samsonite-instalara-una-planta-de-produccion-en-paraguay/.

Larronda, A. (2021), "Tres de las 10 principales tecnológicas uruguayas se vendieron; una de ellas por US$ 100 millones", 22 October, *El País* [online] https://www.elpais.com.uy/el-empresario/tres-principales-tecnologicas-uruguayas-vendieron-us-millones.html.

LexLatin (2021), "Raízen entra al mercado paraguayo de marketing con la compra de Barcos & Rodados", 1 September [online] https://lexlatin.com/noticias/raizen-mercado-paraguayo-marketing-barcos-rodados.

Li, M., G. Trencher and J. Asuka (2022), "The clean energy claims of BP, Chevron, ExxonMobil and Shell: a mismatch between discourse, actions and investments", *PLOS ONE*, vol. 17, No. 2, 16 February [online] https://doi.org/10.1371/journal.pone.0263596.

Loeb, M. (2022), "Global M&A market defies gravity in 2021 second half", McKinsey & Company, 16 March [online] https://www.mckinsey.com/business-functions/m-and-a/our-insights/global-m-and-a-market-defies-gravity-in-2021-second-half.

Loiseau-Aslanidi, O., S. Piscaglia and B. Solís González (2022), "Using ESG Score Predictor: a methodological framework to estimate ESG scores", Moody's Analytics, March [online] https://www.moodysanalytics.com/whitepapers/pa/2022/using_esg_score_predictor_a_methodological_framework_to_estimate_esg_scores.

Maritime South (2021), "Katoen Natie and Uruguayan Government end dispute with $455 million Montevideo investment commitment", 4 March [online] https://maritimesouth.com/2021/03/04/katoen-natie-and-uruguayan-government-end-disputes-with-455-million-investment-commitment-in-montevideos-terminal/.

McKinsey & Company (2021), "The big choices for oil and gas in navigating the energy transition" [online] https://www.mckinsey.com/industries/oil-and-gas/our-insights/the-big-choices-for-oil-and-gas-in-navigating-the-energy-transition.

Megaport (2021), "The state of the cloud in Mexico", 26 October [online] https://www.megaport.com/blog/state-of-cloud-in-mexico/.

*Mercado* (2022), "DP World inicia obra de almacén refrigerado en Punta Caucedo", 27 April [online] https://www.revistamercado.do/negocios/dp-world-amplia-punta-caucedo.

Mesa, P. (2022), "Fusiones y adquisiciones más relevantes de 2021 en un año 'récord' y un sector 'vedette'", *El País*, 24 January [online] https://www.elpais.com.uy/negocios/fusiones-adquisiciones-relevantes-ano-record-sector-vedette.html.

Ministry of Finance (2020), "Bonos SLB" [online] https://hacienda.cl/areas-de-trabajo/finanzas-internacionales/oficina-de-la-deuda-publica/bonos-esg/bonos-slb.

Ministry of Industry, Investment and Commerce (2021), "More BPO companies eyeing Jamaica", 6 October [online] https://www.miic.gov.jm/content/more-bpo-companies-eyeing-jamaica.

Molina, C. (2021) "Las hoteleras españolas comprometen inversiones por 500 millones hasta 2024 en República Dominicana", *Cinco Días*, 21 October [online] https://cincodias.elpais.com/cincodias/2021/10/21/companias/1634808767_864251.html.

Moneda Asset Management (2021), "Patria Investments completa combinación con Moneda Asset Management", 1 December [online] https://www.moneda.cl/noticias/patria-investments-completa-combinacion-con-moneda-asset-management.

MundoMaritimo (2022), "Montecon inició proceso de reclamo contra Uruguay por extensión de concesión de TCP a Katoen Natie hasta 2081", 29 April [online] http://www.mundomaritimo.cl/noticias/montecon-inicio-proceso-de-reclamo-contra-uruguay-por-extension-de-concesion-de-tcp-a-katoen-natie-hasta-2081?utm_medium=email&utm_campaign=newsletter.

*NationNews* (2021), "Choosing Barbados a win-win for OSI", 5 July [online] https://www.nationnews.com/2021/07/05/choosing-barbados-win-win-osi/.
New Fortress Energy (2021), "New Fortress Energy to acquire power purchase agreements and build LNG-to-power project at the Suape Port in Brazil", 13 January [online] https://ir.newfortressenergy.com/news-releases/news-release-details/new-fortress-energy-acquire-power-purchase-agreements-and-build.
Núñez, G., H. Velloso and F. Da Silva (2022), "Corporate governance in Latin America and the Caribbean: using ESG debt instruments to finance sustainable investment projects", *Project Documents* (LC/TS.2022/23), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
Observatório do Clima (2020), "NDC and the carbon trick maneuver: how Brazil reduced the ambition of its goals under the Paris Agreement", 10 December [online] https://www.oc.eco.br/wp-content/uploads/2020/12/NDC-analysis-EN.pdf.
Peña, K. (2021a), "CMPC no para en Brasil: compra activos forestales e industriales de firma por US$ 170 millones", *Diario Financiero*, 8 December [online] https://www.df.cl/empresas/industria/cmpc-no-para-en-brasil-compra-activos-forestales-e-industriales-de.
___(2021b), "AES Andes suma a socio estratégico para su crecimiento en energías renovables a través de millonario acuerdo", *Diario Financiero*, 15 July [online] https://www.df.cl/empresas/industria/cmpc-no-para-en-brasil-compra-activos-forestales-e-industriales-de.
PR Newswire (2021), "GTIS Partners announces $248 million transaction in real estate logistics assets in São Paulo Brazil", 19 October [online] https://www.prnewswire.com/news-releases/gtis-partners-announces-acquisition-of-248-million-in-real-estate-logistics-assets-in-sao-paulo-brazil-301403461.html.
PwC (2021), *Guía para la integración de criterios ESG en los Consejos de Administración* [online] https://www.pwc.com/ia/es/publicaciones/assets/guia-esg-consejos-administracion_revWEM_V2.pdf.
Reuters (2021a), "China's Ganfeng gets green light for Argentina lithium plant", 6 July [online] https://www.reuters.com/article/us-ganfeng-lithium-argentina-idUSKCN2EC1XU.
___(2021b), "Google to build new undersea cable to connect Latin America and the U.S.", 9 June [online] https://www.reuters.com/business/google-build-new-undersea-cable-connect-latin-america-us-2021-06-09/.
Rivas Molina, R. (2020), "La crisis paraliza Vaca Muerta, la joya petrolera de Argentina", *El País*, 29 February [online] https://elpais.com/economia/2020/02/27/actualidad/1582832498_041823.html.
Samsung (2021), "Samsung Electronics announces new advanced semiconductor fab site in Taylor, Texas", 24 November [online] https://news.samsung.com/global/samsung-electronics-announces-new-advanced-semiconductor-fab-site-in-taylor-texas.
Santiago, J. (2021), "Chedraui sube por compra de Smart & Final", *El Economista*, 16 May [online] https://www.eleconomista.com.mx/mercados/Chedraui-sube-por-compra-de-Smart-Final-20210516-0074.html.
Sempra (2021), "Sempra Announces Results Of Cash Tender Offer For Remaining Publicly Owned Shares Of IEnova" [online] https://www.sempra.com/sempra-announces-results-cash-tender-offer-remaining-publicly-owned-shares-ienova.
Takeda (2021), "Takeda Completes Sale of Select OTC and Non-Core Assets to Hypera Pharma" [online] https://www.takeda.com/newsroom/newsreleases/2021/takeda-completes-sale-of-select-otc-and-non-core-assets-to-hypera-pharma/.
*The Tribune* (2021), "RBC opens new office at ALBANY", 2 February [online] http://www.tribune242.com/news/2021/feb/02/rbc-opens-new-office-albany/.
Trafigura (2021), "Vista and Trafigura Argentina collaborate to accelerate the development of Vaca Muerta", 28 June [online] https://www.trafigura.com/press-releases/vista-and-trafigura-argentina-collaborate-to-accelerate-the-development-of-vaca-muerta/.
UNCTAD (United Nations Conference on Trade and Development) (2022), *Investment Trends Monitor*, No. 40, Geneva.
Valle, S. and A. Kumar (2022), "Exxon to invest $10 billion in massive Guyana offshore oil project", Reuters, 4 April [online] https://www.reuters.com/business/energy/exxon-invest-10-billion-massive-guyana-offshore-oil-project-2022-04-04/.

Vogt-Schilb, A., G. Reyes-Tagle and G. Edwards (2021), "Are Latin America's fossil fuels at risk of becoming stranded assets this decade?", Banco Interamericano de Desarrollo (BID), 21 September [online] https://blogs.iadb.org/sostenibilidad/en/are-latin-americas-fossil-fuels-at-risk-of-becoming-stranded-assets-this-decade/.

White, C. (2021), "JBS moves to acquire 100 percent of Australia's Huon Aquaculture", SeafoodSource, 6 August [online] https://www.seafoodsource.com/news/business-finance/jbs-acquires-100-percent-of-australia-s-huon-aquaculture.

Yorio, G. and others (2022), "A road to efficiency in emerging local debt markets: the Mexican experience", paper presented at the second Public Debt Management Conference, Rome, 26–27 May [online] http://www.publicdebtnet.org/export/sites/pdm/pdm/.content/attachment/conference_052022/papers/Bonilla-Road-to-Efficiency-Paper-Mexico.pdf.

# Annex I.A1

**Table I.A1.1**
Latin America and the Caribbean: inward foreign investment by country, 2003–2021[a]
*(Millions of dollars)*

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antigua and Barbuda | 179 | 95 | 238 | 361 | 341 | 161 | 85 | 101 | 68 | 138 | 101 | 46 | 114 | 97 | 151 | 205 | 128 | 74 | 104 |
| Argentina | 1 652 | 4 125 | 5 265 | 5 537 | 6 473 | 9 726 | 4 017 | 11 333 | 10 840 | 15 324 | 9 822 | 5 065 | 11 759 | 3 260 | 11 517 | 11 717 | 6 649 | 4 723 | 6 782 |
| Bahamas | 713 | 804 | 1 054 | 1 492 | 1 623 | 1 512 | 646 | 1 097 | 1 409 | 1 034 | 1 590 | 3 551 | 713 | 1 260 | 901 | 947 | 611 | 897 | 1 185 |
| Barbados | 185 | 228 | 390 | 342 | 476 | 615 | 255 | 446 | 456 | 527 | 118 | 592 | 418 | 269 | 206 | 242 | 215 | 262 | 237 |
| Belize | -10.9 | 111 | 127 | 109 | 143 | 170 | 109 | 97 | 95 | 189 | 95 | 153 | 65 | 44 | 24 | 118 | 94 | 76 | 125 |
| Bolivia (Plurinational State of) | 197 | 85 | -287.8 | 281 | 366 | 513 | 423 | 643 | 859 | 1 060 | 1 750 | 657 | 555 | 335 | 712 | 302 | -216.6 | -1 129.5 | 599 |
| Brazil | 10 123 | 18 161 | 15 460 | 19 418 | 44 579 | 50 716 | 31 481 | 82 390 | 102 427 | 92 568 | 75 211 | 87 714 | 64 738 | 74 295 | 68 885 | 78 163 | 69 174 | 37 786 | 46 441 |
| Chile | 3 486 | 4 969 | 5 991 | 4 755 | 10 545 | 18 812 | 12 750 | 14 849 | 26 369 | 31 802 | 21 121 | 25 528 | 17 766 | 11 363 | 5 237 | 7 943 | 13 579 | 9 205 | 15 252 |
| Colombia | 1 720 | 3 116 | 10 235 | 6 751 | 8 886 | 10 564 | 8 035 | 6 430 | 14 647 | 15 040 | 16 210 | 16 169 | 11 621 | 13 858 | 13 701 | 11 299 | 13 989 | 7 459 | 9 727 |
| Costa Rica | 575 | 794 | 861 | 1 469 | 1 896 | 2 078 | 1 615 | 1 907 | 2 733 | 2 696 | 3 205 | 3 242 | 2 956 | 2 620 | 2 925 | 3 015 | 2 719 | 2 103 | 3 563 |
| Dominica | 32 | 27 | 32 | 29 | 48 | 57 | 58 | 43 | 35 | 59 | 25 | 12 | 7 | 42 | 23 | 78 | 63 | 22 | 44 |
| Dominican Republic | 613 | 909 | 1 123 | 1 085 | 1 667 | 2 870 | 2 165 | 2 024 | 2 277 | 3 142 | 1 991 | 2 209 | 2 205 | 2 407 | 3 571 | 2 535 | 3 021 | 2 560 | 3 102 |
| Ecuador | 872 | 837 | 493 | 271 | 194 | 1 057 | 309 | 166 | 646 | 567 | 727 | 772 | 1 323 | 764 | 630 | 1 389 | 975 | 1 104 | 638 |
| El Salvador | 123 | 366 | 398 | 267 | 1 455 | 824 | 366 | -225.6 | 218 | 466 | 179 | 306 | 396 | 348 | 889 | 826 | 636 | 281 | 313 |
| Grenada | 91 | 66 | 73 | 96 | 172 | 141 | 104 | 64 | 45 | 34 | 114 | 107 | 156 | 110 | 156 | 184 | 199 | 149 | 144 |
| Guatemala | 263 | 296 | 508 | 592 | 745 | 738 | 522 | 658 | 1 219 | 1 270 | 1 479 | 1 442 | 1 231 | 1 174 | 1 130 | 981 | 976 | 932 | 3 472 |
| Guyana | 26 | 30 | 77 | 102 | 152 | 178 | 164 | 198 | 247 | 294 | 214 | 255 | 122 | 32 | 212 | 1 232 | 1 695 | 2 060 | 4 453 |
| Haiti | 14 | 6 | 26 | 161 | 75 | 30 | 55 | 186 | 114 | 174 | 159 | 94 | 104 | 93 | 385 | 105 | 55 | - | - |
| Honduras | 403 | 547 | 600 | 669 | 928 | 1 006 | 509 | 969 | 1 014 | 1 059 | 1 069 | 1 704 | 1 317 | 1 147 | 941 | 1 380 | 947 | 224 | 876 |
| Jamaica | 721 | 602 | 682 | 882 | 866 | 1 437 | 541 | 228 | 218 | 413 | 545 | 582 | 925 | 928 | 889 | 775 | 665 | 265 | 320 |
| Mexico | 18 164 | 25 141 | 25 174 | 22 137 | 31 019 | 29 761 | 19 656 | 30 529 | 23 845 | 18 221 | 50 830 | 28 439 | 36 269 | 38 907 | 33 128 | 37 841 | 29 703 | 31 446 | 33 439 |
| Nicaragua | 201 | 250 | 241 | 490 | 164 | 349 | 217 | 206 | 936 | 776 | 965 | 1 077 | 967 | 989 | 1 035 | 838 | 503 | 747 | 1 220 |
| Panama | 771 | 1 012 | 1 027 | 2 498 | 1 777 | 2 402 | 1 259 | 2 363 | 3 132 | 2 980 | 3 943 | 4 459 | 5 058 | 5 585 | 3 977 | 5 487 | 4 451 | -2 154.7 | 1 350 |
| Paraguay | 28 | 70 | 42 | 161 | 443 | 265 | 101 | 633 | 624 | 725 | 432 | 604 | 378 | 505 | 336 | 156 | 225 | 120 | 122 |
| Peru | 1 335 | 1 599 | 2 579 | 3 467 | 5 491 | 6 924 | 6 431 | 8 455 | 7 682 | 14 182 | 9 571 | 4 263 | 7 337 | 6 805 | 7 413 | 5 873 | 4 760 | 732 | 7 455 |
| Saint Kitts and Nevis | 78 | 63 | 104 | 115 | 141 | 184 | 136 | 119 | 112 | 110 | 139 | 157 | 128 | 121 | 48 | 40 | 48 | 14 | 40 |
| Saint Lucia | 112 | 81 | 82 | 238 | 277 | 166 | 152 | 127 | 100 | 78 | 95 | 65 | 152 | 162 | 90 | 46 | 73 | 35 | 47 |
| Saint Vincent and the Grenadines | 55 | 66 | 41 | 110 | 121 | 159 | 111 | 97 | 86 | 115 | 160 | 124 | 124 | 80 | 163 | 42 | 74 | 31 | 65 |
| Suriname | -76.1 | -37.3 | 28 | -163.4 | -246.7 | -231.4 | -93.4 | -247.7 | 70 | 174 | 188 | 164 | 267 | 300 | 96 | 131 | 84 | 1 | -132.7 |
| Trinidad and Tobago | 808 | 998 | 940 | 883 | 830 | 2 801 | 709 | 549 | 41 | -1 904.3 | -1 130.0 | 661 | 177 | -23.6 | -470.9 | -700.2 | 184 | 1 056 | -777.6 |
| Uruguay | 416 | 332 | 847 | 1 493 | 1 329 | 2 106 | 1 529 | 2 289 | 2 504 | 6 394 | 987 | 4 085 | 2 673 | -515.7 | 2 687 | 1 559 | 1 409 | 410 | 2 587 |
| Venezuela (Bolivarian Republic of) | 2 040 | 1 483 | 2 589 | -508.0 | 3 288 | 2 627 | -983.0 | 1 574 | 5 740 | 5 973 | 2 680 | -1 028.0 | 769 | 1 068 | -68.0 | 886 | … | … | … |
| **Total** | **45 909** | **67 233** | **77 041** | **75 589** | **126 266** | **150 716** | **93 433** | **170 296** | **210 810** | **215 679** | **204 584** | **193 272** | **172 787** | **168 429** | **161 521** | **175 632** | **157 689** | **101 486** | **142 794** |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.

[a] Data are compiled using the methodology of the International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, except in the case of the Bahamas, Barbados, Guyana, Haiti, Paraguay, Peru and Venezuela (Bolivarian Republic of). The methodology of the fifth edition of (BPM5) is used in part of the series for the following countries: Antigua and Barbuda, Bolivia (Plurinational State of), Dominica, Grenada, Saint Kitts and Nevis, and Saint Lucia (2003–2013); Argentina (2003–2005); Dominican Republic (2003–2009); Ecuador (2003–2015); Guatemala (2003–2007); Honduras (2003–2012); Mexico and Nicaragua (2003–2005); Panama (2003–2014); Suriname (2003–2016); Trinidad and Tobago (2003–2010); and Uruguay (2003–2011).

**Table I.A1.2**
Latin America and the Caribbean: inward foreign direct investment by destination sector, 2008–2021[a]
*(Millions of dollars)*

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Argentina**[b] | | | | | | | | | | | | | | |
| Natural resources | 1 537 | 946 | 2 741 | 1 056 | 6 586 | 5 084 | -828.6 | 2 141 | 352 | ... | ... | ... | ... | ... |
| Manufactures | 5 477 | 264 | 3 991 | 4 096 | 3 963 | 3 841 | 5 850 | 6 420 | -1 577.5 | ... | ... | ... | ... | ... |
| Services | 5 126 | 2 556 | 4 140 | 5 830 | 6 295 | 4 511 | 6 454 | 6 704 | 1 620 | ... | ... | ... | ... | ... |
| **Belize** | | | | | | | | | | | | | | |
| Natural resources | 37 | 7 | 13 | 31 | 101 | 22 | 10 | 12 | 28 | 10 | 21 | - | - | - |
| Manufactures | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Services | 117 | 93 | 79 | 59 | 82 | 64 | 113 | 40 | 10 | 7 | 86 | 79 | 67 | 119 |
| Other | 16 | 9 | 5 | 5 | 6 | 9 | 30 | 13 | 6 | 7 | 11 | 15 | 9 | 9 |
| **Bolivia (Plurinational State of)**[c] | | | | | | | | | | | | | | |
| Natural resources | 859 | 420 | 531 | 622 | 1 166 | 1 550 | 1 558 | 916 | 372 | 638 | 448 | 221 | 2 | 492 |
| Manufactures | 154 | 74 | 276 | 240 | 119 | 317 | 390 | 23 | 137 | 260 | 147 | 148 | 39 | 382 |
| Services | 290 | 193 | 128 | 171 | 220 | 162 | 173 | 227 | 592 | 312 | 309 | 206 | 124 | 186 |
| **Brazil**[d] | | | | | | | | | | | | | | |
| Natural resources | 11 210 | 4 288 | 20 278 | 8 901 | 10 140 | 17 180 | 9 391 | 5 924 | 10 140 | 5 030 | 10 644 | 11 448 | 5 283 | 2 262 |
| Manufactures | 9 763 | 9 952 | 25 852 | 33 551 | 37 580 | 39 323 | 42 484 | 34 349 | 37 025 | 21 383 | 33 494 | 24 905 | 14 539 | 7 192 |
| Services | 9 091 | 5 667 | 7 233 | 28 574 | 27 494 | 23 873 | 34 583 | 31 952 | 22 631 | 32 317 | 17 609 | 12 002 | 12 298 | 22 500 |
| Other | - | - | 223 | 207 | 162 | 123 | 82 | 144 | 157 | 106 | 85 | 67 | 157 | 244 |
| **Chile** | | | | | | | | | | | | | | |
| Natural resources | 4 599 | 6 062 | 6 053 | 12 673 | 13 184 | 6 152 | 6 591 | 8 966 | 1 017 | 993 | - 1 570,5 | 1 666 | 2 435 | 4 598 |
| Manufactures | 1 570 | 28 | 1 572 | - 54,1 | 1 107 | 1 465 | 3 630 | 526 | 303 | - 275,9 | - 223,9 | 328 | - 297,8 | 197 |
| Services | 8 725 | 7 092 | 7 805 | 12 918 | 14 288 | 10 758 | 14 318 | 7 759 | 7 175 | 636 | 8 822 | 8 438 | 5 893 | 9 636 |
| Other | 256 | 674 | 589 | - 1 387,2 | 3 224 | 2 747 | 989 | 515 | 2 868 | 3 884 | 915 | 3 147 | 1 175 | 821 |
| **Colombia** | | | | | | | | | | | | | | |
| Natural resources | 5 176 | 5 670 | 4 976 | 7 236 | 7 972 | 8 513 | 7 091 | 3 264 | 2 501 | 4 339 | 3 931 | 4 482 | 1 089 | 1 968 |
| Manufactures | 1 696 | 1 260 | 210 | 1 108 | 1 925 | 2 138 | 2 826 | 2 638 | 1 844 | 2 368 | 1 310 | 1 499 | 894 | 1 346 |
| Services | 3 693 | 1 105 | 1 244 | 6 303 | 5 143 | 5 560 | 6 252 | 5 718 | 9 513 | 6 994 | 6 058 | 8 008 | 5 476 | 6 413 |
| **Costa Rica** | | | | | | | | | | | | | | |
| Natural resources | 71 | 78 | -3.2 | -18.7 | 20 | 2 | 13 | 403 | 110 | 34 | 93 | 5 | -60.1 | -2.3 |
| Manufactures | 431 | 373 | 980 | 887 | 399 | 329 | 614 | 622 | 953 | 1 269 | 1 352 | 1 668 | 1 163 | 2 404 |
| Services | 1 696 | 875 | 530 | 1 548 | 1 847 | 2 392 | 2 271 | 1 726 | 1 138 | 1 481 | 1 038 | 1 119 | 650 | 791 |
| Other | 122 | 118 | 176 | 45 | -7.8 | 19 | 27 | 1 | 3 | -6.1 | 5 | 20 | 10 | 3 |
| **Dominican Republic** | | | | | | | | | | | | | | |
| Natural resources | 357 | 758 | 240 | 1 060 | 1 169 | 93 | -38.5 | 6 | 486 | 410 | 185 | 225 | -6.5 | 473 |
| Manufactures | 574 | 280 | 566 | 355 | 1 257 | 404 | 607 | 368 | 413 | 1 365 | 540 | 356 | 441 | 331 |
| Services | 1 938 | 1 128 | 1 218 | 862 | 716 | 1 494 | 1 640 | 1 831 | 1 508 | 1 796 | 1 811 | 2 440 | 2 125 | 2 299 |
| **Ecuador** | | | | | | | | | | | | | | |
| Natural resources | 265 | 58 | 189 | 380 | 243 | 274 | 724 | 628 | 509 | 193 | 878 | 524 | 525 | 116 |
| Manufactures | 198 | 118 | 120 | 122 | 136 | 138 | 108 | 264 | 38 | 144 | 105 | 110 | 37 | 194 |
| Services | 595 | 133 | -143.1 | 142 | 189 | 315 | -59.9 | 431 | 217 | 293 | 406 | 341 | 542 | 329 |
| **El Salvador** | | | | | | | | | | | | | | |
| Natural resources | 31 | 9 | 1 | -0.6 | -2.6 | 6 | 1 | 1 | 1 | 1 | - | - | - | - |
| Manufactures | 28 | 92 | -65.3 | 149 | -49.3 | 285 | 83 | 290 | 267 | 457 | 582 | 51 | 68 | 23 |
| Services | 479 | 243 | -224.8 | 66 | 490 | -147.2 | 245 | 77 | 81 | 374 | 163 | 552 | 240 | 247 |
| Other (maquila) | 365 | 21 | 59 | 4 | 29 | 35 | -22.5 | 28 | -1.4 | 58 | 81 | 33 | -28.3 | 44 |

Table I.A1.2 (concluded)

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Guatemala** | | | | | | | | | | | | | | |
| Natural resources | 209 | 110 | 147 | 391 | 461 | 440 | 51 | 23 | 59 | -49.6 | -98.2 | 64 | 16 | 43 |
| Manufactures | 76 | 23 | 199 | 187 | 132 | 190 | 197 | 238 | 242 | 277 | 274 | 227 | 263 | 249 |
| Services | 447 | 383 | 290 | 711 | 644 | 789 | 1 159 | 963 | 881 | 804 | 713 | 660 | 568 | 3 078 |
| Other | 6 | 6 | 23 | -69.2 | 33 | 60 | 37 | 8 | -6.6 | 99 | 92 | 26 | 84 | 101 |
| **Guyana** | | | | | | | | | | | | | | |
| Natural resources | 87 | 65 | 94 | 108 | 122 | 173 | 113 | 59 | 41 | 161 | 1 138 | 1 480 | 985 | 4 416 |
| Manufactures | 12 | 8 | 16 | 30 | 44 | 10 | 31 | 13 | 4 | 2 | 6 | 30 | 26 | 44 |
| Services | 62 | 77 | 70 | 92 | 113 | 17 | 44 | 17 | 5 | 41 | 12 | 6 | 32 | 10 |
| Other | 17 | 14 | 18 | 17 | 14 | 14 | 67 | 33 | 8 | 8 | 76 | 197 | - | - |
| **Honduras** | | | | | | | | | | | | | | |
| Natural resources | 4 | 10 | 84 | 62 | 41 | 70 | 72 | 64 | -94.0 | -67.0 | 57 | 9 | 6 | 16 |
| Manufactures | 267 | 98 | 341 | 392 | 426 | 325 | 667 | 385 | 430 | 635 | -37.4 | -110.3 | 70 | 97 |
| Services | 736 | 402 | 545 | 560 | 591 | 665 | 678 | 755 | 803 | 607 | 942 | 600 | 343 | 587 |
| **Mexico** | | | | | | | | | | | | | | |
| Natural resources | 4 602 | 1 547 | 1 491 | 1 159 | 3 059 | 5 959 | 2 865 | 1 964 | 1 191 | 1 890 | 1 718 | 2 130 | 1 677 | 5 040 |
| Manufactures | 9 207 | 6 576 | 14 438 | 11 519 | 9 804 | 31 306 | 18 997 | 18 102 | 18 078 | 15 013 | 15 778 | 15 806 | 10 768 | 11 568 |
| Services | 15 701 | 9 732 | 11 264 | 12 905 | 8 896 | 10 992 | 8 489 | 15 896 | 11 928 | 17 128 | 16 588 | 16 438 | 15 688 | 14 910 |
| **Nicaragua** | | | | | | | | | | | | | | |
| Natural resources | 57 | 47 | 77 | 191 | 123 | 272 | 109 | 32 | -11.8 | 29 | 105 | 136 | - | - |
| Manufactures | 122 | 70 | 108 | 226 | 302 | 234 | 246 | 280 | 378 | 234 | 110 | 25 | - | - |
| Services | 447 | 318 | 323 | 550 | 347 | 350 | 378 | 501 | 385 | 541 | 438 | 219 | - | - |
| Other | - | - | - | - | 22 | 125 | 151 | 137 | 147 | 232 | 184 | 124 | - | - |
| **Panama** | | | | | | | | | | | | | | |
| Natural resources | -59.0 | -33.9 | 77 | 94 | 1 164 | 468 | 27 | 1 679 | 730 | 2 043 | 1 527 | 918 | -346.1 | … |
| Manufactures | 161 | 104 | -113.8 | 298 | 520 | 142 | 250 | -7.6 | 221 | 316 | 27 | 117 | -87.3 | … |
| Services | 2 106 | 1 190 | 2 760 | 2 761 | 1 526 | 2 957 | 4 182 | 2 885 | 3 795 | 1 818 | 3 466 | 3 028 | 1 040 | … |
| **Paraguay** | | | | | | | | | | | | | | |
| Natural resources | 3 | 16 | 7 | 43 | 40 | 108 | 62 | -130.0 | 71 | 10 | -44.1 | 4 | -52.5 | - |
| Manufactures | 93 | 16 | 371 | 263 | 179 | -20.7 | -49.7 | 122 | 143 | 189 | 167 | 272 | 42 | - |
| Services | 169 | 69 | 255 | 318 | 506 | 344 | 592 | 386 | 290 | 138 | 33 | -51.7 | 131 | - |
| **Uruguay** | | | | | | | | | | | | | | |
| Natural resources | 604 | 253 | 329 | 383 | 435 | 342 | 43 | 42 | 182 | -88.9 | -43.0 | -61.1 | 55 | - |
| Manufactures | 261 | 242 | 131 | 190 | 568 | 507 | 677 | 163 | -759.1 | -90.9 | 203 | 487 | 507 | - |
| Services | 1 068 | 1 027 | 1 037 | 1 482 | 1 177 | 3 370 | 1 484 | 861 | -1 273.4 | -401.2 | 60 | 1 461 | -4.4 | - |
| Other | 238 | 71 | 820 | 572 | 36 | 32 | 32 | 20 | 29 | -9.4 | -22.1 | 43 | -11.7 | - |
| **Total** | | | | | | | | | | | | | | |
| Natural resources | 29 649 | 20 308 | 37 325 | 34 369 | 46 023 | 46 708 | 27 854 | 25 995 | 17 683 | 15 577 | 18 990 | 23 249 | 11 606 | 19 420 |
| Manufactures | 30 096 | 19 575 | 48 991 | 53 559 | 58 413 | 80 932 | 77 608 | 64 795 | 58 139 | 43 545 | 53 833 | 45 919 | 28 473 | 24 026 |
| Services | 52 485 | 32 280 | 38 554 | 75 850 | 70 564 | 68 465 | 82 996 | 78 727 | 61 299 | 64 883 | 58 555 | 55 546 | 45 214 | 61 105 |
| Other | 1 019 | 914 | 1 914 | -605,3 | 3 518 | 3 164 | 1 392 | 900 | 3 210 | 4 379 | 1 426 | 3 671 | 1 395 | 1 223 |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.

[a] Data are compiled using the methodology of the International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, except in the case of Costa Rica, Honduras, Mexico, Panama and Paraguay. The methodology of the fifth edition of (BPM5) is used in part of the series for Ecuador (2008–2015).

[b] According to data from the Central Bank of the Republic of Argentina.

[c] Gross foreign direct investment flows, excluding divestments.

[d] Data do not include reinvested earnings.

**Table I.A1.3**
Latin America and the Caribbean: inward foreign direct investment by country of origin, 2007–2021[a]
*(Millions of dollars)*

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Argentina**[b] | | | | | | | | | | | | | | | |
| Spain | 2 191 | 812 | 1 248 | 1 166 | 217 | 2 835 | 2 354 | -2 323 | 3 310 | 1 275 | ... | ... | ... | ... | ... |
| Panama | 592 | 1 153 | 107 | 476 | 840 | 3 170 | 2 345 | 2 629 | 1 621 | 477 | ... | ... | ... | ... | ... |
| Venezuela (Bolivarian Republic of) | 103 | 372 | 664 | 48 | -8 | 450 | 1 249 | 722 | 329 | 332 | ... | ... | ... | ... | ... |
| Bermuda | 200 | 116 | 515 | 730 | 273 | 403 | 369 | 336 | 65 | 151 | ... | ... | ... | ... | ... |
| Chile | 560 | 862 | 245 | 1 080 | 1 085 | 1 255 | 590 | 838 | 929 | 120 | ... | ... | ... | ... | ... |
| Samoa | 229 | 256 | -107 | 368 | 167 | -65 | -79 | 18 | 276 | 95 | ... | ... | ... | ... | ... |
| Mexico | 549 | 545 | 123 | 309 | 407 | 611 | -94 | 312 | 381 | 68 | ... | ... | ... | ... | ... |
| Germany | 385 | 342 | 317 | 578 | 221 | 525 | 927 | 749 | 528 | 62 | ... | ... | ... | ... | ... |
| **Bolivia (Plurinational State of)**[c] | | | | | | | | | | | | | | | |
| Sweden | 242 | 339 | 22 | 169 | 280 | 178 | 347 | 15 | 79 | -13 | 413 | 212 | 40 | -154 | 286 |
| Peru | 35 | 26 | 40 | 82 | 12 | 56 | 102 | 442 | -5 | 247 | 13 | 145 | 37 | 121 | 250 |
| Spain | 50 | 25 | 145 | 271 | 235 | 364 | 676 | 537 | 369 | 164 | 167 | 208 | 274 | 64 | 159 |
| Netherlands | 20 | 20 | 10 | 1 | 5 | 31 | 15 | 3 | 0 | -13 | -3 | 47 | 45 | 60 | 74 |
| Switzerland | -29 | 12 | -7 | 34 | 2 | 12 | 7 | 4 | 5 | 58 | 19 | 13 | 22 | 4 | 69 |
| **Brazil**[d] | | | | | | | | | | | | | | | |
| United States | 2 851 | 2 207 | 1 277 | 7 180 | 4 531 | 2 0926 | 10 715 | 11 530 | 10 159 | 8 614 | 14 820 | 10 310 | 7 698 | 10 399 | 11 956 |
| Luxembourg | 2 696 | 5 337 | -648 | 9 174 | 2 472 | 7 771 | 9 737 | 8 679 | 6 936 | 9 841 | 4 792 | 5 258 | 2 308 | 96 | 4 251 |
| Norway | 255 | 184 | 671 | 1 322 | 1 014 | 810 | 450 | 462 | 2 461 | 2 019 | 895 | 1 467 | 2 413 | 981 | 2 219 |
| Hong Kong (RAE) | 13 | 35 | 34 | 810 | 2 187 | 151 | 431 | 308 | 272 | 226 | 1 082 | 944 | 216 | 83 | 2 185 |
| Spain | 1 732 | 2 594 | 3 016 | 632 | 9 965 | 2 450 | 2 180 | 6 356 | 5 311 | 2 482 | 753 | 2 979 | 2 231 | 1 543 | 1 582 |
| Canada | 665 | 946 | 1 227 | 547 | 1 619 | 1 832 | 1 855 | 2 131 | 2 679 | 1 440 | -559 | 1 460 | 1 361 | 298 | 1 381 |
| Austria | 83 | 93 | 46 | 3 756 | 3 721 | 189 | 1 825 | 995 | 661 | 670 | 708 | 1 267 | 3 541 | 923 | 1 002 |
| Italy | -214 | 203 | -903 | 225 | 519 | 1 006 | 960 | 976 | 1 833 | 2 825 | 1 688 | 986 | 552 | 937 | 970 |
| **Chile** | | | | | | | | | | | | | | | |
| Italy | 0 | 0 | 316 | 392 | 268 | 25 | -138 | 58 | 69 | 2 495 | 17 | 1 043 | 2 094 | 258 | 7 409 |
| Canada | 0 | 0 | 423 | 515 | 3 244 | 2 227 | 2 430 | 3 129 | -1 226 | 326 | 1 104 | 2 661 | 1 348 | 1 882 | 2 832 |
| Belgium | 0 | 0 | 84 | 74 | 12 | 366 | 373 | 337 | 0 | 182 | -53 | -166 | 160 | 181 | 2 798 |
| Netherlands | 0 | 0 | 2 036 | -847 | 1 313 | 3 537 | 6 496 | 2 098 | 1 796 | 531 | 332 | 1 216 | 1 779 | 923 | 2 394 |
| United Kingdom | 0 | 0 | 23 | 1 042 | 1 598 | 2 462 | -325 | 1 191 | 2 915 | 926 | 2 332 | 3 179 | 1 333 | 1 950 | 1 476 |
| **Colombia** | | | | | | | | | | | | | | | |
| United States | 2 697 | 2 874 | 2 343 | 1 593 | 2 154 | 2 476 | 2 838 | 2 240 | 2 123 | 2 099 | 2 172 | 2 410 | 2 475 | 1 843 | 1 888 |
| Spain | 572 | 1 040 | 830 | 113 | 1 164 | 628 | 884 | 2 214 | 1 324 | 1 463 | 2 612 | 1677 | 2 536 | 1 709 | 1 468 |
| Netherlands | -660 | 60 | 197 | 1 | 1 072 | -1792 | 632 | 450 | 907 | 996 | 605 | 173 | 229 | 1 113 | 1 165 |
| Switzerland | 122 | 140 | 166 | 180 | 994 | 698 | 2 096 | 2 804 | 958 | 731 | 741 | 877 | 1 154 | 594 | 1 093 |
| Panama | 839 | 1 141 | 789 | 1 368 | 3 508 | 2 395 | 2 040 | 2 436 | 1 650 | 1433 | 1 429 | 1 215 | 968 | 613 | 633 |
| United Kingdom | 1 304 | 1 224 | 920 | 337 | 482 | 598 | 856 | -163 | -191 | -237 | 35 | 295 | 500 | 11 | 529 |

Table I.A1.3 (continued)

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Costa Rica** | | | | | | | | | | | | | | | |
| United States | 803 | 1 352 | 1 008 | 1 107 | 1 499 | 907 | 449 | 796 | 1 263 | 764 | 1 611 | 1 631 | 1 962 | 1 202 | 2 534 |
| Colombia | 30 | 49 | 6 | 98 | 138 | 104 | 57 | 170 | 135 | 84 | 195 | 69 | 104 | 33 | 205 |
| Spain | 30 | 119 | 68 | 28 | 247 | 301 | 211 | 270 | 95 | 119 | 111 | 21 | 44 | 47 | 62 |
| Switzerland | 35 | 79 | -36 | 68 | 5 | -3 | -7 | 36 | -43 | 40 | 117 | 122 | 54 | -4 | 60 |
| United Kingdom | 26 | 15 | 27 | 14 | -30 | 8 | 3 | 19 | 12 | 4 | -15 | -20 | -5 | -25 | 44 |
| Panama | -4 | 19 | 22 | 37 | -7 | 1 | 154 | 175 | 39 | 28 | 139 | 72 | 76 | 83 | 38 |
| **Dominican Republic** | | | | | | | | | | | | | | | |
| United States | 536 | 360 | 455 | 1 055 | 499 | 252 | 374 | 321 | 405 | 356 | 732 | 709 | 937 | 730 | 1 362 |
| Mexico | -124 | 1055 | 273 | 433 | 73 | -31 | 6 | 244 | -19 | 118 | -45 | -80 | 609 | 337 | 392 |
| Canada | 113 | 383 | 773 | 696 | 1125 | 851 | 143 | 158 | 91 | 480 | 473 | 329 | 259 | 80 | 342 |
| Spain | 605 | 181 | 151 | 203 | 137 | 128 | 33 | 7 | 32 | 281 | 206 | 288 | 355 | 194 | 210 |
| Panama | 40 | 34 | 162 | 42 | 42 | 19 | 5 | -20 | 11 | 5 | 3 | 12 | 12 | 84 | 98 |
| **Ecuador** | | | | | | | | | | | | | | | |
| Costa Rica | 1 | 0 | -15 | 4 | 20 | 4 | 9 | 17 | 8 | 7 | 19 | 3 | 5 | 18 | 85 |
| United States | 50 | -29 | -607 | -535 | 12 | 94 | 42 | 10 | 186 | 88 | 35 | 60 | 74 | 87 | 83 |
| Switzerland | 1 | 34 | 24 | 6 | 8 | 18 | 9 | 28 | 19 | 19 | -2 | 15 | 9 | 31 | 81 |
| China | 85 | 47 | 56 | 45 | 80 | 86 | 94 | 79 | 114 | 62 | 98 | 61 | 28 | 58 | 76 |
| United Kingdom | 5 | 6 | 6 | 5 | 15 | 19 | 1 | 25 | 21 | 34 | 11 | 31 | 33 | 106 | 43 |
| Germany | 3 | 11 | 5 | -3 | -2 | 0 | 1 | 12 | 7 | -16 | 7 | 23 | 45 | 66 | 42 |
| **El Salvador** | | | | | | | | | | | | | | | |
| Panama | 841 | 321 | 80 | 206 | 27 | -514 | 236 | 12 | 120 | 226 | 367 | 172 | 270 | 306 | 343 |
| United States | 499 | 129 | 74 | -99 | 23 | 3 | 31 | 116 | 248 | 49 | 24 | 354 | 215 | -24 | 164 |
| Spain | 0 | 0 | 0 | -41 | -0 | 17 | 170 | 149 | 143 | 31 | 47 | 54 | 233 | 353 | 122 |
| **Guatemala** | | | | | | | | | | | | | | | |
| Luxembourg | 0 | 36 | 19 | 1 | 10 | 18 | -5 | 73 | 70 | 63 | 22 | 23 | 31 | 41 | 2 249 |
| Colombia | 0 | 15 | 18 | 18 | 184 | 50 | 194 | 161 | 129 | 124 | 234 | 154 | 176 | 232 | 260 |
| Mexico | 0 | 75 | 44 | 79 | 97 | 98 | 231 | 181 | 111 | 202 | 203 | 102 | 108 | -13 | 199 |
| Panama | 0 | 9 | 5 | 9 | 15 | 28 | 9 | 27 | 53 | 19 | -24 | 52 | 24 | 172 | 189 |
| United States | 0 | 224 | 132 | 280 | 151 | 232 | 207 | 372 | 359 | 299 | 263 | 292 | 236 | 96 | 133 |
| Netherlands | 0 | 6 | 2 | 35 | 7 | 5 | 7 | 2 | 49 | 0 | -32 | 5 | 69 | 43 | 125 |
| Russian Federation | 0 | 0 | 0 | 0 | 15 | 137 | 194 | -4 | 24 | 40 | 13 | -63 | 126 | 81 | 114 |
| **Honduras** | | | | | | | | | | | | | | | |
| Colombia | 0 | 0 | -0 | 0 | 20 | 22 | 31 | 128 | 97 | 99 | 31 | 106 | 105 | 156 | 168 |
| Guatemala | 15 | 44 | 14 | 61 | 44 | 52 | 37 | 88 | 60 | 158 | 56 | 40 | 121 | 72 | 167 |
| Panama | 22 | 16 | 1 | 14 | 16 | 22 | 63 | 152 | 232 | 273 | 156 | 188 | 89 | 56 | 163 |
| United States | 460 | 449 | 92 | 185 | 141 | 173 | 128 | -256 | 140 | -4 | 564 | -15 | -43 | 248 | 75 |
| Belgium | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 78 | 1 | 127 | 8 | -35 | 33 |
| Mexico | 92 | 30 | 168 | 124 | 154 | 192 | 266 | 140 | 134 | 154 | 33 | 80 | 136 | -33 | 26 |

Table I.A1.3 (concluded)

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mexico** | | | | | | | | | | | | | | | |
| United States | 16 059 | 11 915 | 8 397 | 11 153 | 12 987 | 9 761 | 16 952 | 10 278 | 19 389 | 11 058 | 15 442 | 11 895 | 13 057 | 10 626 | 14 658 |
| Spain | 4 667 | 5 296 | 2 748 | 3 967 | 3 533 | -405 | 454 | 4 464 | 4 019 | 3 651 | 3 365 | 4 279 | 4 058 | 4 023 | 4 270 |
| Canada | 1 748 | 4 850 | 2 154 | 2 139 | 1 595 | 1 669 | 5 105 | 2 964 | 1 096 | 2 291 | 2 814 | 4 038 | 2 899 | 4 099 | 2 478 |
| Germany | 723 | 697 | 263 | 606 | 854 | 1 170 | 1 984 | 2 149 | 1 238 | 2 768 | 2 643 | 2 936 | 3 496 | 1 163 | 2 071 |
| United Kingdom | 593 | 830 | 15 | 528 | 249 | 260 | 1 354 | 239 | 751 | 500 | 510 | 746 | 737 | 901 | 1 832 |
| Japan | 711 | 868 | 780 | 1 263 | 944 | 2 256 | 1 561 | 2 527 | 2 274 | 1 963 | 2 446 | 2 279 | 1 492 | 1 226 | 1 491 |
| Luxembourg | 1 557 | 86 | -11 | -24 | 11 | 7 | 1 294 | -18 | 119 | 17 | 4 | 311 | 14 | 15 | 970 |
| **Nicaragua** | | | | | | | | | | | | | | | |
| United States | 84 | 126 | 88 | 88 | 159 | 121 | 244 | … | … | … | … | … | … | … | … |
| Mexico | 128 | 164 | 48 | 90 | 115 | 149 | 125 | … | … | … | … | … | … | … | … |
| Venezuela (Bolivarian Republic of) | 47 | 132 | 147 | 29 | 45 | 210 | 108 | … | … | … | … | … | … | … | … |
| Panama | 5 | 4 | 1 | 1 | 34 | 78 | 77 | … | … | … | … | … | … | … | … |
| Spain | 45 | 59 | 25 | 33 | 116 | -19 | 74 | … | … | … | … | … | … | … | … |
| **Panama** | | | | | | | | | | | | | | | |
| Canada | 18 | 35 | 16 | 9 | 48 | 1 097 | 505 | 29 | 1 387 | 637 | 2 142 | 1 544 | 1 427 | 1 546 | … |
| Colombia | 134 | 60 | 135 | 82 | 486 | 9 | 29 | 1 162 | 659 | 913 | 446 | 856 | 782 | 406 | … |
| United States | 163 | 224 | -19 | 1 120 | 652 | 28 | 715 | 2 154 | 711 | 1 059 | 788 | 1 201 | 899 | 369 | … |
| United Kingdom | 208 | 6 | 68 | 114 | 486 | -701 | 78 | 101 | 193 | 313 | -1 228 | 279 | 198 | 293 | … |
| Switzerland | 146 | 122 | 301 | 444 | 216 | 152 | 232 | 244 | 161 | 232 | 547 | -41 | -475 | 179 | … |
| Jamaica | 20 | 27 | -33 | -209 | 4 | 0 | 0 | 44 | 67 | 16 | 31 | 41 | 138 | 111 | … |
| Netherlands | 22 | 420 | -0 | 126 | -114 | 244 | -2 | 109 | 398 | -152 | -26 | 266 | 435 | 110 | … |
| **Paraguay** | | | | | | | | | | | | | | | |
| Curaçao | 52 | 43 | 34 | 19 | 81 | -17 | -79 | -21 | -73 | 56 | -86 | -29 | -63 | 140 | … |
| Brazil | 28 | 38 | 14 | 83 | 58 | 168 | 124 | 162 | 89 | -44 | 117 | 49 | 83 | 76 | … |
| Ireland | 6 | 5 | -0 | 5 | 13 | 9 | 6 | 10 | 4 | 6 | 8 | 6 | 18 | 23 | … |
| Chile | 11 | 18 | 12 | 30 | 33 | -18 | 38 | 31 | -11 | 10 | -1 | 7 | 55 | 21 | … |
| Colombia | 0 | 1 | 1 | 0 | -0 | 0 | 2 | 18 | 22 | 19 | 21 | 22 | 25 | 15 | … |
| **Trinidad and Tobago** | | | | | | | | | | | | | | | |
| United Kingdom | 159 | 146 | 152 | 118 | -222 | -292 | -206 | -706 | 180 | 232 | -455 | -353 | 119 | 257 | 300 |
| Barbados | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -162 | -46 | -259 | -163 | -201 | 195 |
| **Uruguay** | | | | | | | | | | | | | | | |
| Netherlands | -18 | 10 | 14 | 110 | -2 | -104 | 119 | -979 | 27 | -228 | -149 | -955 | 129 | 2 008 | … |
| Luxembourg | -0 | 3 | 4 | 12 | 10 | -726 | 102 | -140 | 67 | 281 | -82 | -53 | -2 012 | 1 090 | … |
| Germany | 5 | 16 | 4 | 0 | 15 | 23 | 51 | -61 | 172 | -37 | 64 | 63 | -53 | 336 | … |
| Spain | 81 | 153 | 232 | 55 | 75 | 208 | 437 | 886 | -69 | 568 | 737 | 4 066 | 440 | 261 | … |
| Singapore | 0 | 0 | 0 | 0 | 0 | 58 | 104 | -165 | 240 | 106 | 532 | 372 | 110 | 216 | … |
| Cameroon | 0 | 3 | 3 | 0 | 14 | -125 | 110 | 149 | 203 | -79 | -43 | 80 | 284 | 204 | … |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.

[a] Data are compiled using the methodology of the International Monetary Fund (IMF), *Balance of Payments and International Investment Position Manual: Sixth Edition (BPM6)*, except in the case of Costa Rica, Honduras, Mexico, Panama and Paraguay. The methodology of the fifth edition of (BPM5) is used in part of the series for Ecuador (2007–2015).

[b] According to data from the Central Bank of the Republic of Argentina.

[c] Gross foreign direct investment flows, excluding divestments.

[d] Data do not include reinvested earnings.

**Table I.A1.4**
Latin America and the Caribbean: inward foreign direct investment by component, 2007–2021
*(Millions of dollars)*

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Antigua and Barbuda** | | | | | | | | | | | | | | | |
| Equity | 328 | 149 | 79 | 96 | 61 | 110 | 65 | 67 | 94 | 94 | 156 | 209 | 131 | 76 | 107 |
| Intercompany loans | 0 | 0 | 1 | 1 | 2 | 6 | 29 | -25 | -6 | -4 | 7 | 3 | -3 | 5 | 5 |
| Reinvested earnings | 12 | 12 | 5 | 5 | 5 | 22 | 7 | 5 | 26 | 8 | -11 | -8 | 0 | -7 | -8 |
| **Argentina** | | | | | | | | | | | | | | | |
| Equity | 2 578 | 4 552 | 2 133 | 2 504 | 4 508 | 4 861 | 2 784 | -112 | 1 319 | 3 716 | 1 958 | 3 259 | 2 231 | 1 304 | 864 |
| Intercompany loans | 1 846 | 4 777 | -1 010 | 3 507 | 2 600 | 3 120 | -783 | -945 | 2 382 | -4 732 | 2 422 | 1 424 | 167 | 772 | 1 030 |
| Reinvested earnings | 2 050 | 396 | 2 894 | 5 322 | 3 732 | 7 343 | 7 821 | 6 121 | 8 058 | 4 276 | 7 137 | 7 034 | 4 251 | 2 646 | 4 889 |
| **Bahamas** | | | | | | | | | | | | | | | |
| Equity | 887 | 1 032 | 753 | 960 | 971 | 575 | 868 | 617 | 408 | 511 | 351 | 573 | 373 | 417 | 386 |
| Intercompany loans | 736 | 481 | -107 | 137 | 438 | 458 | 723 | 2 934 | 304 | 749 | 550 | 374 | 238 | 480 | 799 |
| Reinvested earnings | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Barbados** | | | | | | | | | | | | | | | |
| Equity | 420 | 340 | 140 | 393 | 227 | 230 | 135 | 307 | 398 | 82 | 295 | 321 | 311 | 310 | 215 |
| Intercompany loans | 24 | 231 | 103 | 41 | 324 | 113 | -110 | -76 | -190 | -260 | -192 | -165 | -154 | -100 | -27 |
| Reinvested earnings | 32 | 45 | 13 | 13 | -95 | 184 | 92 | 361 | 210 | 447 | 102 | 85 | 58 | 53 | 49 |
| **Belize** | | | | | | | | | | | | | | | |
| Equity | 100 | 141 | 80 | 80 | 103 | 193 | 101 | 145 | 57 | 29 | 2 | 94 | 57 | 68 | 111 |
| Intercompany loans | 13 | 8 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reinvested earnings | 30 | 21 | 23 | 15 | -8 | -4 | -6 | 7 | 7 | 15 | 22 | 24 | 37 | 8 | 16 |
| **Bolivia (Plurinational State of)**[a] | | | | | | | | | | | | | | | |
| Equity | 27 | 45 | 0 | 1 | 5 | 19 | 17 | 313 | 20 | 406 | 152 | 70 | 126 | 36 | 70 |
| Intercompany loans | 654 | 850 | 177 | 141 | 130 | 282 | 331 | 889 | 741 | 568 | 417 | 438 | 345 | 350 | 442 |
| Reinvested earnings | 272 | 407 | 509 | 793 | 899 | 1 204 | 1 682 | 919 | 405 | 127 | 640 | 397 | 103 | -221 | 548 |
| **Brazil** | | | | | | | | | | | | | | | |
| Equity | 26 074 | 30 064 | 19 906 | 40 117 | 54 782 | 52 836 | 42 152 | 47 501 | 49 520 | 44 512 | 53 950 | 40 992 | 42 878 | 28 118 | 32 244 |
| Intercompany loans | 18 505 | 20 652 | 11 575 | 13 470 | 16 451 | 22 541 | 38 346 | 39 040 | 22 851 | 25 440 | 4 886 | 20 840 | 5 543 | 4 209 | -29 |
| Reinvested earnings | ... | ... | ... | 28 803 | 31 194 | 17 192 | -5 288 | 1 174 | -7 632 | 4 342 | 10 049 | 16 330 | 20 753 | 5 459 | 14 226 |
| **Chile** | | | | | | | | | | | | | | | |
| Equity | 2 622 | 7 775 | 1 905 | 4 662 | 10 911 | 8 532 | 4 778 | 10 506 | 6 494 | 6 148 | 2 075 | 2 476 | 6 361 | 5 304 | 12 640 |
| Intercompany loans | 866 | 3 086 | 1 144 | 3 856 | 3 233 | 11 067 | 8 714 | 9 619 | 9 785 | 2 552 | -943 | -795 | 1 846 | 265 | 1 074 |
| Reinvested earnings | 7 058 | 7 951 | 9 701 | 6 332 | 12 225 | 12 203 | 7 629 | 5 404 | 1 488 | 2 663 | 4 105 | 6 262 | 5 372 | 3 637 | 1 537 |
| **Colombia** | | | | | | | | | | | | | | | |
| Equity | 7 024 | 7 861 | 4 903 | 3 733 | 8 282 | 9 091 | 9 755 | 9 181 | 7 423 | 6 399 | 8 053 | 4 558 | 7 285 | 3 386 | 3 465 |
| Intercompany loans | -121 | 47 | 731 | -635 | 1 872 | 1 239 | 2 368 | 2 493 | 2 006 | 4 672 | 1 794 | 1 604 | 2 411 | 2 527 | 2 485 |
| Reinvested earnings | 1 983 | 2 657 | 2 400 | 3 332 | 4 493 | 4 710 | 4 087 | 4 495 | 2 191 | 2 787 | 3 854 | 5 137 | 4 293 | 1 546 | 3 777 |
| **Costa Rica** | | | | | | | | | | | | | | | |
| Equity | 1 377 | 1 594 | 1 050 | 818 | 959 | 852 | 1 704 | 1 352 | 1 180 | 414 | 685 | 769 | 507 | 461 | 899 |
| Intercompany loans | -2 | 39 | -174 | 150 | 711 | 1 136 | 714 | 912 | 665 | 1 153 | 573 | 794 | 574 | 511 | 771 |
| Reinvested earnings | 521 | 446 | 471 | 497 | 509 | 708 | 788 | 978 | 1 110 | 1 054 | 1 667 | 1 452 | 1 638 | 1 130 | 1 894 |

Table I.A1.4 (continued)

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dominica** | | | | | | | | | | | | | | | |
| Equity | 28 | 39 | 39 | 28 | 25 | 45 | 16 | 6 | 8 | 36 | 26 | 60 | 53 | 38 | 41 |
| Intercompany loans | 9 | 9 | 13 | 13 | 7 | 9 | 4 | 2 | -7 | -0 | 15 | 0 | -2 | 0 | 2 |
| Reinvested earnings | 10 | 9 | 6 | 3 | 2 | 4 | 5 | 4 | 6 | 6 | -19 | 18 | 12 | -16 | 1 |
| **Dominican Republic** | | | | | | | | | | | | | | | |
| Equity | 1 616 | 2 199 | 704 | 667 | 804 | 1 256 | 233 | 955 | 995 | 1 126 | 2 403 | 1 513 | 1 583 | 1 688 | 1 515 |
| Intercompany loans | -446 | 278 | 1 096 | 554 | 468 | 904 | 471 | -166 | 18 | 66 | -162 | -141 | 225 | -330 | -59 |
| Reinvested earnings | 498 | 394 | 365 | 803 | 1 005 | 982 | 1 286 | 1 420 | 1 192 | 1 214 | 1 331 | 1 164 | 1 213 | 1 201 | 1 647 |
| **Ecuador** | | | | | | | | | | | | | | | |
| Equity | 151 | 229 | 278 | 265 | 252 | 227 | 424 | 848 | 985 | 679 | 521 | 470 | 431 | 837 | 579 |
| Intercompany loans | -368 | 530 | -225 | -312 | 66 | 40 | -7 | -390 | 51 | -115 | -52 | 687 | 374 | 109 | -82 |
| Reinvested earnings | 411 | 298 | 256 | 213 | 328 | 301 | 310 | 314 | 287 | 200 | 161 | 232 | 170 | 157 | 142 |
| **Grenada** | | | | | | | | | | | | | | | |
| Equity | 140 | 128 | 97 | 56 | 39 | 29 | 109 | 73 | 126 | 87 | 124 | 123 | 144 | 129 | 127 |
| Intercompany loans | 17 | 1 | 2 | 3 | 1 | 0 | 0 | 22 | -3 | 18 | -6 | 22 | 1 | -2 | 1 |
| Reinvested earnings | 15 | 12 | 5 | 5 | 5 | 5 | 5 | 12 | 34 | 4 | 38 | 39 | 53 | 21 | 17 |
| **Guatemala** | | | | | | | | | | | | | | | |
| Equity | 260 | 177 | -33 | 168 | 405 | 448 | 288 | 439 | 772 | 157 | 112 | 212 | 31 | 53 | 2 250 |
| Intercompany loans | -30 | 153 | 175 | -136 | 149 | 318 | 382 | 269 | -255 | 392 | 250 | -57 | 46 | 40 | 68 |
| Reinvested earnings | 515 | 408 | 381 | 626 | 666 | 505 | 809 | 734 | 714 | 625 | 768 | 825 | 899 | 838 | 1 154 |
| **Honduras** | | | | | | | | | | | | | | | |
| Equity | 220 | 568 | 84 | 29 | 284 | 310 | 174 | 248 | 137 | 201 | 474 | 120 | 27 | -18 | -1 |
| Intercompany loans | 203 | -40 | 65 | 378 | 56 | 52 | 250 | 540 | 342 | -34 | 79 | 614 | 231 | -73 | -81 |
| Reinvested earnings | 505 | 479 | 360 | 562 | 674 | 697 | 645 | 917 | 838 | 981 | 388 | 647 | 689 | 314 | 957 |
| **Mexico** | | | | | | | | | | | | | | | |
| Equity | 18 027 | 13 062 | 11 013 | 15 640 | 9 649 | 4 333 | 22 037 | 5 776 | 13 472 | 11 008 | 11 964 | 11 317 | 13 338 | 6 684 | 13 712 |
| Intercompany loans | 4 483 | 7 370 | 3 278 | 9 583 | 3 439 | 3 251 | 10 392 | 4 639 | 10 846 | 17 224 | 9 193 | 13 220 | -1 802 | 8 642 | 7 147 |
| Reinvested earnings | 8 510 | 9 329 | 5 365 | 5 306 | 10 756 | 10 637 | 18 401 | 18 025 | 11 951 | 10 675 | 11 970 | 13 303 | 18 167 | 16 120 | 12 579 |
| **Nicaragua** | | | | | | | | | | | | | | | |
| Equity | … | … | … | … | … | 567 | 360 | 686 | 595 | 446 | 630 | 496 | 247 | 226 | 359 |
| Intercompany loans | … | … | … | … | … | 29 | 321 | 235 | 145 | 209 | 55 | 40 | 109 | 44 | 247 |
| Reinvested earnings | … | … | … | … | … | 180 | 285 | 157 | 227 | 335 | 351 | 302 | 147 | 477 | 615 |
| **Panama** | | | | | | | | | | | | | | | |
| Equity | 719 | 918 | 898 | 948 | 759 | 1 561 | 1 614 | 687 | 77 | 923 | -24 | 31 | -25 | -731 | 51 |
| Intercompany loans | 178 | 136 | 105 | 540 | 1 224 | 682 | 550 | 343 | 1 599 | 2 258 | 2 211 | 3 557 | 2 756 | -864 | -638 |
| Reinvested earnings | 879 | 1 348 | 257 | 874 | 1 150 | 737 | 1 779 | 3 429 | 3 382 | 2 404 | 1 790 | 1 900 | 1 720 | -559 | 1 938 |
| **Paraguay** | | | | | | | | | | | | | | | |
| Equity | 22 | 117 | 192 | 110 | 623 | 309 | 410 | 554 | 344 | 289 | 363 | 181 | 237 | 221 | 159 |
| Intercompany loans | 282 | -59 | -148 | 233 | 135 | 225 | -159 | -183 | 104 | 118 | 1 | -295 | 155 | 38 | 97 |
| Reinvested earnings | 139 | 206 | 57 | 291 | -133 | 191 | 181 | 233 | -70 | 98 | -27 | 270 | -167 | -139 | -134 |

Table I.A1.4 (concluded)

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Peru** | | | | | | | | | | | | | | | |
| Equity | 733 | 2 981 | 1 828 | 2 445 | 896 | 5 387 | 3 013 | -1 786 | 4 060 | 2 574 | 1 944 | 1 763 | 2 965 | 486 | -84 |
| Intercompany loans | 924 | 656 | -782 | 693 | 2 117 | 1 459 | 2 300 | 2 460 | 401 | 906 | 173 | -811 | 1 404 | 170 | 565 |
| Reinvested earnings | 3 835 | 3 287 | 5 385 | 5 317 | 4 670 | 7 337 | 4 258 | 3 589 | 2 876 | 3 325 | 5 297 | 4 921 | 392 | 75 | 6 975 |
| **Saint Kitts and Nevis** | | | | | | | | | | | | | | | |
| Equity | 135 | 178 | 132 | 116 | 107 | 106 | 137 | 161 | 132 | 113 | 34 | 39 | 55 | 28 | 48 |
| Intercompany loans | 3 | 3 | 1 | 1 | 1 | 2 | 0 | -7 | -7 | -0 | 8 | -5 | 6 | -0 | -0 |
| Reinvested earnings | 2 | 2 | 2 | 2 | 4 | 1 | 1 | 2 | 3 | 9 | 6 | 6 | -14 | -13 | -8 |
| **Saint Lucia** | | | | | | | | | | | | | | | |
| Equity | 254 | 135 | 135 | 109 | 80 | 54 | 76 | 25 | 83 | 136 | 68 | 64 | 40 | 54 | 48 |
| Intercompany loans | 8 | 21 | 13 | 13 | 15 | 16 | 10 | 2 | 11 | 11 | 15 | -31 | 13 | -3 | -3 |
| Reinvested earnings | 15 | 11 | 3 | 4 | 5 | 8 | 9 | 38 | 58 | 14 | 7 | 12 | 19 | -16 | 2 |
| **Saint Vincent and the Grenadines** | | | | | | | | | | | | | | | |
| Equity | 102 | 142 | 100 | 91 | 79 | 112 | 157 | 99 | 123 | 109 | 163 | 62 | 73 | 28 | 63 |
| Intercompany loans | 8 | 8 | 8 | 2 | 2 | 2 | 2 | 15 | 4 | -15 | 11 | -10 | 2 | 3 | 3 |
| Reinvested earnings | 11 | 9 | 2 | 4 | 4 | 1 | 1 | 10 | -3 | -14 | -10 | -11 | -1 | -0 | -0 |
| **Suriname** | | | | | | | | | | | | | | | |
| Equity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -205 | -184 | -276 | -265 | -295 |
| Intercompany loans | -247 | -231 | -93 | -248 | -51 | 113 | 71 | -21 | 186 | 254 | 55 | 89 | 96 | -32 | 31 |
| Reinvested earnings | … | … | … | 0 | 121 | 11 | 69 | 27 | 1 291 | 1 519 | 246 | 226 | 264 | 298 | 131 |
| **Trinidad and Tobago** | | | | | | | | | | | | | | | |
| Equity | 554 | 2 322 | 426 | 309 | 517 | -251 | -1 899 | 518 | -223 | -268 | -367 | -790 | 137 | 669 | -954 |
| Intercompany loans | -21 | -16 | -12 | -11 | -476 | -1 653 | 769 | 143 | 400 | 245 | -104 | 90 | 47 | 387 | 176 |
| Reinvested earnings | 297 | 495 | 296 | 251 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Uruguay** | | | | | | | | | | | | | | | |
| Equity | 550 | 1 012 | 990 | 1 617 | 1 412 | 1 242 | 2 057 | 1 708 | 1 422 | 1 019 | 646 | 203 | 566 | 889 | 790 |
| Intercompany loans | 448 | 540 | 82 | 8 | 263 | 2 676 | -1 704 | 1 569 | 2 501 | -924 | 854 | 265 | 1 445 | -194 | -768 |
| Reinvested earnings | 331 | 554 | 457 | 664 | 828 | 2 476 | 634 | 809 | -1 250 | -610 | 1 187 | 1 091 | -602 | -285 | 2 565 |
| **Venezuela (Bolivarian Republic of)** | | | | | | | | | | | | | | | |
| Equity | -806 | 302 | -3 348 | -1 319 | -495 | -307 | -79 | 67 | 123 | 21 | 20 | 20 | … | … | … |
| Intercompany loans | 773 | -11 | 367 | 1 457 | 2 752 | 3 292 | 1 784 | -1 605 | 1 051 | 622 | -1440 | -697 | … | … | … |
| Reinvested earnings | 3 321 | 2 336 | 1 998 | 1 436 | 3 483 | 2 988 | 975 | 510 | -405 | 425 | 1 352 | 1 563 | … | … | … |
| **Total** | | | | | | | | | | | | | | | |
| Equity | 64 143 | 78 060 | 44 483 | 74 643 | 96 243 | 92 725 | 91 487 | 80 940 | 90 143 | 80 966 | 86 573 | 69 021 | 79 888 | 50 498 | 69 407 |
| Intercompany loans | 28 744 | 39 517 | 16 389 | 33 440 | 35 930 | 51 379 | 65 768 | 62 707 | 55 926 | 51 372 | 20 669 | 41 053 | 16 076 | 16 954 | 13 255 |
| Reinvested earnings | 31 252 | 31 110 | 31 212 | 61 473 | 76 523 | 70 624 | 46 464 | 49 694 | 26 993 | 36 929 | 52 400 | 63 223 | 59 466 | 32 723 | 55 508 |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.
[a] Gross foreign direct investment flows, excluding divestments.

**Table I.A1.5**
Latin America and the Caribbean: inward foreign direct investment stock by country, 2001, 2005 and 2012–2021
*(Millions of dollars and percentages of GDP)*

| | 2001 | 2005 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2001 | 2005 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Argentina | 79 504 | 55 139 | 98 706 | 88 338 | 89 716 | 79 773 | 74 868 | 80 700 | 72 589 | 70 458 | 85 371 | 99 890 | 27 | 27 | 17 | 14 | 16 | 12 | 13 | 13 | 14 | 16 | 22 | 20 |
| Belize | 355 | 608 | 1 738 | 1 833 | 1 986 | 2 051 | 2 095 | 2 119 | 2 237 | 2 331 | 2 408 | 2 535 | 41 | 55 | 114 | 116 | 118 | 118 | 117 | 115 | 119 | 120 | 152 | 151 |
| Bolivia (Plurinational State of) | 5 893 | 4 905 | 8 809 | 10 992 | 11 785 | 11 598 | 11 565 | 12 241 | 11 835 | 11 710 | 10 276 | 10 623 | 72 | 51 | 33 | 36 | 36 | 35 | 34 | 33 | 29 | 29 | 28 | 26 |
| Brazil | 121 949 | 181 344 | 731 175 | 724 781 | 725 872 | 568 226 | 703 328 | 767 757 | 737 894 | 873 979 | 765 401 | 761 385 | 22 | 20 | 30 | 29 | 30 | 32 | 39 | 37 | 38 | 47 | 53 | 47 |
| Chile | … | 78 089 | 204 775 | 210 344 | 222 558 | 222 984 | 236 752 | 257 748 | 254 160 | 257 709 | 259 614 | 251 224 | … | 64 | 77 | 76 | 86 | 92 | 95 | 93 | 86 | 93 | 103 | 79 |
| Colombia | 15 377 | 36 987 | 112 949 | 128 213 | 141 810 | 149 073 | 164 428 | 179 334 | 188 833 | 204 916 | 212 299 | 219 426 | 16 | 25 | 30 | 34 | 37 | 51 | 58 | 58 | 57 | 63 | 79 | 70 |
| Costa Rica | 3 600 | 7 510 | 22 960 | 26 938 | 30 788 | 34 278 | 37 309 | 40 788 | 44 524 | 47 753 | 50 129 | 53 692 | 23 | 37 | 49 | 53 | 59 | 61 | 63 | 67 | 71 | 74 | 81 | 83 |
| Dominican Republic | … | … | 25 143 | 26 660 | 29 035 | 31 309 | 33 820 | 37 396 | 40 209 | 43 038 | 45 402 | 48 657 | … | … | 41 | 43 | 43 | 44 | 45 | 47 | 47 | 48 | 58 | 52 |
| Ecuador | 6 876 | 9 861 | 13 072 | 13 799 | 14 571 | 15 894 | 16 671 | 17 300 | 18 689 | 19 664 | 20 767 | 21 405 | 28 | 24 | 15 | 15 | 14 | 16 | 17 | 17 | 17 | 18 | 21 | 20 |
| El Salvador | 2 252 | 4 167 | 8 763 | 8 895 | 9 314 | 9 995 | 10 178 | 10 351 | 10 877 | 11 591 | 11 780 | 12 517 | 18 | 28 | 41 | 40 | 41 | 43 | 42 | 41 | 42 | 43 | 48 | 45 |
| Guatemala | … | 3 319 | 7 071 | 9 094 | 10 872 | 12 228 | 13 850 | 15 099 | 15 587 | 16 670 | 17 570 | 21 423 | … | 12 | 14 | 17 | 19 | 20 | 21 | 21 | 21 | 22 | 23 | 25 |
| Haiti | 99 | 150 | 900 | 1 061 | 1 160 | 1 265 | 1 370 | 1 745 | 1 850 | 1 925 | 0 | 0 | 2 | 2 | 7 | 7 | 8 | 9 | 10 | 11 | 12 | 14 | … | … |
| Honduras | 1 585 | 2 870 | 9 646 | 10 671 | 12 018 | 13 564 | 14 899 | 15 459 | 16 500 | 17 027 | 17 418 | 18 211 | 21 | 29 | 52 | 58 | 61 | 65 | 69 | 67 | 69 | 68 | 73 | 64 |
| Jamaica | 3 931 | 6 918 | 12 119 | 12 664 | 13 246 | 14 171 | 15 087 | 15 839 | 16 567 | 17 232 | 17 497 | 17 814 | 43 | 62 | 82 | 89 | 95 | 100 | 107 | 107 | 105 | 109 | 127 | 121 |
| Mexico | … | 212 374 | 461 350 | 507 876 | 502 688 | 478 453 | 486 671 | 544 480 | 570 381 | 616 321 | 592 508 | 641 678 | … | 24 | 38 | 40 | 38 | 41 | 45 | 47 | 47 | 49 | 54 | 50 |
| Nicaragua | 1 565 | 2 461 | 5 154 | 5 892 | 6 471 | 7 208 | 7 935 | 8 620 | 9 056 | 9 240 | 9 986 | 11 206 | 29 | 39 | 49 | 54 | 54 | 57 | 60 | 63 | 70 | 73 | 79 | 80 |
| Panama | 7 314 | 10 167 | 26 762 | 30 677 | 35 135 | 39 629 | 44 839 | 55 110 | 59 869 | 65 937 | 62 914 | 62 517 | 58 | 61 | 66 | 67 | 70 | 73 | 77 | 89 | 92 | 98 | 117 | 98 |
| Paraguay | 1 016 | 1 127 | 5 373 | 5 407 | 6 446 | 5 992 | 6 671 | 7 512 | 7 388 | 7 281 | 6 977 | 7 005 | 12 | 10 | 16 | 14 | 16 | 17 | 18 | 19 | 18 | 19 | 20 | 17 |
| Peru | 11 835 | 15 889 | 70 032 | 79 603 | 83 866 | 91 203 | 98 008 | 105 421 | 111 294 | 116 054 | 116 786 | 124 241 | 23 | 21 | 36 | 40 | 42 | 48 | 51 | 50 | 50 | 51 | 58 | 58 |
| Suriname | … | … | 1 035 | 1 232 | 1 397 | 1 477 | 1 894 | 2 034 | 2 173 | 2 266 | 2 275 | 2 144 | … | … | 19 | 22 | 25 | 29 | 57 | 57 | 54 | 54 | 55 | 65 |
| Trinidad and Tobago | … | … | 10 984 | 10 413 | 10 368 | 10 049 | 9 545 | 9 083 | 8 452 | 8 455 | 10 496 | 9 701 | … | … | 43 | 38 | 38 | 40 | 43 | 39 | 35 | 35 | 49 | 43 |
| Uruguay | 2 406 | 2 844 | 43 047 | 42 892 | 46 951 | 47 419 | 46 563 | 50 404 | 50 760 | 50 856 | 49 050 | 50 517 | 11 | 15 | 77 | 69 | 76 | 82 | 81 | 78 | 79 | 83 | 92 | 85 |
| Venezuela (Bolivarian Republic of) | 39 074 | 44 518 | 40 180 | 33 018 | 32 016 | 28 142 | 23 569 | 22 175 | 22 918 | … | … | … | 32 | 31 | 11 | 10 | 12 | 19 | 12 | 14 | 22 | … | … | … |
| **Total** | **304 630** | **681 246** | **1 921 745** | **1 991 291** | **2 040 067** | **1 875 980** | **2 061 913** | **2 258 717** | **2 274 645** | **2 472 415** | **2 366 925** | **2 448 229** | **15** | **26** | **32** | **33** | **34** | **37** | **42** | **41** | **43** | **49** | **56** | **50** |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.

**Table I.A1.6**
Latin America and the Caribbean: outward foreign direct investment flows by country, 2003–2021
*(Millions of dollars)*

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antigua and Barbuda | 13 | 15 | 17 | 2 | 2 | 2 | 4 | 5 | 3 | 4 | 6 | 6 | 14 | 38 | 12 | -1 | -1 | -8 | -9 |
| Argentina | 774 | 676 | 1 311 | 2 439 | 1 504 | 1 391 | 712 | 965 | 1 488 | 1 055 | 890 | 1 921 | 875 | 1 787 | 1 156 | 1 726 | 1 523 | 1 292 | 1 363 |
| Bahamas | 72 | 169 | 143 | 333 | 459 | 410 | 217 | 150 | 524 | 158 | 277 | 2 679 | 170 | 359 | 151 | 117 | 148 | 157 | 66 |
| Barbados | 25 | 54 | 157 | 44 | 82 | 73 | 27 | 345 | 556 | 39 | 40 | -229 | 52 | -194 | -28 | 9 | 28 | 8 | 28 |
| Belize | 0 | 0 | 1 | 1 | 1 | 3 | 0 | 1 | 1 | 1 | 1 | 3 | 0 | 2 | 0 | 1 | 2 | 4 | 2 |
| Bolivia (Plurinational State of) | 3 | 3 | 3 | 3 | 4 | 5 | -4 | -29 | 0 | 77 | -255 | -33 | -2 | 89 | 80 | -84 | 48 | -111 | 99 |
| Brazil | 229 | 9 822 | 2 910 | 28 798 | 17 061 | 26 115 | -4 552 | 26 763 | 16 067 | 2 083 | 15 644 | 20 607 | 3 134 | 14 693 | 21 341 | 2 025 | 22 820 | -3 467 | 19 157 |
| Chile | 1 819 | 1 951 | 1 997 | 2 027 | 4 361 | 8 463 | 5 806 | 8 561 | 16 892 | 19 935 | 9 323 | 10 080 | 15 851 | 7 876 | 2 535 | 1 847 | 10 345 | 6 705 | 14 454 |
| Colombia | 938 | 192 | 4 796 | 1 268 | 1 279 | 3 085 | 3 505 | 5 483 | 8 420 | -606 | 7 652 | 3 899 | 4 218 | 4 517 | 3 690 | 5 126 | 3 153 | 1 686 | 3 181 |
| Costa Rica | 152 | 206 | 150 | 219 | 430 | 197 | 274 | 318 | 405 | 894 | 804 | 424 | 414 | 493 | 273 | 581 | 24 | 459 | 453 |
| Dominica | 0 | 1 | 13 | 3 | 7 | 0 | 1 | 1 | 0 | 0 | 2 | -2 | -12 | 1 | -1 | 0 | 0 | 0 | 0 |
| El Salvador | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grenada | 1 | 1 | 3 | 6 | 16 | 6 | 1 | 3 | 3 | 3 | 1 | 7 | 19 | 17 | 4 | 18 | 21 | 0 | -6 |
| Guatemala | 0 | 0 | 0 | 0 | 0 | 17 | 31 | 50 | 80 | 44 | 30 | 55 | 183 | 209 | 196 | 201 | 180 | 149 | 161 |
| Honduras | 12 | -6 | 1 | 1 | 2 | -1 | 4 | -1 | 2 | 208 | 78 | 390 | 365 | 247 | -94 | 485 | 419 | -103 | 534 |
| Jamaica | 116 | 52 | 101 | 85 | 115 | 76 | 61 | 58 | 75 | 90 | 75 | 59 | 34 | 270 | 34 | 13 | 446 | 7 | 56 |
| Mexico | 1 161 | 4 559 | 5 835 | 6 676 | 8 332 | 688 | 11 663 | 17 895 | 11 573 | 18 775 | 18 032 | 5 594 | 10 978 | 7 870 | 3 083 | 12 121 | 5 969 | 5 614 | 396 |
| Panama | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 176 | -274 | 331 | 329 | 1 091 | 933 | -338 | 570 | 725 | -2 800 | -285 |
| Peru | -60 | 0 | 0 | 0 | -66 | -736 | -411 | -436 | -343 | 2 308 | 237 | 837 | -663 | 1 526 | 1 422 | -790 | -435 | 1 631 | 1 735 |
| Saint Kitts and Nevis | 2 | 7 | 11 | 4 | 6 | 6 | 5 | 3 | 2 | 2 | 2 | 5 | -5 | -3 | 6 | 29 | 12 | 4 | -3 |
| Saint Lucia | 5 | 5 | 4 | 4 | 6 | 5 | 6 | 5 | 4 | 4 | 3 | -32 | 23 | 12 | -6 | -9 | 41 | -39 | 26 |
| Saint Vincent and the Grenadines | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 8 | -9 | 21 | 7 | 5 | 3 | 4 |
| Suriname | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 12 | 92 | 1 | -9 |
| Trinidad and Tobago | 225 | 25 | 341 | 370 | 0 | 700 | 0 | 0 | 67 | 189 | 63 | -18 | 128 | -25 | -12 | 65 | 114 | 98 | 260 |
| Uruguay | -15 | -18 | -36 | 1 | -89 | 11 | -16 | 60 | 7 | 4 154 | -2 058 | 1 838 | 1 898 | 1 308 | 4 724 | 2 268 | 12 | -582 | 1 385 |
| Venezuela (Bolivarian Republic of) | 1 318 | 619 | 1 167 | 1 524 | -495 | 1 311 | 2 630 | 2 492 | -370 | 4 294 | 752 | 1 024 | -399 | -1 041 | -2 234 | -661 | 0 | 0 | 0 |
| **Total** | **6 793** | **18 336** | **18 925** | **43 808** | **33 019** | **41 827** | **19 964** | **62 691** | **55 632** | **53 437** | **51 928** | **49 448** | **38 377** | **40 975** | **36 011** | **25 673** | **45 690** | **10 705** | **43 046** |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures and estimates as of 21 September 2022.

CHAPTER II

# Foreign direct investment in the region's pharmaceutical industry

II

# Introduction

In the wake of the coronavirus disease (COVID-19) pandemic, the pharmaceutical industry has emerged as a strategic sector for the well-being of people worldwide. In Latin America and the Caribbean, the countries manifested their interest in the region re-evaluating its productive and technological capacities in health-related goods and services, as evidenced by the plan approved unanimously at the Summit of the Community of Latin American and Caribbean States (CELAC) in 2021.[1]

In recent years, use of pharmaceuticals in Latin America and the Caribbean has grown at one of the highest rates in the world (and will be the highest between 2021 and 2026, according to IQVIA, 2022a), and local capacities exist in the region for every stage of the industry's value chain. Therefore, it makes sense to explore the development of multilateral strategies to further improve these capacities, and, as a result, improve the availability of medicines for the inhabitants of the region.

Progress in this process requires both local and foreign investment. Pressure exerted by the pandemic on health systems around the world has highlighted not only investment shortfalls in the health sector and their impact on the well-being of the population, but also that the global value chains of health-related goods must be rethought. The global health crisis exposed dependencies and bottlenecks, and therefore a need for investment in the sector (ECLAC, 2021b; Mantovani and Wermelinger, 2020).

This chapter analyses recent foreign direct investment (FDI) in the pharmaceutical industry worldwide and in Latin America and the Caribbean, contextualized within the pharmaceutical industry value chain and its different stages, and also evaluates the potential of FDI to foster the new interest of the region's countries in strengthening local manufacturing and innovation systems in health-care goods and services.

## A. An industry that is based on innovation, strictly regulated and constantly changing

The pharmaceutical industry can be defined as the set of activities, processes, operations and entities involved in the discovery, development, production and distribution of medical products and drugs (Moniz, Barbosa-Póvoa and Pinho de Sousa, 2015).[2] Companies operating in this industry carry out research and development (R&D), active pharmaceutical ingredient (API) design and production, and drug manufacturing and distribution. Like most sectors, today's pharmaceutical industry is based on a global value chain of distinct stages, from the discovery of new molecules through R&D activities to the sale and distribution of drugs. However, unlike other manufacturing industries, pharmaceutical companies intervene at different stages and in subsectors that often occur in parallel (see table II.1).

1 See ECLAC (2021a).

2 In this chapter, medicines and drugs refer interchangeably to all end products of the pharmaceutical industry, including drugs and vaccines (but not medical devices).

**Table II.1**
Key actors in the pharmaceutical value chain

| Pre-production | | Production | | Post-production |
|---|---|---|---|---|
| **Research and Development (R&D)** | **Clinical trials** | **Active pharmaceutical ingredients (API)** | **Medicines** | **Distribution** |
| Specialized chemical companies | | | | Pharmacies |
| | Contract research organizations (CROs) | API producers | | Hospitals |
| Research centres | Specialized clinics | Contract manufacturing organizations (CMO) | | Contract sales organizations (CSOs) |
| Biotechnology companies | | Small pharmaceutical companies | | Large distributors |
| Large pharmaceutical companies | | | | |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of C. Zeller and A. Van-Hametner, "Reorganizing value chains through foreign direct investment: Austria's pharmaceutical industry international expansion", *Competition & Change*, vol. 22, No.5, August 2018.

Furthermore, the pharmaceutical industry is R&D-intensive and highly regulated. The introduction of a new drug on the market is the result of lengthy research processes and clinical trials. On average, it takes 10–12 years for a new drug to reach the market after its discovery; clinical trials may take 6–7 years. Estimates of the total average R&D cost of a new drug prior to launch range widely from US$ 161 million to US$ 4.54 billion, depending on the therapeutic area of the drug and clinical trials (Schlander and others, 2021).

The value chain consists of three major stages: activities and operations of pre-production, production and post-production (see diagram II.2) (see Haakonsson, 2009; Kedron and Bagchi-Sen, 2012; Rasmussen, 2007; Zeller, 2010; Zeller and Van-Hametner, 2018). The starting point of the pharmaceutical chain are the design and R&D stages, during which researchers evaluate thousands of compounds as potential candidates for the development of new drugs. Once a promising compound is found, testing is conducted to identify the properties, potential benefits and quantities needed for it to be effective. After the compound is identified and the drug has been designed come the second and third stages: the production of the drug and its approval for the market by regulatory authorities following the necessary clinical trials (FDA, 2018; EMA, 2020).

**Diagram II.1**
Key activities in the pharmaceutical value chain


**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of S. J. Haakonsson, "The changing governance structures of the global pharmaceutical value chain", *Competition & Change,* vol. 13, No. 1, March 2009; P. Kedron and S. Bagchi-Sen, "Foreign direct investment in Europe by multinational pharmaceutical companies from India", *Journal of Economic Geography*, vol. 12, No. 4, July 2012; B. Rasmussen, "Response of pharmaceutical companies to biotechnology: structure and business models", *Working Paper*, No. 33, Pharmaceutical Industry Project, Melbourne, Centre for Strategic Economic Studies, Victoria University, 2007; C. Zeller, "The pharma-biotech complex and interconnected regional innovation arenas", *Urban Studies*, vol. 47, No. 13, November 2010 and C. Zeller and A. Van-Hametner, "Reorganizing value chains through foreign direct investment: Austria's pharmaceutical industry international expansion", *Competition & Change*, vol. 22, No. 5, August 2018.

## 1. Pre-production

According to Pavitt's taxonomy, the pharmaceutical industry is a science-based industry of innovation grounded in scientific breakthroughs and discoveries made in the R&D phase.[3] For this reason, pharmaceutical production requires strong product innovation and a high propensity to patent.

The pharmaceutical industry's R&D process is traditionally divided into three stages: (i) basic research, (ii) preclinical research and (iii) clinical development. Clinical development normally consists of three consecutive clinical trial phases to test the safety of the product in humans, its efficacy and the most appropriate dosage. The R&D process for new pharmaceutical drugs has become highly complex in recent decades, due to the intensified pace of technology and drug development, as well as the regulatory requirements for approval.

Clinical trials, which are a prerequisite for marketing authorization, involve risks and are resource-and capital-intensive. Between 1999 and 2021, the number of clinical trials registered worldwide increased from 2,796 to 59,964 (WHO, 2022a). To obtain marketing authorization for a given market, companies must submit data collected during clinical trials to the national regulatory authority for approval. Preclinical and clinical trials must comply with the minimum standards set by regulatory agencies, known as good clinical practice. According to the Organisation for Economic Co-operation and Development (OECD), the probability of obtaining market approval for a drug undergoing phase I of the clinical trial process ranges from 7% to 45%, depending on the type of drug and approval process (Hay and others, 2014; Wong, Siah and Lo, 2019; OECD, 2018). Clinical trials account for the largest share of total R&D costs. The European Commission (2009) estimates that pharmaceutical companies spend only 1.5% of their total revenues on basic R&D (including the discovery of new molecules) and an average of 15.5% on clinical trials, testing and market authorization processes. In the United States, the average cost of phase I, II and III clinical trials is about US$ 4 million, US$ 13 million, and US$ 20 million, respectively (Sertkaya and others, 2014).

Although in many countries research in the pharmaceutical sector is funded by a complementary combination of public and private resources, public resources tend to fund basic and preclinical research, while clinical trials are financed primarily by private companies (Chopra, 2003; Ehrhardt, Appel and Meinert, 2015). In some cases, this function is outsourced to service providers, such as contract research organizations (CROs), which conduct clinical trials on behalf of pharmaceutical and biotechnology companies.

These characteristics of the R&D process in the pharmaceutical sector have a significant impact on the organization of the sector.

Firstly, the time, high costs and degree of uncertainty involved call for stakeholders that can mobilize the sector's economies of scope and scale, and contemporaneously launch diverse project portfolios, backed by sufficient capital and R&D capabilities. These factors throw up significant barriers to market entry and limit the access of smaller companies with a single innovative product or limited capital, resulting in an oligopolistic market controlled by a handful of large companies specialized in the production of certain types of drugs.

Secondly, in the pharmaceutical sector, intellectual property rights play a fundamental role in guaranteeing economic returns on the resources invested in the R&D stage. Since the adoption of the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), a minimum level of intellectual property protection for pharmaceutical products applies to all WTO member countries.

[3] Pavitt (1984) classifies economic sectors into four categories based on their contribution to innovation and technology transfer: (i) supplier-dominated, (ii) scale-intensive, (iii) specialized suppliers and (iv) science-based. See Bogliacino and Pianta (2016) for an updated review of Pavitt's taxonomy.

In the case of the pharmaceutical sector, patents on a new molecule, for example, grant the company that has invested in its discovery exclusive commercial and ownership rights over the molecule and its related products or processes for a period of 20 years. However, the patent system has become increasingly complex, allowing the patenting not only of molecules and products (primary patents), but also of the research tools and processes that lead to these discoveries (Wang, 2008), resulting in a complicated network of overlapping "secondary patent" protection which grants a drug an additional 20 years of protection. These patents have been used strategically by large companies and have increased market entry barriers, in some cases reducing the effectiveness of innovation processes (Graham and Higgins, 2007; Coriat and Orsenigo, 2014; Di Iorio and Giorgetti, 2020) (see box II.1).

**Box II.1**
The use of patents in the pharmaceutical industry: a controversial reality

Intellectual property protection, which grants patents to innovative scientific knowledge, serves as an incentive to conduct R&D activities. Patents provide exclusive rights to use patented knowledge for a set period of time. This market power grants inventors a greater share of the value of this new knowledge, which encourages ongoing scientific development (Kyle and Qian, 2014; Weissman, 2004). In the pharmaceutical industry, where R&D costs and barriers to entry are high due to costly clinical trials, regulatory approval processes and more, intellectual property protection has been crucial. In this regard, weak institutional frameworks for intellectual property protection may inhibit the development of the pharmaceutical industry and thus limit access to innovative medicines, driven by a fear of compulsory licensing and reverse-engineered imitations and generic drugs (Kyle and Qian, 2014).

At the global level, pharmaceutical patent protection was transformed in 1994 with the signing of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement). Under this agreement, the countries that subsequently joined the World Trade Organization (WTO) were obliged to establish minimum national standards of intellectual property protection, including patents with a term of 20 years that cover products as well as production processes, a form of legal protection which did not exist in 95% of these countries before 1995. For the pharmaceutical industry, this made it possible to protect the active ingredient of a drug and prevent other companies from producing or importing that chemical compound during the entire term of the patent, thus also preventing its use for the development of other drugs (Kyle and Qian, 2014).

Overall, empirical evidence does not indicate that intellectual property protection is a prerequisite for ensuring increased innovation in the pharmaceutical industry in either developing or developed countries (Kyle and Qian, 2014). Companies may decide not to invest large sums in the development of a drug for which there is no earning potential, meaning that new drugs are not developed for "orphan" diseases, which affect a tiny minority of the population, or diseases more prevalent in developing countries where purchasing power is low (Coriat and Orsenigo, 2014; Mahdavi, 2017). Nor can it be said that a higher degree of intellectual property protection favours access to innovative medicines, for developing countries in particular. This is because monopoly pricing for patented drugs and treatments can become prohibitive (Kyle and Qian, 2014).

Moreover, patents are not the only means of leveraging innovation-related benefits. Other long-standing practices in the pharmaceutical industry can ensure that innovative companies obtain a larger market share, such as marketing investments, licensing or FDI (Coriat and Orsenigo, 2014). Even so, efforts to extend exclusivity rights to the production and marketing of certain drugs are commonplace in the pharmaceutical industry, which has been using various strategies to extend the lifetime of its drug patents. These strategies often include small modifications to molecules, or even just to dosage, dosage schedules or use of the drug, which result in a patent extension, even if these changes do not generate new knowledge or the development of new drugs or treatments for previously unaddressed diseases (Nawrat, 2019).

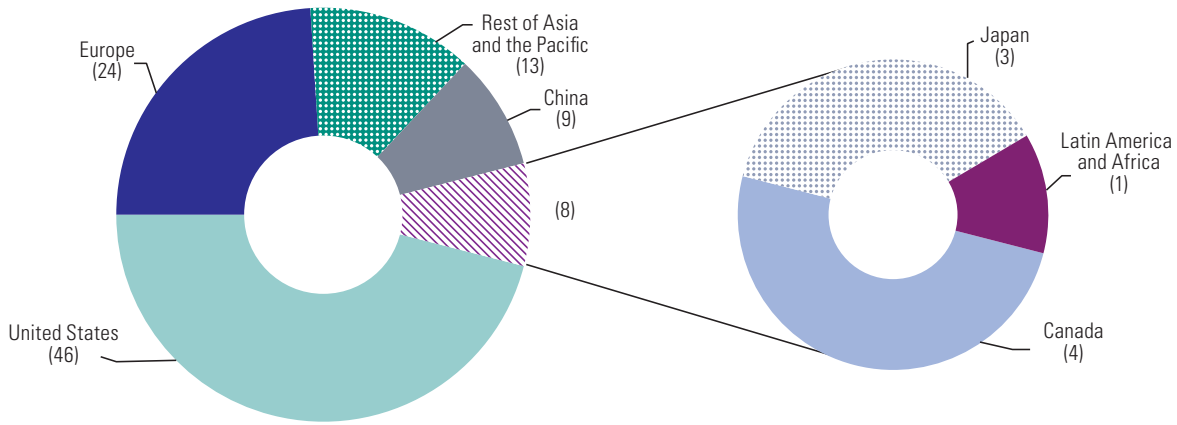
Surveys conducted by researchers at the University of California indicate that 78% of pharmaceuticals covered by new patents are related to other existing drugs. AbbVie, a United States pharmaceutical firm, for example, filed 247 patent applications in the United States for its anti-inflammatory Humira to extend its exclusive rights to the drug to 39 years. One of the strategies used by the firm is to indicate the use of the drug to treat uncommon conditions for which it was not initially developed so as to take advantage of incentives in the United States that grant a monopoly to companies that target such diseases. In addition to lengthening the life cycle of what is considered the best-selling drug of all time (and the source of two thirds of the company's income since 2002), AbbVie has gradually increased the price of the drug (by 18% between 2012 and 2016, above the inflation rate over the period). While this example is not the rule, it raises questions about the benefits of intellectual property protection for society (Mahdavi, 2017; Nawrat, 2019).

**Source**: B. Coriat and L. Orsenigo, "IPRs, public health and the pharmaceutical industry: issues in the post-2005 TRIPS agenda", *Intellectual Property Rights: Legal and Economic Challenges for Development*, M. Cimoli and others (eds.), Oxford University Press, 2014; M. Kyle and Y. Qian, "Intellectual property rights and access to innovation: evidence from TRIPS", *NBER Working Paper*, No. 20799, 2014; E. Mahdavi, "Patents and the pharmaceutical industry", California Management Review Insights, 26 May 2017 [online] https://cmr.berkeley.edu/2017/05/patents-and-pharmaceuticals/; A. Nawrat, "From evergreening to thicketing: exploring the manipulation of pharma patents", Pharmaceutical Technology, 11 November 2019 [online] https://www.pharmaceutical-technology.com/analysis/pharma-patents-manpulation/; R. Weissman, "A long, strange TRIPS: the pharmaceutical industry drive to harmonize global intellectual property rules, and the remaining WTO legal alternatives available to third world countries" *University of Pennsylvania Journal of International Law*, 25, No. 3, 2004.

The intrinsically oligopolistic nature of the pharmaceutical industry and the characteristics of its R&D processes have resulted in the concentration of such activities —and patents— in large pharmaceutical firms in developed countries. In the biotechnology sector, meanwhile, smaller companies have specialized in R&D and have built significant technological capacities and patent portfolios (KPMG, 2021).

In this scenario, United States companies account for the largest number of active R&D projects in the world. Out of a total of 5,416 pharmaceutical companies around the world with such projects (18,582 projects in total), 46% of these companies are based in the United States, 24% are European and 22% are Asian. Latin American and Caribbean companies account for only 1% (see figure II.1) (Pharma Intelligence, 2022).

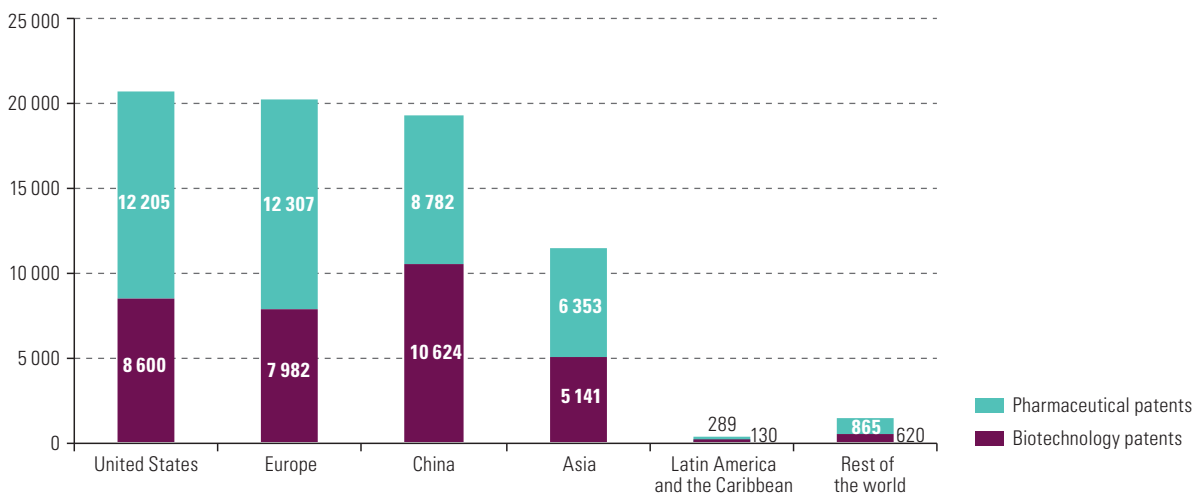
**Figure II.1**
Pharmaceutical companies with active R&D projects, by country or region, 2020
*(Percentages)*




**Source**: Pharma Intelligence, "Pharma R&D Annual Review: Navigating the Landscape", White Paper, 2022 [online] https://pages.pharmaintelligence.informa.com/rdreview#.
**Note**: Geographic origin is determined by the location of parent company headquarters.

Similarly, data from the World Intellectual Property Organization (WIPO) reveal that of all pharmaceutical patents granted in 2020, 30% were filed in the United States, 30% in Europe and 38% in Asia, while 48%, 26% and 24% of biotechnology patents were granted in Asia, in the United States and in Europe, respectively (see figure II.2).

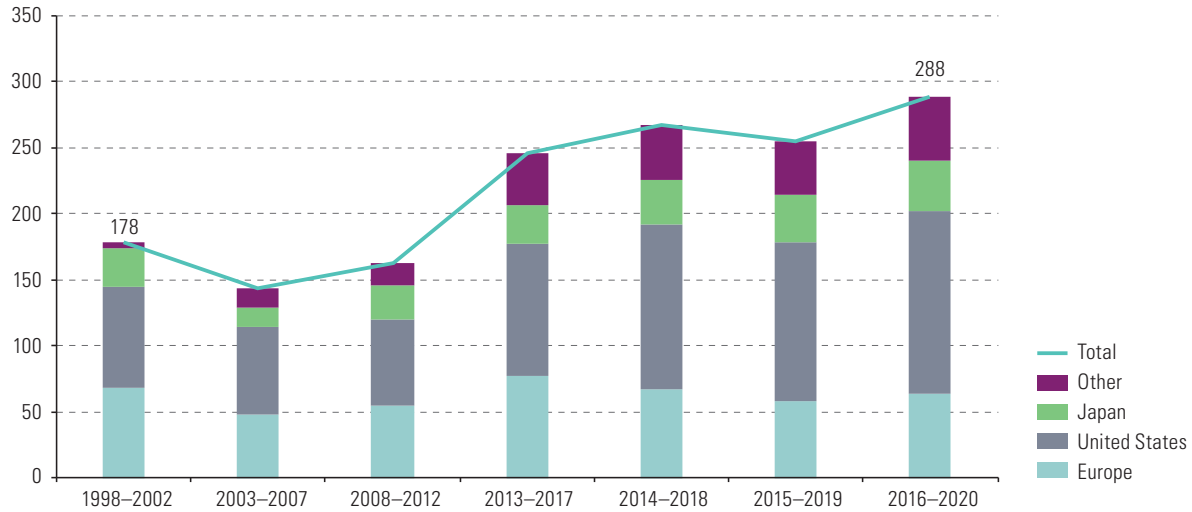
**Figure II.2**
Biotechnology and pharmaceutical patents, by region, 2020
*(Number of patents)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of World Intellectual Property Organization (WIPO) statistical data on patent grants by technology [online] https://www3.wipo.int/ipstats/index.htm?lang=en&tab=patent [accessed: March 2021].

While United States and European companies still develop nearly 70% of new chemical or biological products, the pharmaceutical sector has undergone major structural change since the first decade of the 2000s. Companies in the United States have consolidated their position, accounting for more than 40% of the new entities developed, while European firms have lost momentum and new players in certain developing countries such as Brazil, China, India and South Africa have developed significant pharmaceutical capabilities (EFPIA, 2021) (see figure II.3).

**Figure II.3**
New chemical or biological entities developed, by region of origin, from 1998–2020
*(Number of entities)*




**Source**: European Federation of Pharmaceutical Industries and Associations (EFPIA), *The Pharmaceutical Industry in Figures: Key Data*, 2021 [online] https://www.efpia.eu/media/602709/the-pharmaceutical-industry-in-figures-2021.pdf.

However, R&D processes in the biopharmaceutical sector are undergoing major structural change. In recent decades, large pharmaceutical companies have tended to divest large portfolios of basic research projects to instead acquire biotech or pharmaceutical companies with portfolios of preclinical- and clinical-stage projects (Richman and others, 2017; Visnji, 2019). Biopharmaceutical companies have become the most dynamic player in pharmaceutical R&D, accounting for about 80% of research portfolios (IQVIA, 2019).

## 2. Production

In terms of end products, today's pharmaceutical sector can be divided into three major interrelated sub-sectors with distinct R&D processes, products and markets.

Branded products are generally new and highly lucrative, protected by a patent for long periods and intended for markets in developed and high-income countries.

High-value generic products are based on substances for which patents have expired or on new combinations of known chemical or biological substances. This market has developed rapidly in recent decades and is expected to expand in the wake of European initiatives to promote the use of quality generics (see European Commission, 2020a). The target markets for these drugs are developed countries, middle-income countries and the middle classes in developing countries.

Low-value generic products are basic pharmaceuticals for low-income markets, mainly in developing countries, or purchased via public procurement processes for the health sector in developing countries.

In the branded product sector, the need for new solutions, the high R&D costs and patent enforcement create extremely high barriers to entry. This market segment is dominated by United States and European companies with large market shares and a monopoly on a drug for the duration of a patent. These types of drugs are highly strategic for companies, as in many cases they generate the most profits. In 2021, for example, Pfizer's top three products generated around 66.5% of the company's total pharmaceutical revenue, Bayer's top three generated 49%, and Takeda's and AstraZeneca's top three around 34% (*Pharmaceutical Executive*, 2022). To cope with patent expiry, companies have adopted strategies focusing on specialization in vertical markets and have favoured mergers and acquisitions between large companies or biotech companies in search of high-profit drug niches (Gautam and Pan, 2016).

Large pharmaceutical companies that produce branded drugs are usually vertically integrated in the value chain and use a network of smaller suppliers dedicated to a specific stage in the production of a drug. Smaller companies that produce branded drugs and companies producing generic drugs do not usually operate across the entire value chain; instead they concentrate on drug production and distribution (Haakonsson, 2009; Kedron and Bagchi-Sen, 2012; Zeller and Van-Hametner, 2018).

Pharmaceutical products are manufactured in two stages: (i) the production of raw materials (active substances of biotechnological or chemical origin) and (ii) the pharmaceutical production of proprietary medicinal products and end products. The production of medicines is strictly regulated; all companies that manufacture medicines or active ingredients must meet the minimum standards set out in the good manufacturing practice (GMP) system, and compliance is verified by inspections and licensing measures throughout the value chain (see box II.2).

**Box II.2**
Stages of the regulatory process

Pharmaceutical regulation plays a key role in ensuring that high quality, safe and effective drugs reach the market. Although each country's regulatory authority establishes its own rules, stages, timelines and criteria for the approval of a new drug, international regulatory directives exist in the form of best practices. This is all the more important given growing efforts to harmonize national regulatory frameworks in the area of health (PAHO, 2022).

In general terms, the approval process of a new drug on the market can be divided into four stages: (i) the preclinical stage, (ii) the clinical stage, (iii) registration and (iv) the post-marketing surveillance stage.

In the preclinical stage, the company demonstrates in the laboratory the clinical objectives of the drug under study, its mechanisms of action and its safety for human health. Testing is usually performed on isolated cells and animals. It is also in the preclinical stage that the pharmaceutical formulations and quality specifications for product manufacturing are defined. With this information, regulatory authorities review technical, scientific and ethical factors to establish whether or not companies can initiate clinical trials in humans (ANVISA, 2018).

The clinical stage aims to evaluate the safety, as well as the efficacy, of a drug. Regulators define trial protocols, which include details of the dosage and dosage form, the duration of the trial and the types of people who must take part, always with their prior consent and informed of the risks. In addition, between each trial, regulators establish safety requirements in order to proceed with the trial. The clinical stage is subdivided into three phases:

(i) In phase I, a drug is tested on 20–80 healthy individuals to determine potential adverse effects, toxicity levels and any metabolic issues.

(ii) In phase II, testing is carried out on a few dozen to 300 people suffering from the disease or condition for which the drug is intended in order to establish the efficacy of the drug. Dosages are adjusted and short-term side effects are assessed.

(iii) In Phase III, which involves several hundred to 3,000 different healthy and unhealthy individuals, deeper analysis is carried out on dosage, dosage schedules and on how the medicine interacts with other substances (FDA, 2017).

**Box II.2 (concluded)**

Once the clinical trials are successfully completed, the registration phase begins, in which the pharmaceutical company must demonstrate to regulatory authorities that it is technically capable of manufacturing the drug in accordance with good manufacturing practice (GMP). These are the minimum standards that pharmaceutical manufacturers must meet in their production processes. Compliance is verified via inspections and licensing throughout the value chain. In order to standardize agency practices, the Pan American Health Organization (PAHO) developed 12 guidelines, incorporated by over 100 countries around the world, which pharmaceutical companies and regulatory agencies should follow in inspection processes (PAHO, 2022). Also in the registration phase, authorities verify in detail how the drug will be packaged and labelled to ensure that patients and health professionals are adequately informed about the risks and potential uses of the drug (FDA, 2017).

Once authorized and marketed, the post-marketing surveillance stage of the drug begins, which involves pharmacovigilance and good distribution practice (GDP). Pharmacovigilance is the ongoing monitoring of possible adverse effects that may be caused by a medicine, based on the principle that the benefits derived from a product should always outweigh the risks (EMA, 2019). Good distribution practice describes the minimum standards that must be met by drug distributors to ensure consistent product quality, safety and integrity throughout the value chain. This includes transporting and storing products according to manufacturer recommendations and avoiding contamination and misplacement (EMA, 2018).

**Source**: Brazilian Health Regulatory Agency (ANVISA), "Registro de novos medicamentos: saiba o que é preciso", 1 November 2018 [online] http://antigo.anvisa.gov.br/resultado-de-busca?p_p_id=101&p_p_lifecycle=0&p_p_state=maximized&p_p_mode=view&p_p_col_id=column-1&p_p_col_count=1&_101_struts_action=%2Fasset_publisher%2Fview_content&_101_assetEntryId=5062720&_101_type=content&_101_groupId=219201&_101_urlTitle=registro-de-novos-medicamentos-saiba-o-que-e-preciso&inheritRedirect=true; European Medicines Agency (EMA), "Good distribution practice", 17 September 2018 [online] https://www.ema.europa.eu/en/human-regulatory/post-authorisation/compliance/good-distribution-practice; EMA, *From laboratory to patient: the journey of a centrally authorised medicine*, 2019 [online] https://www.ema.europa.eu/en/documents/other/laboratory-patient-journey-centrally-authorised-medicine_en.pdf; Food and Drug Administration (FDA), "The FDA's drug review process: ensuring drugs are safe and effective", 2017 [online] https://www.fda.gov/drugs/information-consumers-and-patients-drugs/fdas-drug-review-process-ensuring-drugs-are-safe-and-effective; Pan American Health Organization (PAHO), *Regulatory System Strengthening in the Americas: Lessons Learned from the National Regulatory Authorities of Regional Reference*, Washington, D.C., 2022.

The first stage of production involves the biological or chemical synthesis of APIs. This stage, which is generally carried out by specialized companies, involves lengthy processes and the intensive use of chemicals and reagents for the manufacture of pharmaceutical substances. Competitiveness largely depends on economies of scale. API production is one of the most frequently outsourced stages in the pharmaceutical industry, including in Europe and the United States, and among those that have become the most concentrated in China and India (Richman and others, 2017; ATKearney, 2019).

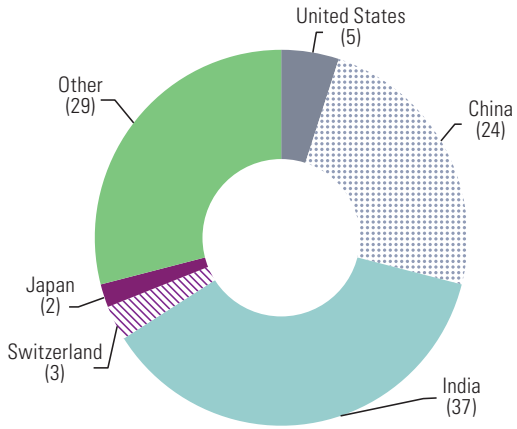
In the United States, 22% of APIs are sourced from domestic suppliers, and India and China are the country's second- and third-largest suppliers, respectively (see figure II.4). No information exists on what proportion of APIs are sourced domestically in Europe, but the European Medicines Agency (EMA) reports that 61% of APIs sourced outside the region are produced in Asia (24% in China and 37% in India) (Francas, 2021).

In Europe, more Asian-produced APIs have been certified in recent years than European ones. Between 2000 and 2020, while the number of Certificate of Suitability of Monographs of the European Pharmacopoeia[4] granted to European-made generic APIs rose from 348 to 1,260, the number of certificates granted to APIs produced in Asia —in India (41% of the total) and China (13%) in particular— grew from 183 to 2,369 over the same period. Research shows that Asian imports came to prominence in the second half of the 2010s, with most connected to high-volume APIs. In parallel, the European market has focused on producing complex APIs in low volumes (Pro Generika, 2020).

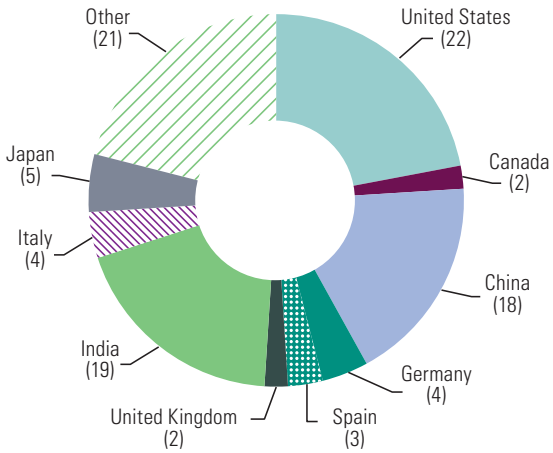
[4] These certificates, considered proof of the quality of APIs, are necessary for drug approval by European regulatory agencies (Pro Generika, 2020).

**Figure II.4**
Origin of active pharmaceutical ingredients in the European Union and United States, 2020
*(Percentages)*

A. European Union (including the United Kingdom): imports from other regions




B. United States: sourcing by origin




**Source**: D. Francas, 2021 [online] https://public.tableau.com/profile/david.francas#!/.

In a highly competitive market, the cost advantages enjoyed by China and India in terms of inputs, labour, infrastructure, transportation and equipment have favoured large-scale production and improved the competitive position of these countries. Furthermore, each has specialized in a different stage of production. Chinese companies tend to specialize in the first stage of production related directly to raw materials, whereas Indian companies focus more on the final stages (Bumpas and Betsch, 2009).

In the second stage of drug manufacturing, excipients such as binders and lubricants are added to APIs, followed by processing, dosing and packaging to produce the final drugs (Francas, 2021). Drug manufacturing requires significant capital investments to build the manufacturing plant and production equipment.

Some small pharmaceutical companies specialize in the production and distribution stages. Firms that produce generics also tend to specialize in manufacturing.

While large pharmaceutical companies used to produce drugs in-house, there has been a significant hike in recent decades in the outsourcing of drug manufacturing to specialized companies —in this case, contract manufacturing organizations (CMOs). According to a report by Fortune Business Insights (2022), the biopharmaceutical CMO market was worth US$ 32.6 billion in 2018. While the largest markets are the United States and Europe, an increasing number of companies are meeting global regulatory requirements in a highly dynamic Asian market. Latin American and Caribbean markets are still at an early stage in this domain. CMOs offer companies services ranging from API manufacturing to packaging and, in some cases, distribution. CMOs have manufacturing facilities, specialized equipment and staff to produce at the scale needed, significantly reducing costs for companies (Fortune Business Insights, 2020).

### 3. Post-production

The post-production stage includes the packaging and distribution of the drug and its provision to patients. A single manufacturer can carry out each of these processes by itself or outsource to contract sales organizations that provide distribution services. In many cases, large pharmaceutical companies have their own distribution channels. The process by which a drug is made available to patients depends on the type of drug (prescription or non-prescription) and on the purchasing and distribution modalities of the specific market (public procurement, private actors or pharmacies).

In short, the biopharmaceutical sector is characterized by complex supply chains that are increasingly globalized and dominated by large firms operating in oligopolistic markets and specialized in specific therapeutic areas and drugs. Smaller companies specialize in specific stages of the supply chain. However, in recent decades the sector has undergone rapid change, both geographically and in terms of actors. Outsourcing has been a defining feature of the evolving model of large pharmaceutical firms. Multinational companies that took a vertical approach to the entire process before, from R&D to drug distribution, now increasingly outsource services related to preclinical testing and validation, clinical trials, manufacturing and distribution, redirecting investment to expanding the patent pipeline and research programmes by buying promising small companies and biopharmaceutical companies.

In the wake of the COVID-19 pandemic, project-specific partnerships for the development of COVID-19 vaccines have emerged between large pharmaceutical companies leveraging asset complementarity. Sanofi, for example, has invested in the development of two vaccines (one based on messenger RNA (mRNA) and one on recombinant proteins), but has lent its manufacturing capacities to support the dosing and packaging of Pfizer-BioNTech and Johnson & Johnson vaccines. Novartis has not invested in its own vaccine but has used its production sites to manufacture the Pfizer-BioNTech vaccine.

## B. Internationalization has been linked to access to technologies and markets

### 1. Large United States and European firms lead the globalized marketplace

The pharmaceutical product market has grown steadily in the last two decades, and this trend is expected to continue. In 2021, global drug sales amounted to US$ 1.4 trillion, compared to under US$ 400 billion in 2001 (see figure II.5). This trend is projected to continue, with pharmaceutical sales set to grow at a compound annual rate of 3%–6% through 2026 (IQVIA, 2022b).

In addition to sustained growth, another outstanding feature of this market is the role of the United States and Europe in consumer spending. Together they accounted for 45.9% and 22.7% of the global market, respectively (IQVIA, 2020).

The predominance of the United States and Europe as consumer markets is linked to the fact that United States and European companies have led the sector, in some cases for more than 100 years. The evolution of the pharmaceutical industry worldwide and most internationalization processes and cross-border capital flows have been concentrated in these two markets.

**Figure II.5**
Worldwide drug sales, 2001–2021
*(Billions of dollars)*


**Source**: Institute for Human Data Science (IQVIA), *The Global Use of Medicines 2022: Outlook to 2026,* 2022 [online] https://www.iqvia.com/insights/the-iqvia-institute/reports/the-global-use-of-medicines-2022.

Thus, of the 500 highest-earning companies in the world in 2021, 19 were pharmaceutical firms. Eight are based in the United States, seven in Europe, three in China and one in Japan (see table II.2). These are large companies, with average annual revenue of US$ 45.172 billion in 2020, that have generated a significant number of highly skilled jobs.

**Table II.2**
Largest global pharmaceutical companies by revenue, 2021

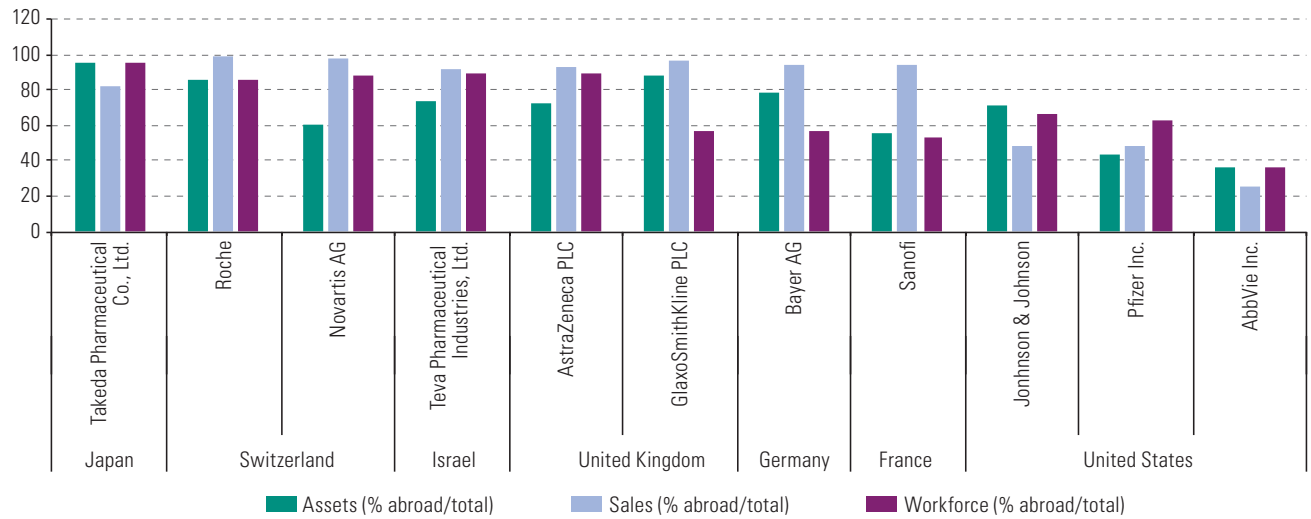
| Fortune 500 ranking | Company | Country of parent company | Revenue *(Millions of dollars)* | Employed persons (worldwide) | Number of announced FDI projects (2003–2021) |
|---|---|---|---|---|---|
| 69 | China Resources | China | 99 438 | 370 955 | ... |
| 95 | Johnson & Johnson | United States | 82 584 | 134 500 | 115 |
| 109 | Sinopharm | China | 77 278 | 176 686 | 2 |
| 147 | Roche | Switzerland | 64 285 | 101 465 | 111 |
| 218 | Novartis | Switzerland | 49 898 | 105 794 | 142 |
| 227 | Bayer | Germany | 48 484 | 99 538 | 69 |
| 232 | Merck | United States | 47 994 | 73 500 | 102 |
| 247 | AbbVie | United States | 45 804 | 47 000 | 8 |
| 264 | GlaxoSmithKline (GSK) | United Kingdom | 43 732 | 94 066 | 150 |
| 276 | Sanofi | France | 42 580 | 99 412 | 121 |
| 278 | Bristol Myers Squibb | United States | 42 518 | 30 250 | 23 |
| 281 | Pfizer | United States | 41 908 | 78 500 | 123 |
| 409 | Takeda Pharmaceutical | Japan | 30 166 | 47 099 | 68 |
| 462 | AstraZeneca | United Kingdom | 26 617 | 76 100 | 83 |
| 464 | Boehringer Ingelheim | Germany | 26 497 | 51 944 | 70 |
| 468 | Guangzhou Pharmaceutical Holdings | China | 26 070 | 34 371 | 3 |
| 476 | Amgen | United States | 25 424 | 24 300 | 28 |
| 489 | Gilead Sciences | United States | 24 689 | 13 600 | 26 |
| 495 | Eli Lilly | United States | 24 540 | 35 000 | 35 |

**Source**: Fortune, "Fortune 500" [online] https://fortune.com/fortune500/ and fDi Markets.

In this highly globalized market, China's large pharmaceutical companies, which do rank among the world's largest in terms of revenue, have not yet internationalized their activities like their European and United States counterparts.[5] Among the world's 19 largest companies by revenue, United States firms announced the most FDI projects between 2003 and 2021 (see table II.2).

Most of these companies operate outside the markets where their parent company is located. For example, Takeda in Japan and Roche in Switzerland generate over 80% of their business and sales outside their respective countries. United States companies have the most balanced ratio of assets, sales and employees inside and outside the country (see figure II.6). In other cases —Sanofi and Novartis, for example— foreign sales account for over 95% of total sales, although half of the companies' assets or workforces are located in the country of their parent company.

**Figure II.6**
Internationalization indices of pharmaceutical companies in the UNCTAD transnational ranking, 2020
*(Percentages)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations Conference on Trade and Development (UNCTAD).

Notably, with respect to market dynamics, although emerging markets have together accounted for less than 10% of the global market, they have been more dynamic than those of developed countries. Between 2014 and 2019, the drug market grew by 11.2% in Brazil, 11.1% in India, 6.9% in China, 6.1% in the United States and 5.4% in the top five markets of the European Union (IQVIA, 2020). Thus, emerging economies can begin to gain prominence in the sales of major transnationals.

Latin America and the Caribbean, for example, have not been major targets. Sales in the region represented on average 4.7% of the global sales of 20 major transnational pharmaceutical companies between 2017 and 2021 (total sales averaged US$ 662.591 billion annually) (ECLAC, 2021b). However, results vary between these companies. European companies led sales in the region between 2017 and 2021, accounting for 60% of sales among the top 20 transnationals, compared to 37% for companies based in the United States and 3% for those based in Japan. European firms have also had the most exposure to the region's market (see figure II.7).

[5] In 2020, 11 of the companies on the Transnationality Index (TNI) prepared by the United Nations Conference on Trade and Development (UNCTAD) were in the pharmaceutical sector, the second most represented segment after the automotive industry, which tops the list with 12 companies. The TNI is calculated as the average of the following three ratios: (i) foreign assets to total assets, (ii) foreign sales to total sales and (iii) foreign employment to total employment.

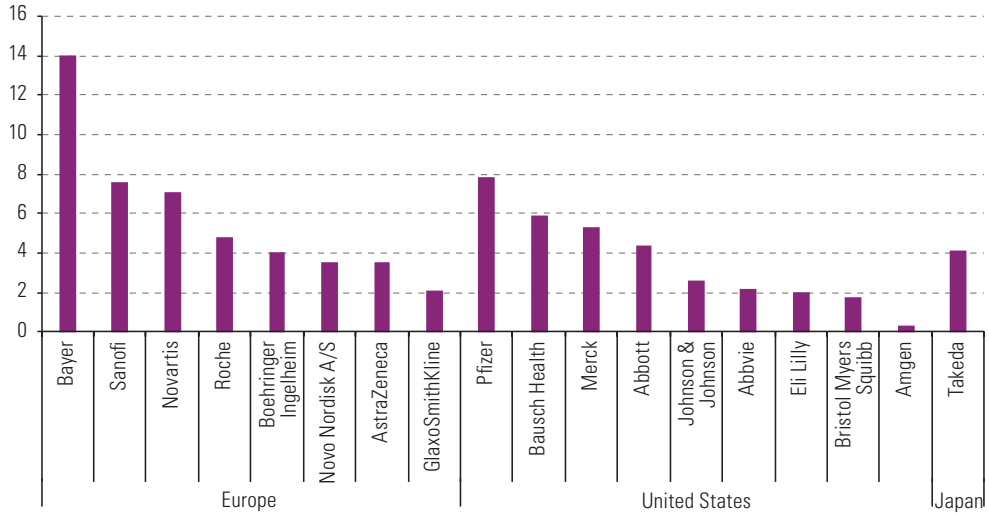



**Figure II.7**
Transnational pharmaceutical company sales in Latin America, 2017–2020
*(Percentages)*

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), *International Trade Outlook for Latin America and the Caribbean, 2021* (LC/PUB.2021/14-P/Rev.1), Santiago, 2021.

## 2. Mega mergers and large acquisitions have strengthened companies' international position

Although many of today's leading pharmaceutical companies were established in the late nineteenth and early twentieth centuries, it was only after the Second World War that a major expansion of the drug market spurred the development and mass-market uptake of medicines. The sector only really took off in the 1960s, when new molecules and uses for drugs were discovered and approved by regulatory agencies that had previously focused their attention on production processes rather than products. The ratio of R&D expenditure to sales has risen from 5.8% in the 1950s to 10% in the 1960s and between 15% and 20% since the 1980s (Malerba and Orsenigo, 2015).

The high fixed costs associated with R&D activities required rapid market expansion. Large pharmaceutical firms adopted internationalization strategies in tandem with changes in both market structure and R&D practices. With regard to the market, pressure grew on prices amid austerity in the 1980s despite a steady increase in demand, pushing pharmaceutical companies to reduce costs and focus on efficiency. At the same time, in the late 1970s, new research methods, together with technical advances in other areas of science, such as genetics and biotechnology, led to the emergence of new segments in the pharmaceutical market. These changes gave rise to different business models that saw firms working with universities, research centres and investment and development funds in areas that had previously been dominated by the R&D laboratories of the large pharmaceutical companies (Malerba and Orsenigo, 2015)

With a view to remaining competitive in a context of new drugs and applications, the pharmaceutical industry "de-verticalized" in the late 1980s and early 1990s, with the creation of new segments specialized in R&D, clinical trials and manufacturing, as well as mergers and acquisitions by large pharmaceutical firms of laboratories in other market segments with innovative technology of their own (Malerba and Orsenigo, 2015).

Mega mergers and acquisitions among the major companies in the sector began in 1995 and continued until the mid-2000s. One example is the merger between the Swedish Astra AB and the British Zeneca Group PLC announced in 1998 (Pharmaceutical Online, 1998). These operations aimed to create more efficient organizations, with greater economies of scale, allowing companies to balance out their portfolios and expand and streamline in geographic terms. This shift also pushed back the imminent expiry of patents on commercially

successful products and addressed underperformance issues in R&D activities (Williams, 2009; Gautam and Pan, 2016). The TRIPS Agreement, which seeks to ensure similar intellectual property protection regimes in all countries and to facilitate international trade and investment, already existed at the time (see box II.3). Cross-border mergers and acquisitions shot up in the mid-2000s, increasing from an annual average of US$ 7 billion between 1990 and 2002 to US$ 54 billion between 2003 and 2021. These processes have concentrated market power in the hands of large pharmaceutical companies. For example, as a result of various merger and acquisition transactions between 1995 and 2015, 60 pharmaceutical companies merged into 10 larger companies (Visnji, 2019).

**Box II.3**
The Agreement on Trade-Related Aspects of Intellectual Property Rights

The World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) was adopted in 1994. The Agreement defines minimum standards for copyright, trademarks, industrial designs, trade secrets and patent protection, and is binding on all WTO members.

Developed countries pushed for the adoption of the TRIPS Agreement to ensure similar intellectual property protection regimes in all countries and to facilitate international trade and investment. Prior to the adoption of the TRIPS Agreement, developed countries used what are defined therein as "flexibilities" to build manufacturing capacities (Coriat and Orsenigo, 2014). Since the adoption of the Agreement, patents cover products and processes developed in almost all technological areas, including pharmaceuticals, for a period of 20 years.

Minimum intellectual property protection frameworks were intended to help reduce risks and increase incentives for multinational companies to enter other markets. In particular, the debate on the investment decisions of multinational enterprises (for example, the eclectic paradigm developed by Dunning (1977)) suggests a positive relationship between intellectual property protection regimes and the investment decisions of transnational enterprises. By reducing the risk that local firms copy the innovation of multinational firms, intellectual property protection would facilitate decisions to locate firms in developing countries (Dunning, 1977). At the same time, the guarantee of a monopoly period on developed products would increase incentives for innovation, especially in unprofitable areas of research such as rare diseases.

Since its adoption, the effectiveness of the TRIPS Agreement has been a matter of debate. According to WTO, the Agreement "attempts to strike a balance between the long-term social objective of providing incentives for future inventions and creation, and the short-term objective of allowing people to use existing inventions and creations". The organization further states that "intellectual property protection encourages inventors and creators because they can expect to earn some future benefits from their creativity. This encourages new inventions, such as new drugs, whose development costs can sometimes be extremely high, so private rights also bring social benefits" (WTO, 2006).

The main concerns relate to the impact of the intellectual property protection regime on least developed and developing countries, especially in terms of access to knowledge, technology and innovation. The economic literature indicates that intellectual property protection regimes contribute to the accumulation of technological capabilities in developing countries (Cimoli and others, 2014). Overly strict intellectual property rights regimes prevent countries from pursuing the incremental and replicative innovation at the core of development processes (Dosi and Stiglitz, 2014).

Moreover, findings presented in the economic literature on the link between intellectual property protection and investment decisions of multinational firms are inconclusive (see Noon, De Vita and Appleyard (2019) for a review of the literature). The degree to which a protection regime influences a firm's investment decisions depends on the many factors that determine such decisions, including costs, markets and technologies. This influence also depends on the stage of development of the countries, the type of FDI, the industry concerned and the innovation capabilities of the host countries (Nunnenkamp and Spatz, 2004).

In the pharmaceutical sector, in some cases long-period patent protection has become an additional obstacle to accessing medicines in developing countries and has driven up drug prices. Extensive research has studied the case of drugs and medications to treat human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS). The adoption of patents in developing countries resulted in high treatment costs that limited access (Westerhaus and Castro, 2006; Outterson, 2010).

To limit negative effects, the TRIPS Agreement includes transitional rules for least developed countries and a number of exceptions that have been reviewed and updated over time. Along the same lines, the Declaration on the TRIPS Agreement and Public Health was adopted in Doha in November 2001 to guarantee the applicability of the flexibilities built into the Agreement for emergency situations and to protect public health. The Declaration extended the exemptions in pharmaceutical patent protection for the least developed countries until 2016. The Agreement focuses primarily on the following flexibilities:

**Box II.3 (concluded)**

- Patentability criteria: Article 27 includes three exceptions. Governments may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect human, animal or plant life or health; diagnostic, therapeutic and surgical methods for the treatment of humans or animals and certain interventions for the production of plants or animals.
- Bolar provision: Article 30 provides for a regulatory exception by which patented products and processes may be used for research, testing and trials necessary to understand an invention. In addition, some countries allow manufacturers of generic drugs to use the patented invention to obtain marketing approval before the patent protection expires.
- Anti-competitive practices: Articles 8 and 40 allow for appropriate measures and exceptions to prevent anti-competitive practices that unreasonably restrain trade or the international transfer of technology.
- Compulsory licensing: Article 31 allows the use of patented products and processes without the consent of the right holder in case of national emergency, in other circumstances of extreme urgency, in cases of public non-commercial use, or in case of anti-competitive practices. The same article allows for exceptions, known as compulsory licensing, in cases where a company or person has first attempted, unsuccessfully, to obtain a voluntary licence.
- Parallel imports: Article 6, on the exhaustion of rights, and paragraph 5 of the Declaration on the TRIPS Agreement and Public Health, indicate that parallel imports cannot be raised as WTO disputes unless they violate the principles of non-discrimination (national treatment and most-favoured-nation treatment).

Use by the least developed and developing countries of the special exceptions included in the TRIPS Agreement has been infrequent. For example, on issues of public health and access to medicines, information on the use of TRIPS flexibilities compiled since 2001 by Medicines Law & Policy shows that such flexibilities have been used in a relatively small number of cases: 168 worldwide, 118 of which are related to article 31 and the use of compulsory licensing (see table). It is also worth mentioning that 110 of the cases concern exceptions related to products for the treatment of HIV and AIDS. Latin American and Caribbean countries have availed themselves of the flexibilities included in the TRIPS Agreement and the Declaration on the TRIPS Agreement and Public Health in a total of 32 cases. Only one —a request from Haiti in 2005 concerning antiretroviral therapies for HIV-infected persons— was related to paragraph 7 of the Declaration, on the transition period for least developed countries. The other 31 cases concerned the use of compulsory licensing, mainly for products for the treatment of HIV and AIDS. During the coronavirus disease (COVID-19) pandemic, Chile, Colombia, the Dominican Republic and Peru requested a compulsory licence for nirmatrelvir and ritonavir for the treatment of people affected by COVID-19.

Use of flexibilities in the TRIPS Agreement, 2001–March 2022

*(Number of cases)*

| Flexibility | World | Latin America and the Caribbean |
|---|---|---|
| TRIPS Agreement, article 31 (compulsory licensing, non-commercial use) | 118 | 31 |
| Declaration on the TRIPS Agreement and Public Health, paragraph 7 (transition period for least developed countries) | 46 | 1 |
| TRIPS Agreement, article 30 (regulatory exceptions to patents) | 3 | - |
| Declaration on the TRIPS Agreement and Public Health, paragraph 6 (parallel importing) | 1 | - |
| Total | 168 | 32 |

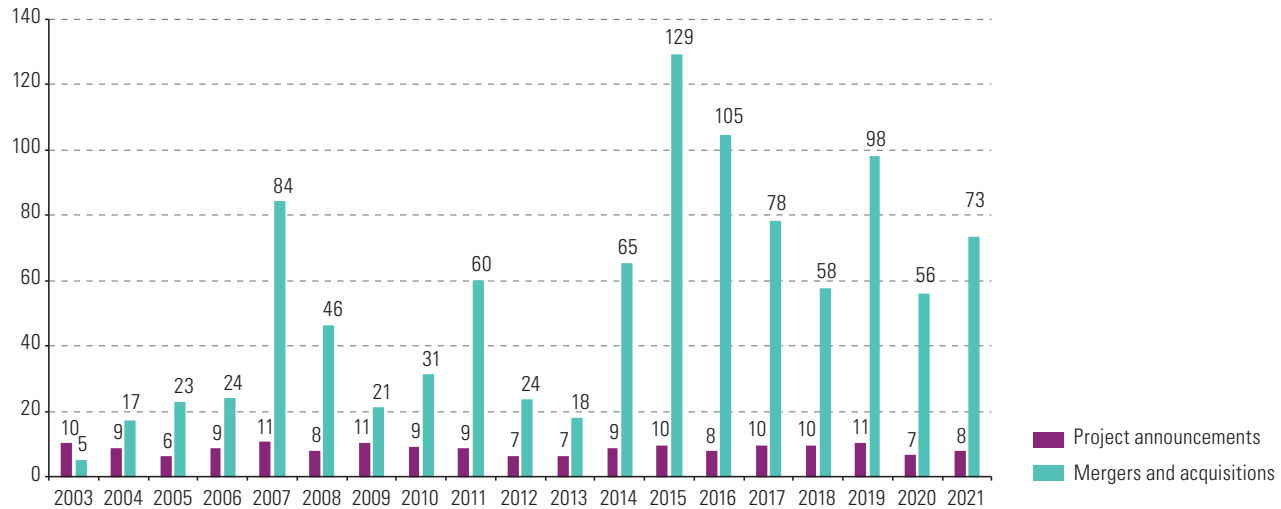
**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), based on Medicines Law & Policy, TRIPS Flexibilities Database [online] http://tripsflexibilities.medicineslawandpolicy.org/.

A combination of factors explains the little use made of TRIPS exceptions. Among them are the potential for patent-holding companies to apply additional political and commercial pressure, as well as the proliferation of clauses on intellectual property protection in trade agreements, which, although not found in the TRIPS Agreement, limit the use of the flexibilities included therein, reducing *de jure* the leeway offered to developing countries to implement policies aimed at the development and accumulation of technological capabilities (Alshareef, 2015).

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of B. Coriat and L. Orsenigo, "IPRs, public health and the pharmaceutical industry: issues in the post-2005 TRIPS agenda", *Intellectual Property Rights: Legal and Economic Challenges for Development*, M. Cimoli and others (eds.), Oxford University Press, 2014; S. Alshareef, "Patent regulation in North-South and South-South trade agreements", paper presented at the seminar Big Emerging Countries, Global South and International Economic Relations: Cooperation and Power, 15–16 October, 2015; Cimoli, M. and others (eds.), *Intellectual Property Rights: Legal and Economic Challenges for Development*, Oxford, Oxford University Press, 2014; G. Dosi and J. E. Stiglitz, "The role of intellectual property rights in the development process, with some lessons from developed countries: an introduction", *Intellectual Property Rights: Legal and Economic Challenges for Development*, M. Cimoli and others (eds.), Oxford, Oxford University Press, 2014; J. H. Dunning, "Trade, location of economic activity and the MNE: A search for an eclectic approach", *The International Allocation of Economic Activity*, London, Palgrave Macmillan, 1977; K. Outterson, "Disease-based limitations on compulsory licenses under Articles 31 and 31bis", *Research Handbook on the Protection of Intellectual Property under WTO Rules: Intellectual Property in the WTO Volume I*, C. Correa (ed.), Edward Elgar, 2010; World Trade Organization (WTO), "Fact Sheet: TRIPS and Patents," September 2006 [online] https://www.wto.org/english/tratop_e/trips_e/factsheet_pharm00_e.htm; Medicines Law & Policy TRIPS Flexibilities Database [online] http://tripsflexibilities.medicineslawandpolicy.org/; P. Noon, G. De Vita and L. Appleyard, "What do we know about the impact of intellectual property rights on the foreign direct investment location (country) choice? A review and research agenda", *Journal of Economic Surveys*, vol. 33, No. 2, April 2019; P. Nunnenkamp and J. Spatz, "Intellectual property rights and foreign direct investment: a disaggregated analysis", *Review of World Economics*, vol. 140, No. 3, 2004 and M. Westerhaus and A. Castro, "How do intellectual property law and international trade agreements affect access to antiretroviral therapy?", *PLoS Medicine*, vol. 3, No. 8, August 2006.

Between 2003 and 2021, internationalization mainly consisted of purchases of existing assets instead of investments to build new capacity. On average, mergers and acquisitions worth US$ 53.545 billion were carried out annually, while announcements of new foreign investment projects averaged US$ 8.6 billion per year (see figure II.8). Such figures are not comparable in terms of their impact on FDI statistics: project announcements are an expression of intent on the part of companies, whereas mergers and acquisitions are closed deals. Nevertheless, the enormous difference in the amount of capital invested in either approach demonstrates that internationalization via mergers and acquisitions has taken precedent in this industry in the last 18 years. In general, mergers and acquisitions affect capacity-building and job creation in recipient countries to a lesser degree than greenfield investments, making it more difficult to calculate the impact of FDI in recipient countries.

**Figure II.8**
Cross-border mergers and acquisitions and FDI project announcements in the global pharmaceutical sector, 2003–2021
*(Billions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from fDi Markets and from United Nations Conference on Trade and Development (UNCTAD).

The scale of mergers and acquisitions in the pharmaceutical industry makes it one of the sectors —together with telecommunications, finance, insurance and hydrocarbons— in which the largest deals in the world are concluded. Moreover, deals between Europe, the United States and Canada are clearly predominant. Among the 10 largest deals closed since 2013, only 2 involved companies located outside the Europe-North America axis: (i) the purchase of Shire (United Kingdom) by Takeda of Japan and (ii) the purchase of Allergan PLC (Ireland) by Teva Pharmaceuticals of Israel (see table II.3).

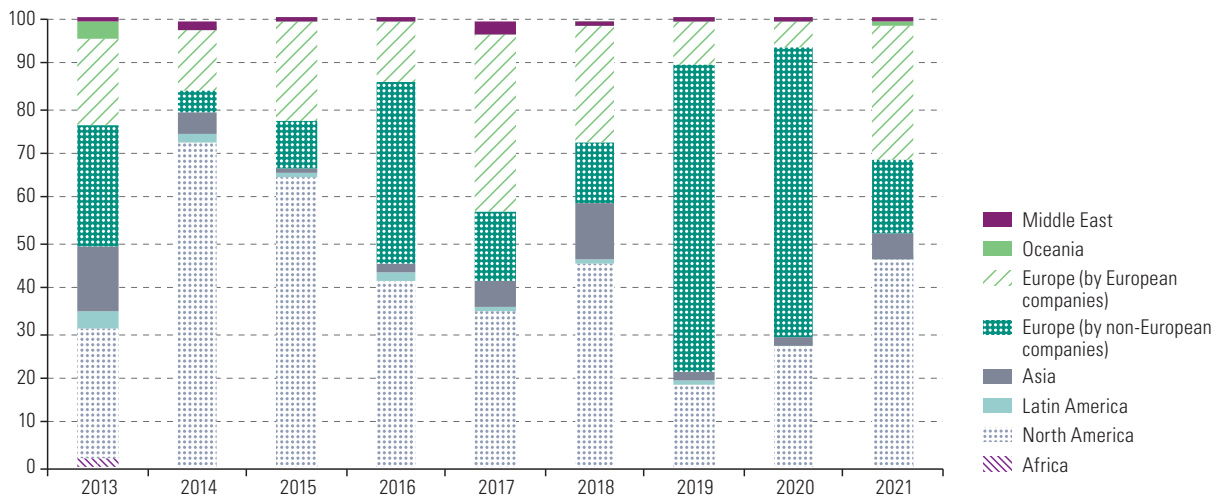
Thus, consolidation through mergers and acquisitions was concentrated in developed economies. Between 2013 and 2021, 94% of all mergers and acquisitions targeting firms in the pharmaceutical industry occurred in Europe (50%) and North America (44%). It is worth noting that a significant number of both intraregional and foreign operations took place in Europe (see figure II.9). The vast majority of mergers and acquisitions also involved companies in Europe and North America (56% of acquisitions were made by European companies and 21% by North American ones). Although interest is growing among industry players in the role of Indian and Chinese pharmaceutical companies, especially in terms of API production, their participation in the global mergers and acquisitions landscape remains limited. China accounted for 1% and India, 2%, of the total value of mergers and acquisitions concluded between 2013 and 2021. In India, asset swaps among large global players have been the main driver of deals (e.g. Merck India was sold to Procter & Gamble for US$ 3.853 billion in 2018). Most mergers and acquisitions in China (58% over the period) were transactions between China and Hong Kong (Special Administrative Region of China).

**Table II.3**
World: 10 largest cross-border mergers and acquisitions in the pharmaceutical sector, 2013–2021

| Year | Company | Country of origin | Assets acquired | Percentages | Country of assets | Sector and subsector | Amount *(Millions of dollars)* |
|---|---|---|---|---|---|---|---|
| 2015 | Actavis PLC | Ireland | Allergan Inc. | 100 | United States | Manufacturer of pharmaceutical products | 70 500 |
| 2020 | Venice Subsidiary LLC | United States | Allergan PLC | 100 | Ireland | Manufacturer of pharmaceutical products | 63 533 |
| 2019 | Takeda Pharmaceutical Co., Ltd. | Japan | Shire PLC | 100 | United Kingdom | Specialty biopharmaceutical manufacturing holding company | 62 200 |
| 2016 | Teva Pharmaceutical Industries Ltd. | Israel | Allergan PLC's Activis global generic pharmaceuticals business (Actavis Generics) | 100 | Ireland | Manufacturer of pharmaceutical products | 40 500 |
| 2016 | Shire PLC | United Kingdom | Baxalta Inc. | 100 | United States | Manufacturer of biopharmaceutical products | 32 000 |
| 2014 | Actavis PLC | Ireland | Forest Laboratories Inc. | 100 | United States | Manufacturer of pharmaceutical products | 24 245 |
| 2015 | Novartis AG | Switzerland | GlaxoSmithKline PLC's oncology products unit | 100 | United Kingdom | Manufacturer of oncology products | 16 000 |
| 2015 | Valeant Pharmaceuticals International Inc. | Canada | Salix Pharmaceuticals Ltd. | 100 | United States | Manufacturer of treatments for gastrointestinal (GI) disorders | 14 500 |
| 2018 | Sanofi S.A. | France | Bioverativ Inc. | 100 | United States | Manufacturer of therapies to treat blood disorders | 11 600 |
| 2019 | EQT Partners and the Abu Dhabi Investment Authority (ADIA) | Sweden, United Arab Emirates | Nestlé Skin Health S.A. | 100 | Switzerland | Manufacturer of medical skin care products | 10 270 |

**Source**: Bureau van Dijk, Orbis [online database] https://www.bvdinfo.com/en-gb/our-products/data/international/orbis.

**Figure II.9**
Global cross-border mergers and acquisitions with target companies in the pharmaceutical industry, by target region, 2013–2021
*(Percentages)*

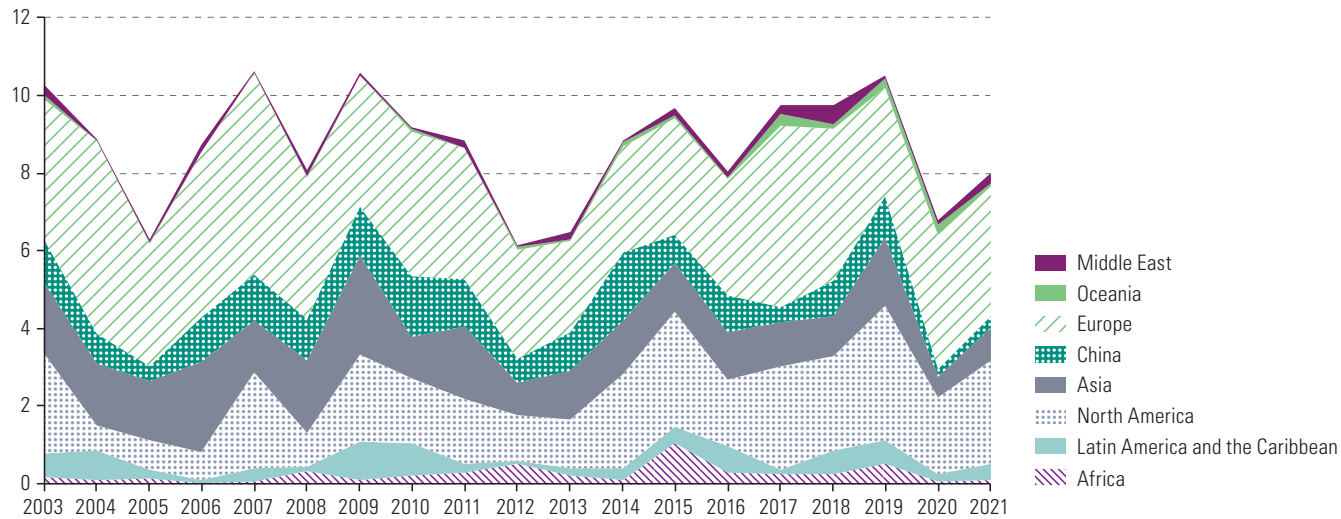



**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bureau van Dijk.

As mentioned above, the pharmaceutical industry has announced few greenfield investments over the last 18 years, with little variation. Most were in Europe (40% between 2013 and 2021) and the United States (19%). However, Asia —China in particular— has emerged as a popular target destination. Over the same period, Asian countries accounted for 27% of the value of announcements, with China accounting for 11%. From 2013, the share of announcements for North America gradually trended

upward (reaching 29% of total value between 2014 and 2021), while those for China declined (9% of announcements over the same period) (see figure II.10). As was the case with mergers and acquisitions, European and North American companies made the most FDI project announcements in the pharmaceutical industry.

**Figure II.10**
Global FDI project announcements in the pharmaceutical industry, by region of destination, 2003–2021
*(Billions of dollars)*



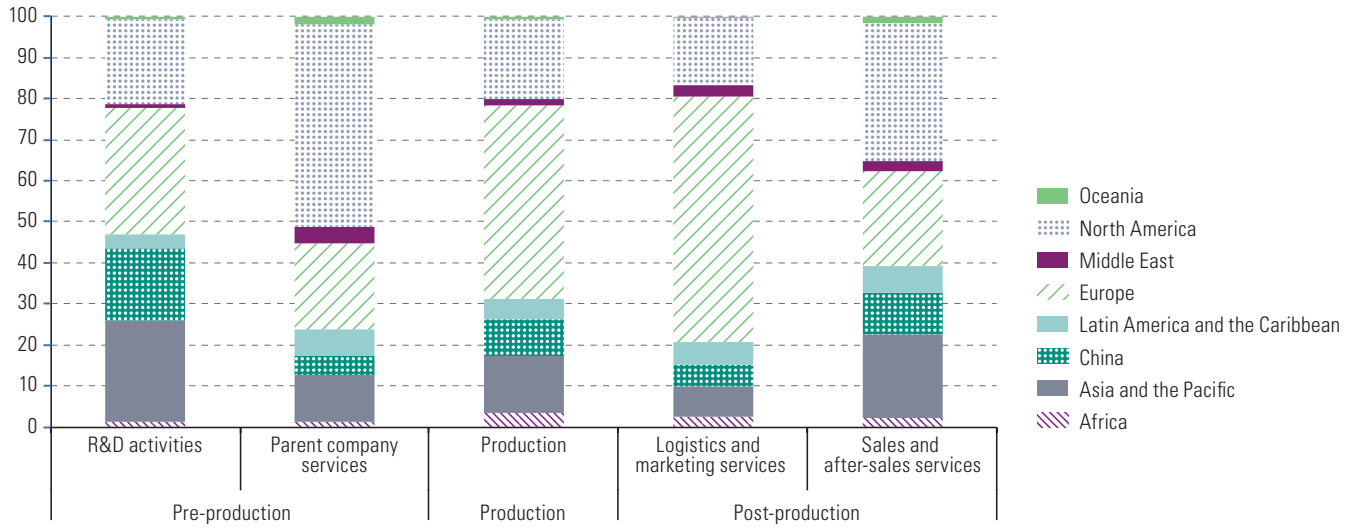

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from fDi Markets.

A 17.8% increase in project announcements in 2021 is clearly linked to the pandemic. More than two thirds (37.9%) of FDI project announcements made in the pharmaceutical industry that year entailed the development and production of vaccines, including three announcements made by Sanofi (France) for US$ 1.611 billion to expand its manufacturing facilities in Canada and open new production sites in Singapore and the United States.

Interest in China has been most evident in certain segments of the pharmaceutical value chain. In general, Europe predominates as a destination at all stages of the production process —pre-production, production and post-production— and Asia comes second, mainly due to the development of the sector in China (see figure II.11). Two exceptions have been sales and after-sales services and announcements regarding the establishment of services for parent companies: the United States has emerged as the most popular destination, mainly due to projects by large Swiss and British pharmaceutical companies to expand or establish their headquarters in the country. In terms of pre-production and specifically R&D activity, it is noteworthy that in multiple years, R&D project announcements in Asia (mainly China), outnumbered the same type of project announcement in Europe and North America.

R&D activities are established in Asian markets not only to optimize costs and move closer to growing consumer markets; certain countries in the region hold potential in their ability to conduct clinical trials, which are essential in the development stage of new drugs. Nor should the experience of Asian countries in developing generic drugs through reverse engineering processes be neglected. Such is the case of China and India, which have established an important technical base for the expansion of their domestic pharmaceutical industries. Both countries stand out in this trend: among projects to expand R&D capacities in the pharmaceutical industry in Asia, the most resources were announced for Japan (32%), China (30%), Singapore (30%) and India (6% of the amount, but which accounted for 27% of all announcements).

**Figure II.11**
Global FDI project announcements in the pharmaceutical industry, by value chain subsegment and destination region, 2003–2021
*(Percentages of project amounts)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from fDi Markets.

According to Han and others (2021), China's emergence as a major player in the biopharmaceutical innovation landscape has attracted the attention of multinational pharmaceutical companies. They have not only invested in purchasing licences and establishing partnerships with Chinese companies, but are also investing in promoting innovation in the country. Other examples include the 2021 launch of the Roche Accelerator and Johnson & Johnson's JLABS incubator network, both of which are based in Shanghai. According to fDi Intelligence (Williams, 2009), geographical lines also define the different stages of the life cycle of a new drug: initial stages of research, development and testing tend to occur in developed countries where the necessary technical capacities exist and there is greater market flexibility and reliability. Once a new chemical compound is approved, production tends to expand to larger markets and where production costs are lower (in India or China, for example) or where the tax regime is favourable (e.g. Ireland or Singapore).

In any case, the number of announced FDI projects is low, both in comparison with mergers and acquisitions and in relation to other production activities. One reason for this lack of large-scale greenfield investment in emerging markets is that national regulatory regimes are of central importance to the pharmaceutical sector, particularly with regard to biosafety and intellectual property rights. This has hampered the international fragmentation of large-scale pharmaceutical production, in contrast to other manufacturing industries. Pharmaceuticals are relatively compact and do not incur high transportation costs. Investing in emerging countries would facilitate the establishment of production facilities in lower-cost markets, improve market positioning in these high-growth countries and pave the way for low-cost clinical trials. However, past cases of patent infringement and unauthorized generic drug production, among other practices, have inhibited investors, especially concerning projects that involve technology transfer (Williams, 2009).

## 3. In Latin America and the Caribbean, FDI is concentrated in production and marketing

Identifying the investments of pharmaceutical transnationals in the region is complex. On the one hand, most of the companies were established in Latin America and the Caribbean many decades ago and the information available to analyse FDI inflows is more recent. For example, Bayer arrived in Argentina in 1911, opened a plant in 1980 in Zárate (where it currently operates two plants) and opened four more in other parts of the country between 1984 and 1999. In Brazil, in the 1950s, many transnationals set up operations to supply the domestic market in an economy based on an import substitution model. In other words, production and marketing were promoted, but not R&D (Hasenclever and others, 2022). This is also the case with other companies and in countries where large transnationals built production capacities decades ago. For this reason, the available databases from 2005 to 2021 do not reflect these investments. On the other hand, the analysis of FDI inflows in national accounts by sector is only available for 12 countries in the region. Moreover, only in Brazil and Mexico is it possible to identify FDI inflows in the pharmaceutical industry in the statistics, limiting the analysis to the two largest economies in the region.

Therefore, this section examines recent trends in: (i) FDI inflows in the pharmaceutical industry in Brazil and Mexico; (ii) mergers and acquisitions of companies in the sector in the region and (iii) FDI project announcements in Latin America and the Caribbean. The present analysis underscores the fact that investments and investment announcements in the pharmaceutical industry do not reflect a clear trend during the period, as they were more a response to the specific needs of the companies than to the momentum of the industry's development in the region. Consequently, in most countries, the pharmaceutical sector accounts for a small share of total cross-border investments.

In Brazil and Mexico, annual FDI inflows to the pharmaceutical industry averaged about US$ 600 million per year between 2006 and 2021, reflecting a cumulative total of US$ 9.785 billion in Brazil and US$ 9.68 billion in Mexico as of 2021.[6] FDI inflows showed no clear trend over the period in Mexico, where they fluctuated year after year, in some cases owing to large-scale acquisitions (as in 2016). Meanwhile, in Brazil, equity inflows from abroad have declined since 2012 (see figure II.12).

**Figure II.12**
Brazil and Mexico: FDI inflows in the pharmaceutical industry, 2006–2021
*(Billions of dollars)*


**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official data.

[6] Note that data for Brazil may underestimate the total invested by foreign pharmaceutical companies, since the sectoral data do not include reinvested earnings.

In both countries, the pharmaceutical segment accounted for less than 5% of FDI inflows to the manufacturing sector between 2006 and 2021, at 2.5% and 4.2% of the total for Brazil and Mexico, respectively. In Mexico, the industries that received the most FDI were motor vehicles and motor vehicle parts (29.6% of FDI in manufacturing), beverages (16.6%), plastics and rubber (5.5%) and basic metals (5.3%). The pharmaceutical industry followed, in fifth place, with 4.2% of cumulative FDI between 2006 and 2021. In Brazil, the pharmaceutical industry ranked tenth among the main recipients of FDI in manufacturing. The top five recipients were refined oil and biofuels (24.2%), metals (13.0%), motor vehicles (12.8%), food (11.5%) and chemicals (8.3%). The decline in FDI in the Brazilian pharmaceutical industry also coincides with a period in which domestic business groups gained greater market share (in the early 2000s, only one local company was among the 10 largest companies by sales, while in 2017 there were five domestic and five foreign companies). Transnationals also exited some of their productive activities in the country over the period; for example, Eli Lilly, Roche and Takeda, between 2018 and 2020 (Hasenclever and others, 2022).

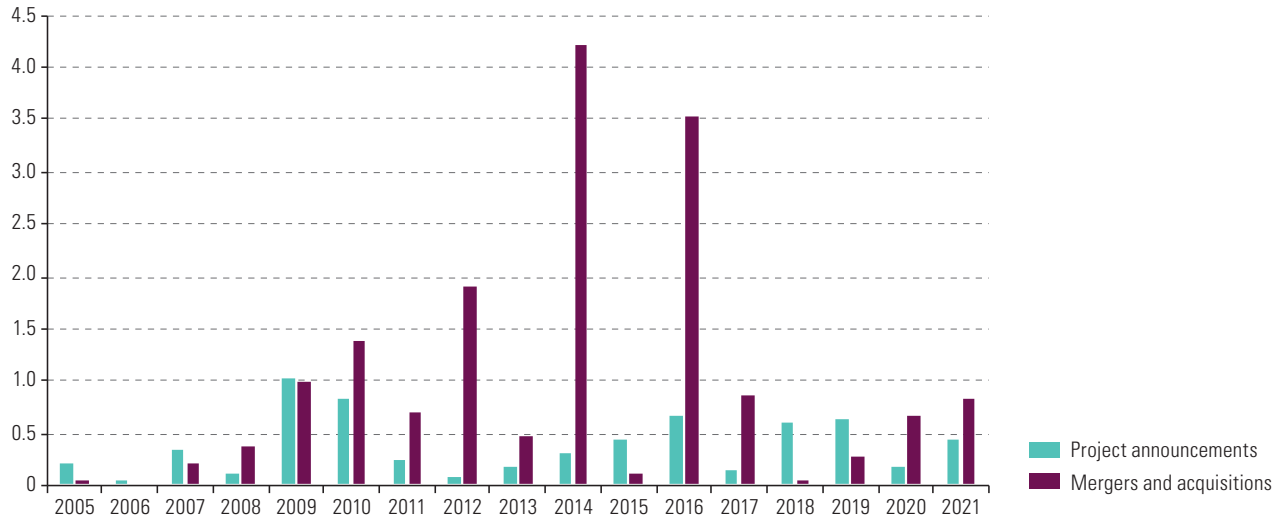
With respect to the other countries of the region, mergers and acquisitions of target companies in the sector were analysed to identify the trend in FDI in the pharmaceutical industry. Investment project announcements were also examined to explore the interest of transnationals in building new capacity in the region. Both indicators reflect a scenario in which transnationals have focused on a few countries and there is no clear trend in terms of dynamism or specialization in product types. In addition, most inflows have targeted production, followed by post-production (mainly marketing), while no major investments have been identified in the pre-production segment.

Cumulatively, between 2005 and 2021, cross-border mergers and acquisitions of target companies in the pharmaceutical sector in Latin America and the Caribbean totalled US$ 16,633 billion.[7] This figure represented 2.2% of the total amount of transactions in the region, lower share than the share of the sector in transactions worldwide (10% of total mergers and acquisitions). Moreover, unlike the rest of the world, where the volume of mergers and acquisitions in the sector increased from 2014 onwards, in Latin America and the Caribbean, deals have fluctuated around an average of US$ 1.04 billion per year, with no clear trend (see figure II.13). Meanwhile, announcements of FDI projects in the industry in general have been lower than merger or acquisition transaction amounts. This suggests that investments in new projects in the pharmaceutical industry are not so significant in the region either, although, as we will see below, in some countries and specific years there have been major announcements. Between 2005 and 2021, FDI projects announced for Latin America and the Caribbean represented an estimated cumulative amount of US$ 7.855 billion, or 0.55% of the total.

The largest mergers and acquisitions in the region reflect the predominance of transactions in the production segment, mainly the manufacture of drugs and pharmaceuticals. They also highlight transnationals' interest in expanding their presence in Latin American markets, especially in the generic segment, although there are also significant transactions targeting the marketing phase (see table II.4). The purchase of Chile's CFR Pharmaceuticals by United States-based Abbott in 2014 aimed to double the supply of branded generics in the 15 Latin American markets where the Chilean company operates, especially in the women's health, central nervous system, cardiovascular disease and respiratory disease segments (Agencia EFE, 2014). Years earlier, in 2009, France's Sanofi-Aventis had acquired the Brazilian company Medley, thus becoming the largest producer of generic drugs in Latin America (the segment accounted for two thirds of Medley's turnover at the time of the purchase) (Reuters, 2010). Meanwhile, with the acquisition of the Mexican company Representaciones e Investigaciones Médicas (RIMSA), Israel-based Teva, a world leader in the generic drug market, sought to expand its portfolio with the products patented by the Mexican company, which were complementary to its own generic portfolio, and to expand its commercial presence and customer base (*El Financiero*, 2015).

[7] This figure is an underestimate, since in 52% of cases the data source does not include the amount of the agreement.

**Figure II.13**
Latin America and the Caribbean: cross-border mergers and acquisitions and FDI project announcements in the pharmaceutical industry, 2005–2021
*(Billions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bloomberg and fDi Markets.

**Table II.4**
Latin America and the Caribbean: top 10 cross-border mergers and acquisitions in the pharmaceutical sector, 2005–2021

| Year | Company | Country of origin | Assets acquired | Percentages | Country of assets | Sector and subsector | Amount *(Millions of dollars)* |
|---|---|---|---|---|---|---|---|
| 2014 | Abbott Laboratories | United States | CFR Pharmaceuticals S.A. | 99.6 | Chile | Pharmaceuticals, medicines | 3 384 |
| 2016 | Teva Pharmaceutical Industries Ltd. | Israel | Representaciones e Investigaciones Médicas S.A. de C.V. | 100 | Mexico | Pharmaceuticals, medicines | 2 300 |
| 2016 | Coty Inc. | United States | Hypermarcas, personal care and beauty products | 100 | Brazil | Retail sales, perfumes and cosmetics | 985 |
| 2021 | Hypera S.A. | Brazil | Over-the-counter and prescription active pharmaceutical ingredients | 100 | Mexico | Pharmaceuticals, medicines | 825 |
| 2014 | Alliance Boots GmbH | Switzerland | Farmacias Ahumada S.A. | 99.4 | Chile | Retail sales, drugstore | 740 |
| 2009 | Sanofi | France | Medley Indústria Farmacêutica Ltda. | 100 | Brazil | Pharmaceuticals, medicines | 690 |
| 2010 | Grupo Casa Saba S.A.B. de C.V. | Mexico | Farmacias Ahumada S.A. | 97.8 | Chile | Retail sales, drugstore | 673 |
| 2012 | Koninklijke DSM N.V. | Netherlands | DSM Produtos Nutricionais Brasil S.A. | 100 | Brazil | Pharmaceuticals, vitamins and nutrition products | 609 |
| 2012 | CFR Pharmaceuticals S.A. | Chile | Laboratorio Franco Colombiano Lafrancol S.A.S., Lafrancol Internacional S.A.S. | 100 | Colombia | Health services, medical diagnostics | 562 |
| 2012 | Caisse de dépôt et placement du Québec | Canada | Invekra S.A.P.I. de C.V. | 24 | Mexico | Pharmaceuticals, medicines, wholesale sales | 500 |

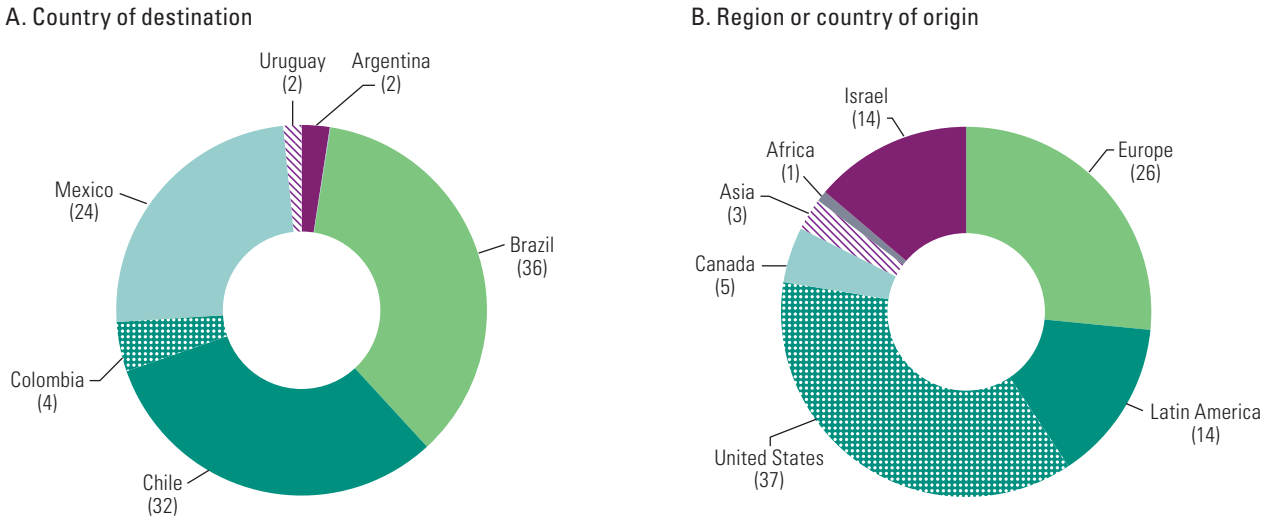
**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bloomberg.

Although the region's consumer market is not analysed in this chapter, it is worth noting the interest of large retail pharmacy chains (such as Switzerland's Alliance Boots[8] and Mexico's Grupo Casa Saba) in this segment. Pharmacies are important for access to health services in countries with a shortage of medical services (WHO, 1990) and this is also reflected in the interest shown by foreign companies in this marketing segment.

8 After merging in 2015 with United States-based Walgreens, the company was renamed Walgreens Boots Alliance.

As seen in table II.4, the countries accounting for the largest share of mergers and acquisitions in terms of amounts are Brazil, Chile and Mexico, which also saw a steady pace of transactions in the industry between 2005 and 2021. Although operations were also steady in Colombia and Argentina, investments in these countries were considerably smaller (see figure II.14).

**Figure II.14**
Latin America and the Caribbean: cross-border mergers and acquisitions, by country and region of destination or country of origin, 2005–2021
*(Percentages of the total amount)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Bloomberg.

Given that the major pharmaceutical transnationals are mostly based in Europe and North America, it is natural that the majority of mergers and acquisitions (around 70%) originate there, especially in the United States. Capital from Asia derives mainly from Japan (1.5%) and India (1%). Despite India's prominence as a producer of APIs and generic drugs, and moves to expand its presence in the region (Yadav, 2021; Vargas, Rama and Singh, 2022), the magnitude of its investments is not yet comparable to that of large European and United States transnationals.

Significantly, mergers and acquisitions have also included intraregional operations, mainly involving companies based in Brazil (4.8% of the total), Mexico (4.7%) and Chile (3.7%)(see table II.4). Mergers and acquisitions, characteristic of the global pharmaceutical industry, also occur in Latin America and the Caribbean, and Latin American companies also consider them important for expansion in the region. Large laboratories, whether local or transnational, seek to optimize their portfolio in order to expand markets and commercial capacity, streamline costs and increase their sources of income. In Argentina, for example, some business groups have internationalized their operations by acquiring manufacturing and commercial subsidiaries in Latin American countries (especially in Uruguay) and in the United States, Europe and some Asian countries (e.g. Grupo Insud, Roemmers, Bagó, Laboratorios Richmond) (ECLAC, 2021a).[9] In Mexico, some domestic companies have made acquisitions in other North American countries (United States and Canada) and also in Spain. Some Brazil-based groups have also internationalized their operations with investments abroad not only in the production and marketing segments, but also in strategic R&D assets. Hypera Pharma and Eurofarma are interesting examples of the different investment and expansion strategies of Brazilian companies (see box II.4).

[9] As Bloomberg's mergers and acquisitions data include only publicly-traded companies, some transactions carried out by companies in the region are not reflected.

**Box II.4**
Brazil: expansion and internationalization strategies of domestic pharmaceutical companies

Among the various acquisitions and sales of assets in the region, the Brazilian companies Hypera Pharma and Eurofarma are interesting examples of different investment and expansion strategies.

Hypera Pharma's strategy is focused on optimizing its drug portfolio and mainly targets the domestic market. With sales of around US$ 208 million in 2021 (Quintans, 2021) and operations in sectors as diverse as non-biological similars and generic drugs, prescription and consumer drugs and skincare products, the company has modified its portfolio by buying and selling assets of multinational companies. In order to consolidate its position in the domestic pharmaceuticals market, the company (then called Hypermarcas) began repositioning in 2015 with the sale of its personal care and beauty assets to United States-based Coty Inc. for US$ 950 million.

In 2017, the company sold its personal hygiene line to Belgium-based Ontex Group NV for US$ 319 million. Already under the name Hypera Pharma and 100% focused on pharmaceuticals, the company acquired assets from Germany's Boehringer Ingelheim for US$ 319 million (Correio Braziliense, 2020; Reuters, 2019). In 2020, in a competitive deal, it purchased a portfolio of 18 over-the-counter (OTC) drugs from Japan's Takeda for US$ 825 million, including the rights to market them in other Latin American countries, such as Argentina, Colombia, Ecuador, Mexico, Panama and Peru (LexLatin, 2020). Continuing with its strategy, in 2021 it acquired for US$ 190 million a portfolio of 12 drugs, both prescription and OTC, from France's Sanofi, also present in Mexico and Colombia (Exame, 2021). All these operations were aimed at aligning Hyper Pharma's portfolio with complementary pharmaceutical brands and compounds. To this end, on the one hand, it exploits the opportunities to use molecules that had been patented as part of the assets acquired to expand its portfolio through the development of other drugs and line extensions and, on the other hand, it uses marketing and advertising to promote the major acquired brands (Drska, 2021). Given that the company still has room to grow in the Brazilian market (which generates two thirds of its revenues), as part of its strategy it has licensed or sold assets in other Latin American markets (Drska, 2021).

One of the companies that has benefited from this strategy is Eurofarma, which is undergoing an international expansion and which was the third-largest Brazilian pharmaceutical company in 2020, with sales of US$ 650 million (Quintans, 2021). The company, 100% Brazil-owned and present in 20 Latin American countries, began its internationalization process in 2009, with the acquisition of the Argentine company Quesada Farmacéutica. The following year, it acquired three other laboratories in the region: Uruguay's Gautier and Chile's Laboratorio Volta and Farmindustria. In 2012, it announced its expansion into Colombia, Ecuador, Mexico and Paraguay, and in 2013 it entered Guatemala and Peru. It entered the Guatemalan market through the acquisition of Laboratorios Productos Industriales S.A. In 2016, the company opened a factory in Argentina and, shortly after, in 2018, it purchased the assets of the Guatemalan pharmaceutical company Laboratorios Stein, which guaranteed it the right to produce 90 products in Costa Rica and Honduras also, thus strengthening the company's presence in Central America (Scaramuzzo, 2019). The following year, it acquired Chile's Productos Farmacéuticos Medipharm and Argentina's Buxton.

In 2020, Eurofarma carried out its first brand triangulation exercise with Hypera Pharma and purchased 12 of the 18 brands bought by Hypera Pharma from Japan's Takeda, thereby acquiring production rights in Argentina, Colombia, Ecuador, Mexico, Panama and Peru, while Hypera Pharma retained the rights to produce and market the brands in Brazil. In 2021, Eurofarma made significant investments to increase its presence in the Mexican and Colombian markets. In Mexico, it expanded its presence beyond its manufacturing plant announced in 2018 by acquiring an asset from United States-based Eli Lilly and buying back, from Hypera Pharma, two compounds acquired recently from Sanofi. In Colombia, rights were acquired from Germany's Grünenthal and, again, from Hypera Pharma, which had previously belonged to Sanofi (Atance, 2021; Scaramuzzo, 2019).

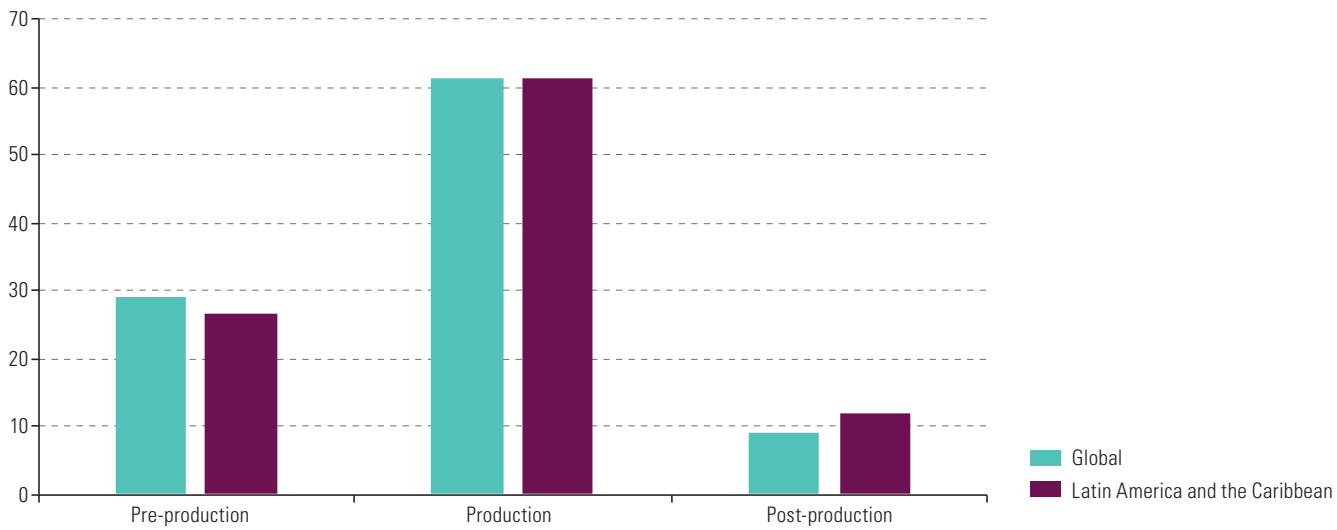
Eurofarma has great ambitions for expansion in the Brazilian market, especially with the investment of more than US$ 230 million in a new plant in the state of Minas Gerais, and the announcement of initiatives such as the collaboration with Pfizer-BioNTech for the production of COVID-19 vaccines in the country. Although it is not neglecting the domestic market, Eurofarma has ambitions to expand in the region. The company plans to derive 30% of its revenue from its international operations by 2022. In 2021 this figure was 20% (Eurofarma, 2021; Pacheco, 2021).

**Source**: Correio Braziliense, "Hypera entra na disputa por ativos da Takeda no Brasil e na América Latina", 29 February 2020 [online] https://www.correiobraziliense.com.br/app/noticia/economia/2020/02/29/internas_economia,838297/hypera-entra-na-disputa-por-ativos-da-takeda-no-brasil-e-na-america-la.shtml; Eurofarma, "Who we are", 2021 [online] https://eurofarma.com/about-the-company; Euromonitor, "Cannabis in Latin America", 2021 [online] https://www.euromonitor.com/cannabis-in-latin-america/report; Exame, "Hypera compra 12 marcas de remédios da Sanofi por US$ 190 mi", 13 July 2021 [online] https://exame.com/negocios/hypera-compra-12-marcas-de-remedios-da-sanofi-por-us-190-mi/; B. Pacheco, "Pé no Brasil, olhar na América Latina", Istoé Dinheiro, 8 October 2021 [online] https://www.istoedinheiro.com.br/pe-no-brasil-olhar-na-america-latina/; LexLatin, "Hypera Pharma gana liderazgo en el segmento OTC en Brasil", 22 May 2020 [online] https://lexlatin.com/noticias/hypera-pharma-gana-liderazgo-segmento-otc-brasil; M. Drska, "Hypera ajusta a dose para capturar sinergias em nova leva de aquisições", NeoFeed, 26 July 2021 [online] https://neofeed.com.br/blog/home/hypera-ajusta-a-dose-para-capturar-sinergias-em-nova-leva-de-aquisicoes/; C. Atance, "Eurofarma avanza con Hypera en Latam", PharmaBiz, 19 November 2021 [online] https://www.pharmabiz.net/eurofarma-avanza-con-hypera-en-latam/; Reuters, "Brazil's Hypera says to buy Boehringer's Buscopan rand for $319 million", 18 December 2019 [online] https://www.reuters.com/article/us-hypera-boehringer-deal-idUKKBN1YM1HE; R. Quintans, "Interfarma divulga guia com ranking das maiores indústrias farmacêuticas", Revista da Farmácia, 7 April 2021 [online] https://revistadafarmacia.com.br/industria/interfarma-divulga-guia-com-ranking-das-maiores-industrias-farmaceuticas/; M. Scaramuzzo, "Eurofarma tem planos para ampliar negócios na América Latina", Sindusfarma, 4 February 2019 [online] https://sindusfarma.org.br/noticias/destaques-imprensa/exibir/7970-eurofarma-tem-planos-para-ampliar-negocios-na-america-latina.

Project announcements in the pharmaceutical sector in Latin America and the Caribbean accounted for 5% of total global announcements in the sector in the period analysed (2003–2021). Activity was concentrated in a few companies: 10 companies (six European, three based in the United States and one Canadian) accounted for 50% of the amount relating to project announcements in the region during the entire period. Most of these investments have been concentrated in the production stage of the value chain (59% of total investments), although the largest announcement in the region's pharmaceutical sector was made in the pre-production stage by the Swiss company Novartis, which in 2004 announced a project focused on clinical trials in Ecuador, estimated at US$ 450 million.

With respect to the stage of the value chain targeted by investments announced in Latin America and the Caribbean, the regional dynamics differ very little from the global dynamics, with a clear predominance of the pharmaceutical production stage. However, the region reflects a weaker emphasis on pre-production investments than the global average, especially with respect to R&D activities, and a slightly higher volume of post-production investments, especially in logistics services and retail sales (see figure II.15).

**Figure II.15**
FDI project announcements in the pharmaceutical industry, by value chain segment, 2003–2021
*(Percentages of the total amount)*



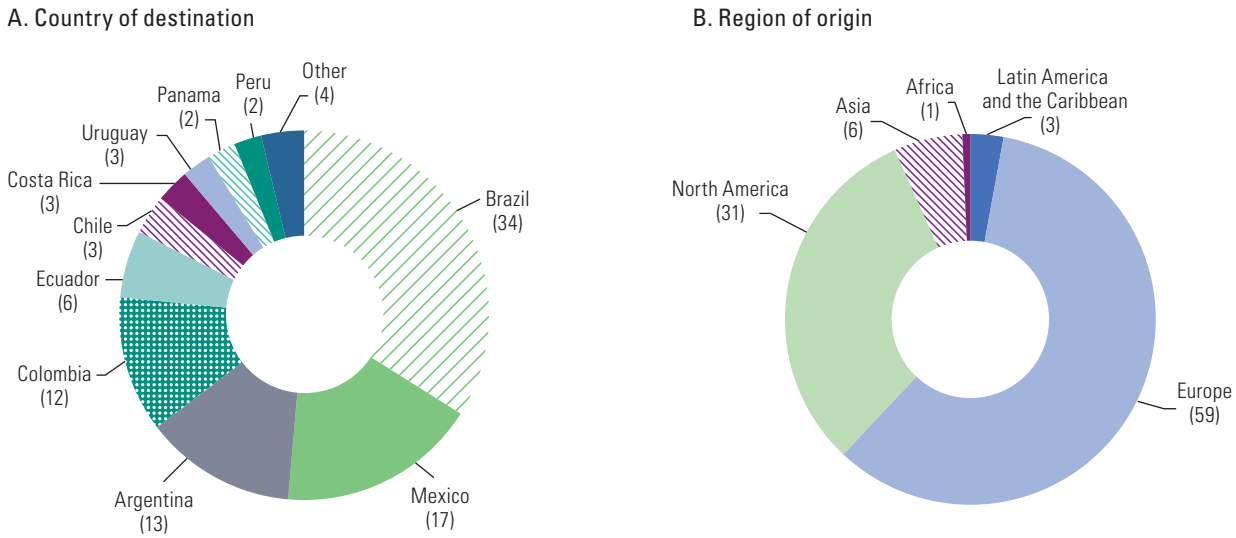

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from fDi Markets.

The total number of projects targeting the pharmaceutical sector between 2003 and 2021 represents 0.6% of the total number of announcements across all sectors in the region. The figure amounts to more than 1% of announcements in only two countries: Ecuador (3.7%) and the Bahamas (4.4%). However, in some notable years, pharmaceutical sector announcements were more significant for some countries, either because the total number of announcements for the country declined or because some countries accounted for few but large announcements by transnationals in the sector. In Argentina, for example, in 2021, the total number of announced investments in the country fell by 14% compared to the previous year. In this context, the three expansion projects of the German pharmaceutical company Bayer in the province of Buenos Aires, for a total of US$ 150 million, represented 4.2% of the total announcements for the country that year.

By contrast, in Costa Rica, announcements increased by 12% in 2021 compared to 2020, and the pharmaceutical sector increased its weight in the total number of announcements in that country: from 1.2% in 2020 to 8.5% in 2021. That year, five projects were announced in Costa Rica in the sector, three of which were related to the development of APIs. These include two projects announced by the Swiss group Roche, totalling US$ 104.1 million, and three projects by United States companies Pfizer (US$ 3.3 million), Viatris (US$ 1.4 million) and cbdMD (US$ 0.5 million).

With respect to the destinations of the announced investments, Brazil (33.9%) and Mexico (17.4%) stood out, as in the case of mergers and acquisitions, while in terms of origin, Swiss (20.8%) and United States companies (19.3%) were notable. Latin American countries accounted for only 3% of the total amount announced between 2003 and 2021 (see figure II.16). Thus, the international expansion of Latin American pharmaceutical companies to other countries in the region has occurred more through the acquisition of existing assets than through the building of new capacities.

**Figure II.16**
Latin America and the Caribbean: FDI project announcements, by country of destination and region of origin, 2003–2021
*(Percentages of the total amount)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from fDi Markets.

An interesting point to note is the presence of investments in non-traditional sectors, especially those related to the development of cannabis-based medicines. Although these are small investment amounts compared to the traditional pharmaceutical sector, the region has an important reserve of bionatural resources for the formulation of these drugs. Colombia, Costa Rica and Uruguay stand out as countries that have been working to attract investment in this sector (see box II.5).

**Box II.5**
Announcements of investments in the non-traditional medicine sector

In addition to the development and production of coronavirus vaccines, another sector that has featured prominently in announcements of FDI projects in the global pharmaceutical industry in recent years is the production of drugs based on cannabis or psychedelic substances. Although it still represents a small share of the total value (3.9% of announcements in 2021), this share has been growing since 2017 and in 2019 reached 19% of the total.

In 2021, there were two mega deals involving companies specializing in cannabis-derived medicines: Ireland's Jazz Pharmaceuticals PLC acquired 100% of United Kingdom-based GW Pharmaceuticals PLC for US$ 6.7 billion and Tilray Inc. of the United States bought 100% of Canada's Aphria Inc. for US$ 1.969 billion. Jazz Pharmaceuticals thus expanded its portfolio with pioneering drugs already established in the United States market and Tilray has become the world's largest company (in terms of sales) focused on adult-use cannabis products (Businesswire, 2021).

In addition to the approval of new uses for cannabidiol, the number of countries and regions where medicinal use of cannabis-derived drugs is authorized is increasing steadily. Thus, this type of operation is expected to become increasingly frequent (Grand View Research, 2022). Pfizer, for example, announced in 2022 the US$ 6.7 billion purchase of Arena Pharmaceuticals, a biotech company with a pipeline of cannabidiol-based therapies (Pfizer, 2022).

In Latin America, notable examples are the merger of the Colombian Cleaver Leaves with the United States-based Schultze Special Purpose Acquisition Corp in 2020, valued at US$ 206 million (Asocolcanna, 2020; Uruguay XXI, 2021) and the purchase of Chile's Alef Biotechnology SpA by Tilray in 2018 for US$ 3.8 million.

Uruguay, a pioneer country in this field, has regulated the production, marketing and consumption of cannabis since 2013 and is the home of an incipient export-oriented medical cannabis industry, which has received FDI. The country began exporting in 2019 and the following year sales abroad exceeded US$ 7.5 million (Uruguay XXI, 2021). Colombia is another prominent country in this regard, and since 2017 has regulated the manufacture of cannabis, the use of its seeds and its cultivation for medicinal and scientific purposes (MinSalud, 2022). The country hopes to expand productive areas, for which it would take advantage of its favourable geographical conditions and experience in the floriculture sector, as well as in the cannabis-related industry, with product development and R&D activities (InvestinColombia, 2022).

The Latin American market for cannabidiol-based pharmaceuticals is considered to harbour great growth potential, given its significant geographical advantages for the production of the raw material and the existence of a huge potential consumer market. However, regulatory issues and large disparities in institutional frameworks between countries in the region are seen as obstacles to increased foreign investment in the sector (Euromonitor, 2021; Uruguay XXI, 2021).

**Source**: Colombian Association of Cannabis Industries (Asocolcanna), "Schultze Special Purpose Acquisition Corp. y Clever Leaves International Inc. completan la combinación de negocios", 18 December 2020 [online] http://asocolcanna.org/noticias/clever-leaves-cotiza-desde-hoy-en-nasdaq/; Businesswire, "Tilray & Aphria announce closing of transaction that creates the 'new' Tilray – a global cannabis leader", 3 May 2021 [online] https://www.businesswire.com/news/home/20210503005294/en/Tilray-Aphria-Announce-Closing-of-Transaction-That-Creates-the-%E2%80%9CNew%E2%80%9D-Tilray-%E2%80%93-a-Global-Cannabis-Leader; Euromonitor, "Cannabis in Latin America", 2021 [online] https://www.euromonitor.com/cannabis-in-latin-america/report; Grand View Research, "Legal Marijuana Market Size, Share & Trends Analysis Report by Product Type (Flower, Oil And Tinctures), by Application (Medical, Adult Use), by Region (North America, Europe, APAC, LATAM, Africa), and Segment Forecasts, 2022 - 2030", 2022 [online] https://www.grandviewresearch.com/industry-analysis/legal-marijuana-market; ProColombia, "Cannabis medicinal y cosmético", 2022 [online] https://investincolombia.com.co/es/sectores/servicios-de-salud-y-ciencias-de-la-vida/cannabis-medicinal-y-cosmetico; Ministry of Health and Social Security, "Cannabis de uso medicinal", 2022 [online] https://www.minsalud.gov.co/salud/MT/Paginas/cannabis-uso-medicinal.aspx; Pfizer, "Pfizer completes acquisition of Arena Pharmaceuticals", 11 March 2022 [online] https://www.pfizer.com/news/press-release/press-release-detail/pfizer-completes-acquisition-arena-pharmaceuticals; Uruguay XXI, Cannabis sector in Uruguay, September 2021 [online] https://www.uruguayxxi.gub.uy/uploads/informacion/2bc6b4620064a250a12db1b8e61bb5e90d564564.pdf.

# C. Latin America and the Caribbean: opportunities to strengthen capacity in the pharmaceutical sector

## 1. A strategic industry with an expanding market

The pharmaceutical sector is strategic for Latin America and the Caribbean because of its importance in two areas central to the socioeconomic development of the region and the achievement of the Sustainable Development Goals (SDGs): (i) its impact on public health and (ii) its importance as a technology-based industrial sector.

In terms of public health and quality of life, non-communicable diseases are currently the greatest cause of mortality in Latin America. According to the definition of the World Health Organization (WHO, 2021), these include chronic diseases such as those related to cardiovascular and respiratory problems, or those linked to cancer or diabetes (Vargas, Rama and Singh, 2022).

In the absence of public health systems that provide coverage broad enough to pay for the treatment of these diseases, affected households resort to internal resources: out-of-pocket spending. In Latin America, out-of-pocket spending now accounts for the largest share of private spending on health and represents an average of 33.6% of total health spending in the region (ECLAC, 2021a). Among already vulnerable populations, these expenses have a substantial effect on the incidence of poverty in the countries of the region, especially because they tend to be regressive (with the biggest impact on households with fewer resources) (ECLAC, 2021a). Thus, we can speak of a vicious circle caused by noncommunicable diseases: on the one hand, they lead to the impoverishment of the population and, on the other hand, the poorest populations are more vulnerable to them (WHO, 2021).

Given the fragility of the health structure of the countries in the region, combined with the trend towards relatively rapid ageing of their populations (ECLAC, 2020) and the high probability of other pandemics with extreme consequences (Marani and others, 2021), access to effective, safe and affordable medicines is even more important from the point of view of public health and the well-being of the population.

Moreover, the Latin American and Caribbean market is one of the most promising in the world. With an estimated 660 million inhabitants in 2021 (ECLAC, 2022a), the value of drug purchases increased from US$ 34.3 billion in 2008 to more than US$ 69.5 billion in 2017 (Vargas, Rama and Singh, 2022). In addition, the region's sales are projected to grow by 9.7% on a cumulative average annual basis between 2021 and 2026, positioning this market as the fastest-growing in the world over the next six years (IQVIA, 2022a).[10] Qualitatively, the region's response to the COVID-19 crisis has shown a strong adherence of the Latin American population to vaccination programmes. Latin America ranks second in terms of the percentage of people who are fully vaccinated (69.7%), behind only the European Union (73.2%), although the trend varies considerably from one country to the next (ECLAC, 2022b).

Apparent consumption in the pharmaceutical industry[11] in the countries for which data on the gross value of production are available totalled US$ 41.033 billion on average from 2018–2019. The region's largest market is Brazil, followed by Mexico, Colombia and Chile (see figure II.17). On average, imports accounted for 49% of apparent consumption in the countries analysed.

[10] The IQVIA analysis (2022a) is based on data for Argentina, Brazil, Chile, Colombia, Ecuador, Mexico and Peru.
[11] Calculated as the gross value of production plus imports and minus exports.

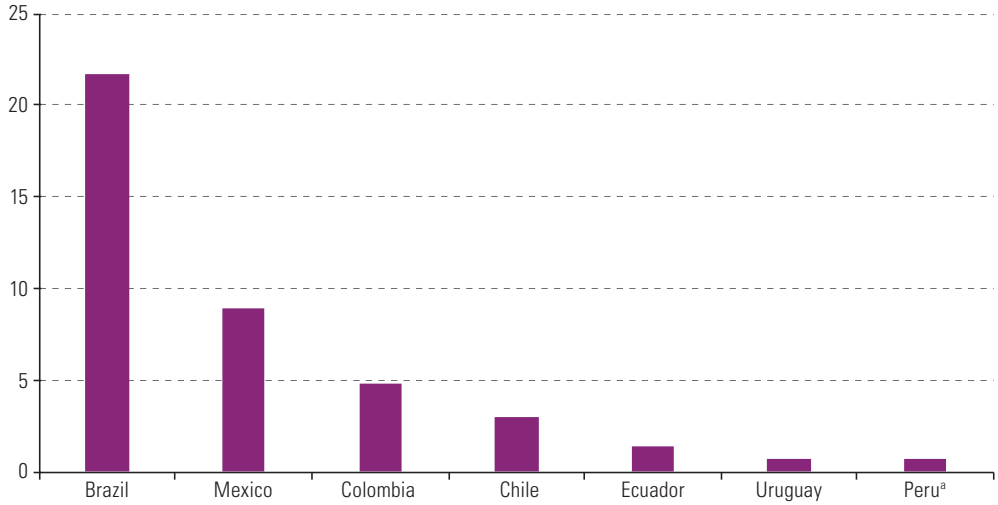



**Figure II.17**
Latin America (7 countries): apparent consumption in the pharmaceutical industry, annual average from 2018–2019
*(Billions of dollars)*

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from the Economic Indicators and Statistics Database (BADECON).
**Note**: The series reflects the gross value of production in the manufacture of pharmaceuticals, medicinal chemicals and botanical products for pharmaceutical use (does not include chemicals or pharmaceutical chemicals).
[a] The data for Peru refer to 2018.

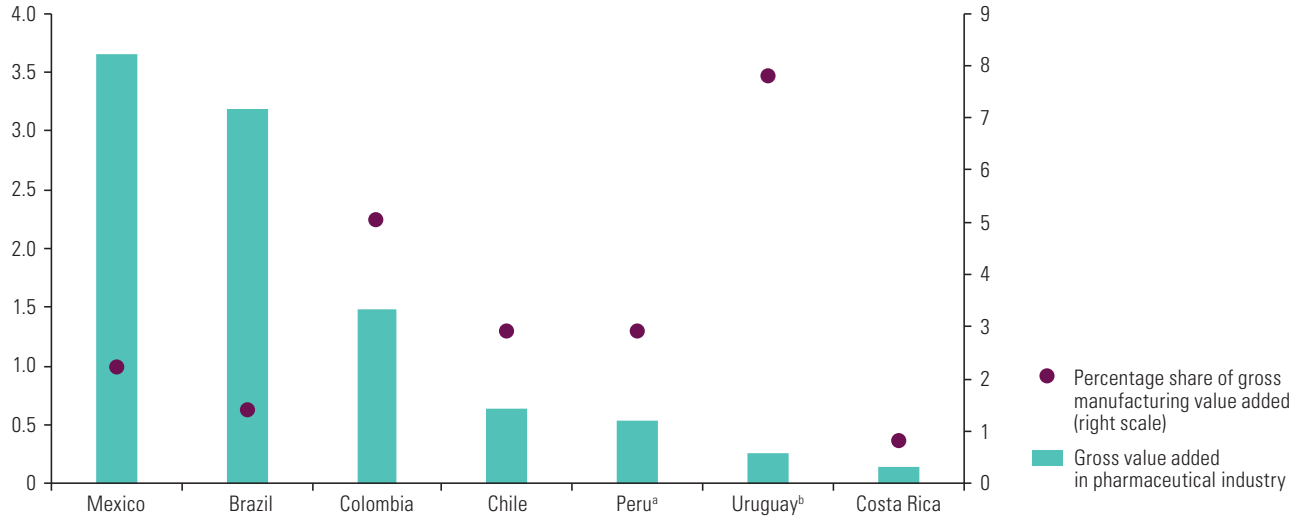
From the standpoint of the economic impact of manufacturing activities, the pharmaceutical industry harbours considerable potential for the creation of capacity, value and employment and the attraction of investment, owing to its innovative characteristics linked to industrial technological development. In Brazil, Colombia and Mexico, labour productivity and annual wages per worker in the industry are higher than the manufacturing average.[12] In Brazil, labour productivity per worker per year in the pharmaceutical industry was 134% higher than the manufacturing average in 2019. The second-largest gap was observed in Mexico (81%) and the third-largest in Colombia (29%). In terms of annual wages, these differences amounted to 120% in Brazil, 78% in Mexico and 56% in Colombia (ECLAC, 2021a).

For the region as a whole, the share of the pharmaceutical industry in output and employment is still small (0.4% of total GDP and 0.2% of employment) (ECLAC, 2021a). However, the situation in each country is mixed and in some small economies, such as Uruguay, the weight of the pharmaceutical industry in manufacturing gross value added is higher (see figure II.18). The productive activity in these countries corresponds to both national laboratories and the installation of plants of transnational companies, although the large global pharmaceutical companies operate in all the countries of Latin America and the Caribbean through the commercialization of their products and the building of production plants has been concentrated in a few countries of the region.

From the perspective of consumption, in a group of countries which produce their own goods, transnationals account for an average of 40% of total sales in the domestic market (including imported goods), while domestic firms account for 60% (see figure II.19). These figures differ in some market segments, depending on the type of product, and in general, transnationals have a greater share in branded drugs. In Brazil, for example, in 2019, foreign transnationals accounted for 77% of retail sales of patented medicines (innovative or original) and their share in generics and non-biological similars was much lower (24% and 20%, respectively) (Interfarma, 2020).

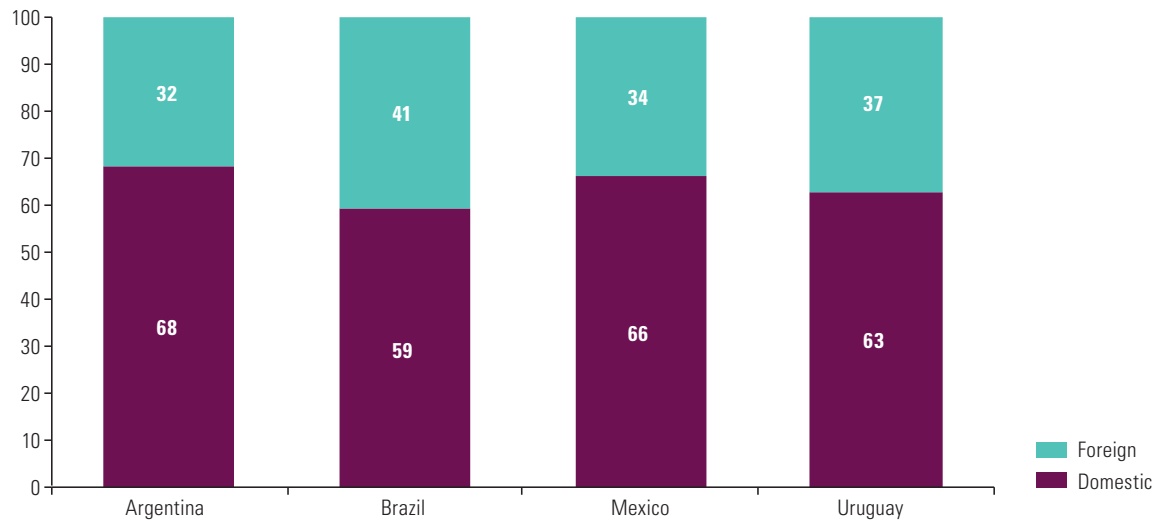
[12] Countries for which the information necessary for the calculation was available.

**Figure II.18**
Latin America (7 countries): gross value added in the pharmaceutical industry, annual average, 2016–2019
*(Billions of dollars and percentages)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from the Economic Indicators and Statistics Database (BADECON).
**Note**: The series reflects the gross value added of the manufacture of pharmaceuticals, medicinal chemicals and botanical products for pharmaceutical use (does not include chemicals or pharmaceutical chemicals).
[a] Data for Peru refer to the period 2016–2018.
[b] Data for Uruguay refer to 2019 only.

**Figure II.19**
Latin America (4 countries): share of domestic market sales of pharmaceutical products, by company ownership, 2020
*(Percentages)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Industrial Chamber of Argentine Pharmaceutical Laboratories (CILFA) for Argentina; Research-based Pharmaceutical Manufacturers Association (Interfarma), Guía 2020 Interfarma, 2020 for Brazil; Institute for Human Data Science (IQVIA) (year-on-year as from April 2021) for Mexico, and Indufarma for Uruguay.

The different specialization does not mean there are no domestic laboratories that are sales leaders in their countries. In Argentina, Brazil and Mexico, national laboratories play a key role in the production of drugs, biosimilars and generics. Among the top 10 laboratories in terms of sales in Argentina, for example, eight are domestic, as Argentina is one of the countries with the strongest presence of domestic companies among the top 10 (in Brazil, Mexico and Colombia, the corresponding figures are eight, six and one, respectively) (ECLAC, 2021a). Although most laboratories specialize in the production of generics, biosimilars and APIs, some domestics laboratories in the region produce

branded drugs, focus on R&D and, as seen in the previous section, have managed to internationalize through investments abroad. Examples include Roemmers and Bagó in Argentina, which, in addition to manufacturing generics and biosimilars, invest in the production of innovative drugs, and the company Aché in Brazil, which produces natural medicines. In Costa Rica, there are national laboratories that work jointly with international laboratories in the biotechnology sector (Vargas, Rama and Singh, 2022). Finally, Cuba has national laboratories and institutes active throughout the value chain, from basic research and clinical trials to production for the domestic and international markets.

The analysis of the number of companies that comply with good production practices to export to the European Union, according to the European Medicines Agency (EMA), and have the authorizations required by the United States Food and Drug Administration (FDA), offers a good approximation of the production capacities in the region. In particular, it gives an insight into contract manufacturing organizations and national laboratories that meet the production requirements of the industry. In Latin America, 79 companies and laboratories from 11 countries have plants that can export to these markets (see figure II.20). Among the authorized companies, global transnationals account for 54% of the total. In addition, of the total number of authorized companies, seven are eligible to export to the two regions: two from Mexico, two from Argentina and three from Brazil. Most of the authorizations were granted by EMA (62%). Among the authorizations granted for export to the United States (36%), 30% are categorized as manufacturing activities, 19% correspond to the analysis category and 18% are dedicated to the production of APIs. The remaining proportion of authorizations (33%) corresponds to the bottling, packaging and labelling categories.

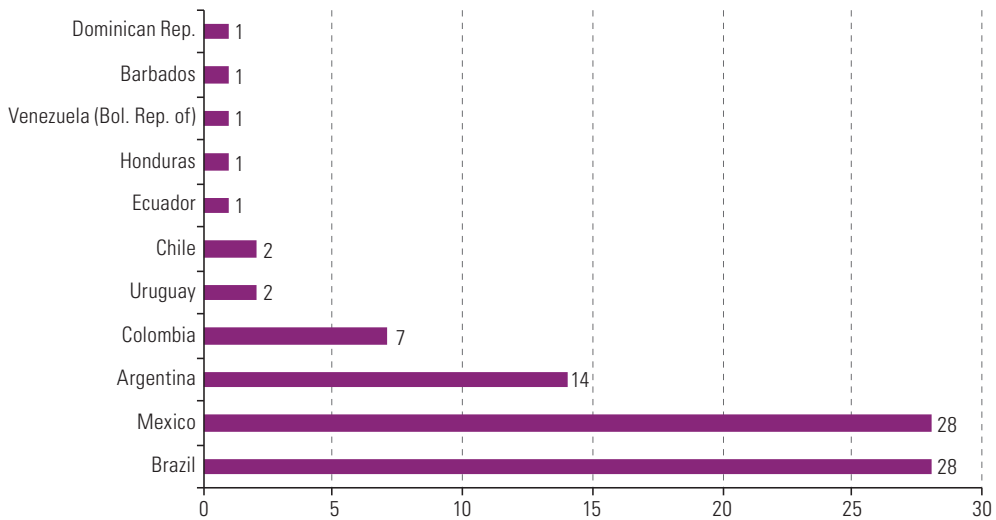



**Figure II.20**
Latin America (11 countries): number of pharmaceutical establishments authorized to export to the United States and the European Union, 2022

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from the Food and Drug Administration (FDA) of the United States and the European Medicines Agency (EMA).
**Note**: The seven companies authorized to export to the United States and the European Union are accounted for twice in the figure.

## 2. Exports weakened and the region was the main destination

The Latin American and Caribbean region accounts for a small share of international trade in pharmaceuticals and biopharmaceuticals: between 2018 and 2020, the region as a whole accounted for 1.1% of global exports. In addition, exports have shown a downward trend over the past decade. They have declined by nearly 30% and a persistent trade deficit in pharmaceuticals and biopharmaceuticals has been consolidated. In 2020, the value of imports was almost five times that of exports (ECLAC, 2021b).

In terms of composition, medicines account for almost two thirds of total exports and 50% of imports. Most of the drugs exported are generic and mainly supply the intraregional market. Active pharmaceutical ingredients (APIs) are the other major component of the region's trade, accounting for 9% of exports and 20% of imports (see figure II.21). The share of active ingredients in the region's exports has declined over the last decade. Between 2010 and 2012, these products accounted for 18% of regional exports.

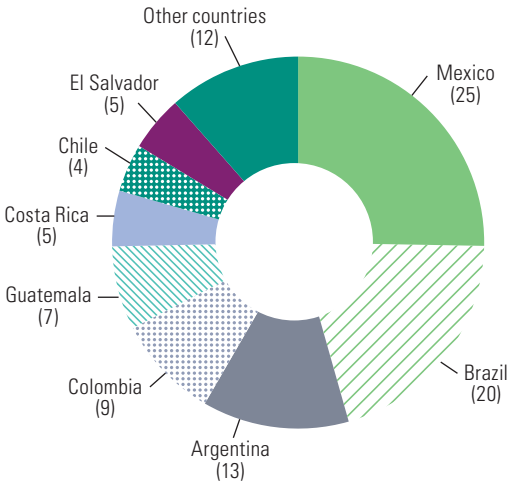
**Figure II.21**
Latin America and the Caribbean: trade in pharmaceutical products, by main category, 2008–2020[a]
*(Billions of dollars)*


**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations, UN Comtrade Database [online] https://comtrade.un.org/.
[a] Excludes Panama.

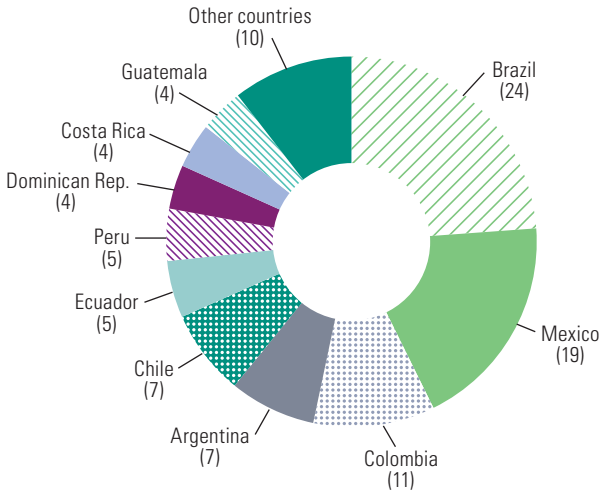
The origin of exports reflects the characteristics of the region's pharmaceutical industry. Brazil and Mexico are the main exporters and accounted for 26% and 24% of total exports, respectively, in 2020. In terms of active ingredients, Brazil and Argentina account for three quarters of total regional exports (see figure II.22).

**Figure II.22**
Latin America and the Caribbean: distribution of trade in pharmaceutical products, by category and country, 2020[a]
*(Percentages)*

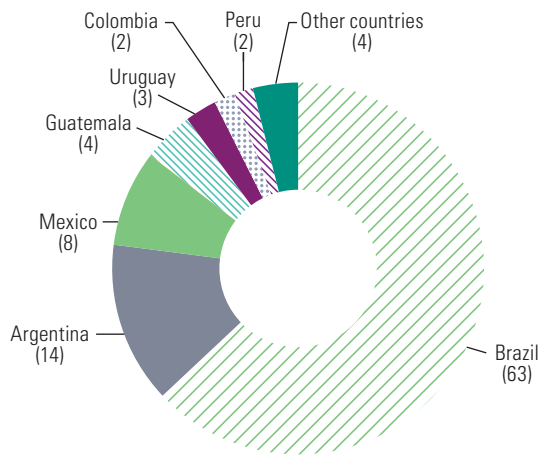
A. Exports of all pharmaceutical products



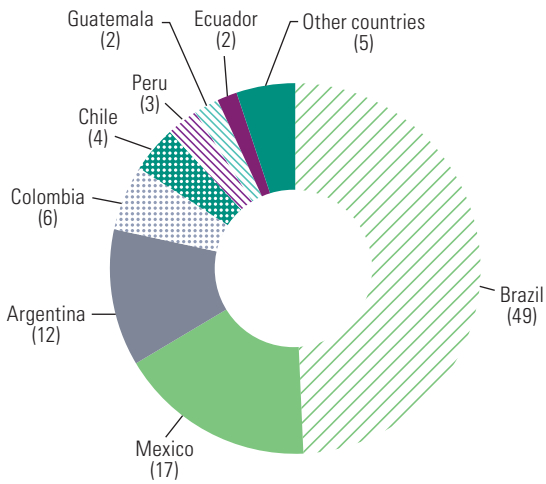

B. Imports of all pharmaceutical products




C. Exports of active ingredients




D. Imports of active ingredients




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations, UN Comtrade Database [online] https://comtrade.un.org/.
[a] Excludes Panama.

Exports of pharmaceutical and biopharmaceutical products have been concentrated in three main destinations. Between 2018 and 2020, the intraregional market was the main destination, absorbing 46% of the total value of exports. The United States and the European Union accounted for 25% and 22% of the region's exports, respectively (ECLAC, 2021b). The Dominican Republic and Mexico are the largest suppliers of pharmaceutical products from the region that are imported into the United States. In particular, 71% of the Dominican Republic's exports and 53% of Mexico's exports are oriented towards the United States, largely because of the pharmaceutical companies set up in these countries to supply that market.

While the main suppliers of pharmaceuticals to the region are the European Union and the United States, with shares of 50% and 19%, respectively, between 2018 and 2020, the intraregional market remains the most important for the majority of countries in the region. For the smaller economies, it represents 90% of drug imports (ECLAC, 2021b). During the three-year period 2018–2020, 10% and 6% of imports originated from China and India, respectively.

## 3. The need to define strategies in a changing world

Although the pharmaceutical industry in Latin America and the Caribbean has significant productive and research capacities, as briefly discussed, the region remains heavily dependent on extraregional imports of innovative drugs and production inputs (ECLAC, 2021b). Pandemic-related disruptions in the supply chains of pharmaceuticals from abroad have highlighted the dependence of the global pharmaceutical sector on the production of APIs from China and India. Moreover, the pandemic has highlighted the vulnerability of regional markets in terms of imports of medicines and, in particular, vaccines. In this context, capacity-building in the pharmaceutical sector has become strategic in order to face future health crises and increase the resilience of supply chains to external shocks. Developed countries, including the United States and the member countries of the European Union, have implemented industrial strategies to increase their production capacities for APIs and diversify external suppliers.

The policy spaces available to developing countries to build local production capacities in the pharmaceutical industry are much more limited than those historically available to the countries that currently lead the industry. For example, international agreements impose limits on the use of certain policy instruments, such as export restrictions and trade-related investment measures, or rules for countries to use existing knowledge and technology in industry. However, the structural changes that the pharmaceutical sector is undergoing worldwide, and the recognition of the strategic role of this sector for development, open up opportunities to devise industrial strategies that leverage the flexibility provided to developing countries in the framework of international agreements aiming to strengthen local capacity.

In Latin America and the Caribbean, the development of the pharmaceutical industry requires industrial strategies to strengthen national production capacities, increase investment in R&D and consolidate regional integration in terms of regulation, standards and production and distribution chains.

Against this backdrop, the countries of the region have expressed interest in strengthening the capacities of the pharmaceutical industry and, within the framework of CELAC, approved a plan that should contribute to the development of regional capacities to achieve greater productive autonomy in the health sector (ECLAC, 2021a). The plan gives a central role to productive policies aimed at developing regional capacities throughout the pharmaceutical industry value chain. It also emphasizes the need to bolster regional integration in commercial, productive and health matters in order to create a market large enough to be reach a competitive scale of production in the pharmaceutical sector.

## 4. The potential contribution of FDI to the development of the industry

The strategic use of FDI to foster local capacity development and increase productivity and employment, particularly in high value added activities, is especially important in technology- and knowledge-intensive sectors such as the pharmaceutical industry. In fact, the literature on the role of FDI in manufacturing capacity development shows that FDI in high value added activities can help facilitate the transfer of knowledge and technology. However, the benefits of FDI in technology- and knowledge-intensive sectors depend, among other factors, on the capacity of local industry, the technology gap between foreign and domestic firms, local investments and technology policies. Therefore, it is essential to design strategies to attract investment that complement industrial and technological development strategies (see various analyses of the role of FDI in development in Kolk, Kourula and Pisani, 2017; Knoerich, 2017; Lipsey and Sjöholm, 2005; Saggi, 2002; Fan, 2002; Görg and Greenaway, 2001 and UNCTAD, 2012).

Over the past decades, many developing countries, such as Bangladesh, China, India, Indonesia, the Republic of Korea, Singapore and South Africa, have implemented pharmaceutical industry development strategies. In some cases, policies aimed at attracting FDI have played

a complementary role in the development of local capacities and insertion into global value chains. Various packages of instruments have been designed to promote quality investments in the pharmaceutical sector, depending on the technological capacities of domestic companies, the level of development of the sector and positioning in global value chains.

For example, FDI policy in India has evolved with the development of the sector. Prior to 2011, FDI projects aimed at manufacturing drugs and pharmaceuticals did not require any prior approval, except for some licensed drugs and specific technologies (see Government of India, 2001). In 2011, following a wave of acquisitions of local companies, the government introduced limitations on investments made through mergers and acquisitions. The objective was to safeguard the production of essential drugs for the domestic market and the R&D capabilities of local companies by incentivizing greenfield investments to build new production, research and development capacities (see Government of India, 2011). Since 2016, some of the restrictions have been relaxed and purchases of up to 74% of local companies are allowed, provided that the companies ensure that the level of production and distribution of essential drugs for the domestic market and the level of R&D spending are maintained (Government of India, 2016).

Until 1980, the Republic of Korea had a restrictive FDI policy, which favoured joint ventures and licenses over acquisitions or the establishment of foreign companies. Foreign investments had to be aligned with the priorities of the national plan and to be approved by the government. Free trade zones were created in the 1970s, the law banning pharmaceutical imports of drugs that can be produced locally was repealed in the 1980s and patents have been recognized and granted since 1987 (Kim, McGuire and Kyle, 2015). In 1998, the government passed a new Foreign Investment Promotion Act (amended in 2012). Contrary to the policies of the previous decade, this act promoted FDI and did not include any specific restrictions as long as the investments did not pose a threat to national security, public health or environmental conservation. Today, the Republic of Korea offers a number of incentives to attract foreign companies to the pharmaceutical sector. These include tax and duty reductions for companies developing cutting-edge technologies classified as new drivers of growth, and subsidies for companies engaged in R&D and manufacturing activities with at least 30% foreign investment. At the same time, incentives for manufacturing in foreign investment zones and free trade zones were offered (see the amendment to the Foreign Investment Promotion Act in 2012).

The strategies of most developing countries that have successfully harnessed FDI for the development of the pharmaceutical industry share some common features:

(i) They are part of a medium- to long-term development strategy for the pharmaceutical industry and seek to contribute to the achievement of the strategy's objectives.

(ii) They evolve according to the international dynamics of the sector and its development at the local level.

(iii) They include instruments to promote the creation of collaborative links between the private sector, the public sector and R&D actors (e.g. creation of technology parks and industrial clusters).

(iv) They are complemented by mechanisms to stimulate domestic investment and by public investment in R&D.

(v) They are complemented by policies aimed at developing and strengthening skills.

(vi) They are complemented by legal and regulatory frameworks in line with the requirements of the sector.

In the region, based on a survey conducted in Mexico with the support of the National Pharmaceutical Industry Chamber (CANIFARMA), pharmaceutical companies believe that in order to attract more investment to the industry, it is necessary to strengthen the sector's capabilities, promote the development of suppliers and ensure there are clear regulatory frameworks for attracting investment (see box II.6).

**Box II.6**
The pharmaceutical industry in Mexico

A survey conducted by the Economic Commission for Latin America and the Caribbean (ECLAC), with the support of the National Pharmaceutical Industry Chamber (CANIFARMA) of Mexico, which represents Mexican and transnational companies in the country, inquired about the vision of companies in the sector regarding the determinants of foreign investment in the industry in Mexico and the factors that could enhance the development of this industry in the country.

Roughly 63% of the companies that participated in the study were foreign. Most established a foothold in the country through greenfield investments, either exclusively (68% of cases) or in combination with other methods (e.g. joint venture with a local company, acquisition or merger). The main reasons for establishing operations in Mexico were listed as market expansion and cost efficiencies, in addition to logistical factors. Sixty-one per cent of the companies contacted were exporters and said that, above all, trade agreements such as the Agreement between the United States of America, the United Mexican States, and Canada (USMCA) and bilateral agreements between Mexico and Latin America, were favourable for investments made in the country.

Forty-two per cent of the companies that responded to the survey believed that regulatory improvements were necessary to attract more investment in the pharmaceutical sector. Greater government transparency was also highlighted (37% of companies), with frequent mention of the need for greater clarity with respect to public procurement.

Regarding links with the local economy, 41.6% of the companies that participated in the survey stated that more than 50% of their suppliers were foreign. Specific products of the pharmaceutical value chain, such as active pharmaceutical ingredients (APIs) and excipients, other pharmaceutical raw materials and the necessary machinery, were predominantly purchased outside the Mexican market, indicating limited coordination of the pharmaceutical supply chain in the country. However, companies indicated that the greatest opportunities for improving the supply of goods and services by Mexican companies were precisely in APIs (indicated by 59% of companies), pharmaceutical raw materials (47% of companies) and excipients (41%).

When asked about the policies needed to deepen the link with the Mexican economy, 43% of the companies highlighted regulatory improvements, especially in terms of the agility and transparency of the country's regulatory authority. Aspects related to a national policy for the sector were also mentioned as necessary for the development of the pharmaceutical industry in Mexico (29% of the companies).

In terms of R&D activities, 78% of the respondents stated that they were carried out in Mexico, although the majority invested less than 10% of their overall R&D budget in the country. Eighty-eight per cent of the companies also stated that they did not engage in R&D collaborations or share technological knowledge with other important players in Mexico. According to the companies, this was mainly because of the lack of economic and fiscal incentives, especially those related to the sector's activities (29% of the companies mentioned this factor). Regulatory improvements and respect for intellectual property were also highlighted as elements to be developed in order to promote R&D.

**Source**: Online survey carried out by the Economic Commission for Latin America and the Caribbean (ECLAC) with the support of the National Pharmaceutical Industry Chamber (CANIFARMA).

The investment promotion initiatives in the pharmaceutical industry in Latin America and the Caribbean have more limited objectives. They focus on attracting transnational corporations and have fewer tools to incorporate them into a broader industrial development strategy.

There are some areas that the region's policies could explore. On the one hand, they could try to meet growing demand for medicines that is currently satisfied by intraregional trade, in specific areas such as APIs and biosimilar medicines, which will be developed in the following section. There is also the potential to invest in the region to export to the United States, as is the case with many companies in Costa Rica, the Dominican Republic and Mexico. This type of investment requires complementary policies to promote linkages with the local economy and encourage technological spillovers.

On the other hand, to meet the objectives of the plan for self-sufficiency in health matters (ECLAC, 2021a), transnationals could facilitate the building of regional chains,

strengthen regional R&D activities and support the creation of a regional platform for clinical trials. So far, these processes have not emerged naturally or extensively with the market incentives in the region. It is therefore necessary to define policies that promote these changes and create scenarios that are more auspicious for the development of a stronger pharmaceutical industry in Latin America and the Caribbean with greater positive impacts in terms of production and health care for the population.

The European Union could be a strategic partner for the development of this sector in the region. Not only have European companies participated successfully in Latin American and Caribbean markets, but the current cooperation scenario is conducive to seeking partnerships to improve local manufacturing and the resilience of health systems in the region. In this regard, in June 2022 the European Commission expressed the political will to build a partnership between the European Union and Latin America and the Caribbean to complement the social, economic and scientific links between the two regions. This partnership would make it possible to increase production capacity and strengthen health resilience in the region, among other fundamental objectives for the sector.

## 5. Investment promotion agencies in Colombia, Costa Rica and Uruguay have prioritized the pharmaceutical sector

In the health-care sector, investment flows tend to be highly regulated because of strategic and national security concerns. The European Commission, for example, issued a communication in March 2020 urging member States to conduct an analysis of FDI received in the area of health, in order to ensure that such investments do not have a negative impact on meeting the health needs of their citizens (European Commission, 2020b).

However, the pharmaceutical sector appears to be the segment of the health-care industry least affected by these regulations. FDI in the pharmaceutical industry has the potential to contribute to the transfer of know-how to the host country, owing to its technological and industrial nature, and to bring innovations and medical and treatment alternatives to countries without previous access to such resources (Mantovani and Wermelinger, 2020). In addition, there are indications that access to more modern drugs allows for a reduction in health-care spending, since the use of new drugs, despite being more expensive, would contribute to a reduction in non-pharmacological spending linked to access to the health-care system, which brings benefits to governments and increases the well-being of the population (Carrasco and Harrison, 2020).

Worldwide, interest in attracting investment in the pharmaceutical industry is widespread. According to a survey conducted by UNCTAD among 188 national investment promotion agencies in 2021, 82% were actively promoting the attraction of FDI for the manufacture of pharmaceuticals, biopharmaceuticals and vaccines in their regions of operation (UNCTAD, 2021a).

Success in attracting investment to the pharmaceutical sector depends on the basic prerequisites for the operation of the sector, such as the availability of skilled labour, basic infrastructure and access to inputs, as well as complex institutional and tax frameworks and the necessary health and intellectual property regulation. Other important elements relate to the size and growth potential of the domestic market, export facilities, geographic location and the presence of a network of related companies, factors that attract foreign companies. In this context, investment promotion agencies play an important role, since they are fundamental not only to publicize the

aforementioned aspects, but also to achieve internal coordination in the institutions of the host country, so that the establishment of transnationals is aligned with and contributes to the country's sustainable development strategy and the role of the pharmaceutical sector in this strategy.

In Latin America, investment promotion agencies not only vary in terms of scope and capacity, but also in terms of their prioritization of different sectors. Different strategies are employed in the region's pharmaceutical sector to attract investment. Efforts are made, in some cases, to highlight the potential of the domestic market and in others, to emphasize the productive structures and tax treaties that would facilitate production and exports.

The pharmaceutical sector is considered a priority for FDI inflows in some countries in the region, particularly Colombia, Costa Rica and Uruguay. The investment promotion agencies of these countries provide data, case studies and an overview of the sector's regulatory framework and the country's investment regime. In this way they make clear the advantages for investments in the sector.

The Investment Promotion Agency of Costa Rica (CINDE) stands out for the quality of information provided by its website on the health and related sectors, the visibility it gives to case studies and its facilitation of partnerships (UNCTAD, 2021b). CINDE lists the ecosystem of companies already established in the country and the accumulated experience in R&D, medical and diagnostic technology and biotechnology as the main competitive factor for attracting investment in the pharmaceutical sector. It also highlights Costa Rica's sustainable productivity model, free trade zone regime and the diversification of tax incentives for companies setting up in and outside the San José metropolitan area.[13]

ProColombia has a section on its website dedicated to health services and life sciences, which includes four subsectors: (i) medical cannabis and cosmetics; (ii) the pharmaceutical sector; (iii) health-care services and (iv) clinical trials. Regarding the pharmaceutical and cannabis sector in particular, ProColombia describes the importance of the country's geographic location as an advantage for the production and export of pharmaceutical products. It also highlights the country's regulatory framework, the potential of the domestic market and the network of companies in the sector that are already established in Colombia.[14]

In the same vein, the Uruguay XXI agency offers studies and fact sheets related to the pharmaceutical, life sciences, pharmaceutical logistics and cannabis sectors. It describes the opportunities in these subsectors, the existing regulatory framework, the export potential given the geographic location and the legal and fiscal structure of the country, and presents case studies of companies already established in the country.[15]

The Brazilian Trade and Investment Promotion Agency (Apex Brasil) does not include the pharmaceutical industry in its important areas for attracting investment, but has a specific sectoral website for promoting business in the pharmaceutical and health sector.[16] The project, Brazilian Pharma & Health, is supported by companies and associations in the sector and aims to develop the sector through internationalization and the search for potential and priority markets. However, the focus is on exports of Brazilian pharmaceutical companies, although data related to investment opportunities in the pharmaceutical sector are included in the project's publications and reports.[17]

13 See [online] https://www.cinde.org/en/sectors/smart-manufacturing/life-sciences.
14 See [online] https://investincolombia.com.co/en.
15 See [online] https://www.uruguayxxi.gub.uy/en/.
16 See [online] https://apexbrasil.com.br/.
17 See [online] http://bph.org.br/.

Similarly, InvestChile does not list the pharmaceutical sector as a key industry on its website.[18] However, it recently published an e-book on the country's pharmaceutical industry and investment opportunities in the sector, especially those related to the technological development of drugs and vaccines (InvestChile, 2022a). It also seeks opportunities to organize related events. The agency helped Chinese company Sinovac Biotech to set up its first vaccine factory in the region; construction began in May 2022 (InvestChile, 2022b).

ProDominicana (Dominican Republic) only mentions the "health and pharmaceutical" sector in its investment promotion materials, without providing further information on the subject.[19] In turn, the Investment and Export Network (REDIEX) (Paraguay) only mentions the health sector as a sustainable business opportunity in the country. However, no further details or information are available online.[20]

Mexico is one of the recipients of the most FDI in the pharmaceutical industry and the place of origin of many of the major Latin American transnationals in the sector. However, there is no evidence that it is currently actively promoting investments in the sector.

Naturally, the amount of information available and the investment of resources and tax incentives that local investment promotion agencies should dedicate depend on the objectives of the region's governments in relation to the pharmaceutical sector, as well as each country's competitive potential in this industry. However, in the cases of Costa Rica and Uruguay in particular, an active investment promotion agency can have an impact on attracting investment to the sector.

## D. Opportunities for the region and conclusions

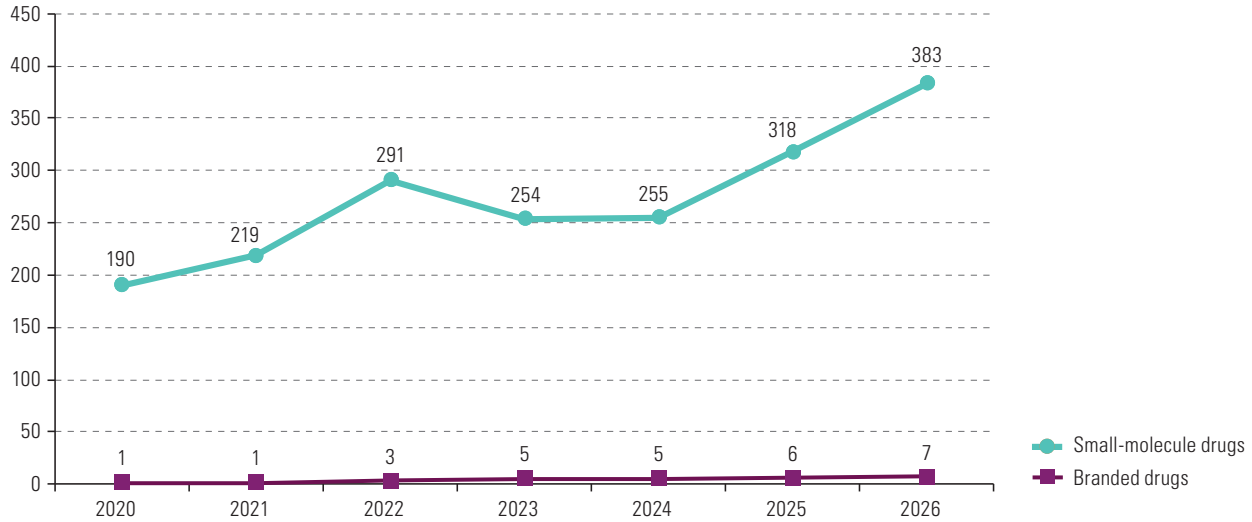
The renewed interest of the countries of Latin America and the Caribbean in leveraging the strategic potential of the pharmaceutical industry represents an opportunity to promote greater activity in this industry in the region, both through investments of domestic capital, public or private, and through FDI.

The following is an analysis of some of the global trends in the pharmaceutical industry that could represent opportunities for strengthening activity in the region.

Considering the existing generic production capacities in the region, one element to bear in mind is that, according to certain projections, the number of small-molecule drugs[21] and branded drugs with patents set to expire will double in the next five years. These amount to 383 small-molecule drugs and 7 branded drugs by 2026 (see figure II.23) (KPMG, 2020).

18 See [online] https://investchile.gob.cl/.
19 See [online] https://prodominicana.gob.do/.
20 See [online] http://www.rediex.gov.py/es/.
21 Small-molecule drugs are compounds with a low molecular weight that are used to diagnose, treat or prevent diseases. They include aspirin, diphenhydramine and natural products. Small-molecule drugs have been the pillar of medicine in the past few decades and the basis for some of the best-selling branded drugs. Despite the pharmaceutical sector's increasing focus on biological medicines, small-molecule drugs are still the largest category.

**Figure II.23**
Patents expiring worldwide, by drug type, 2020–2026
*(Number of patents)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of KPMG, *Generics 2030: three strategies to curb the downward spiral*, 2020 [online] https://advisory.kpmg.us/articles/2020/generics-2030-curb-downward-spiral.html.

This market segment offers new possibilities for the region's producers. On the one hand, this is because the barriers to entry are relatively low, since the subsector is not necessarily characterized by R&D activities and production processes that are not cutting-edge. On the other hand, it is because transnational companies tend to keep their original brands after patent expiration, but to relocate production to developing countries, especially India. This is also increasingly occurring in countries such as Brazil, where domestic companies are becoming suppliers of these products (Hasenclever and others, 2022). In particular, the region could leverage existing capacity in the manufacture of generic drugs to attract investment in high value added segments, such as specialty generics and biosimilars. Although these segments present challenges, they offer opportunities to strengthen capacity-building processes in pharmaceutical manufacturing.

For example, specialty generics are used to treat rare and chronic diseases such as cancer, multiple sclerosis and HIV/AIDS, and harbour growth potential of more than 10% (KPMG, 2020). Although these drugs are generic, sophisticated capacities are needed to manufacture them as they require complex APIs (such as polymeric compounds) and involve complex formulations and dosage forms (for example in the case of ophthalmological and transdermal products). Generic drug makers in the region have the required manufacturing capacity and could leverage investments by biotechnology companies and large pharmaceutical companies to produce specialty generics.

Likewise, the expiry of patents in the coming years represents opportunities for the development of innovative generic drugs, with improvements in format and dosage. These medicines require limited investment in R&D and large-scale production capacity. Coordination at the regional level could create regional value chains that include all aspects of the production process for these drugs, from R&D to manufacturing.

Similarly, biosimilars are a safe and less expensive alternative to biological medicines that face patent expiration in the near term. The biosimilars market, which is projected to record a compound annual growth rate (CAGR) of 9.5% between now and 2026, could represent an opportunity for small and medium-sized pharmaceutical companies

in the region that cannot afford the high R&D costs of biological medicine development, but could find space in this segment, where development costs are substantially lower (Ortiz-Prado and others, 2020). The production of this type of medicine in the region is still incipient and the countries remain heavily dependent on imports. Different national regulatory standards also add to the complexity of the scenario. Through regional coordination, biotechnology hubs could be created to meet the demand for these drugs in Latin America (Ortiz-Prado and others, 2020). In 2019, four countries in the region (Argentina, Brazil, Cuba and Mexico) had already obtained authorization from their regulatory agencies for the local production of biosimilars. While Argentina, Brazil and Cuba planned various forms of government support to develop local production, the situation in Mexico was characterized by the heavy involvement of the private sector (PAHO, 2022). In this context, regional initiatives that promote the use of generic and biosimilar drugs could be useful.

The manufacture of APIs could represent an opportunity to strengthen regional capacities and consolidate the insertion of some countries in the region, such as Argentina, Brazil, Colombia and Mexico, into global supply chains. One of the bottlenecks in the region during the pandemic was the limited regional production capacity for APIs. It would therefore be strategic to strengthen this capacity with a view to guaranteeing the security of drug supply in the regional market and in other places where it is possible, in order to promote the region's positioning in the manufacture of APIs for some segments of the global industry. Although most APIs require large-scale production capacity and generate relatively limited marginal gains, the region could leverage the development of other market segments (such as generics and quality medicines) to improve the sector's downstream integration, while developing the production capacity for complex APIs needed for new generation drugs.

In this context, initiatives that promote the development of APIs in local companies are needed. In Brazil, for example, thanks to non-reimbursable funding from the National Bank for Economic and Social Development (BNDES), the Oswaldo Cruz Foundation (FIOCRUZ) invested in the rapid incorporation of 100% domestic production of APIs for the COVID-19 vaccine produced by AstraZeneca (Agência BNDES de Notícias, 2021). Another initiative, following the example referred to in Brazil, is the special treatment given in public tenders to pharmaceutical companies using domestic APIs, as well as an accelerated approval regime by the Brazilian Health Regulatory Agency (ANVISA) for requests related to domestic APIs, which would favour the national development of these inputs (Hasenclever and others, 2022). At the same time, the search for new API suppliers by large multinational companies in the European Union and the United States could create new opportunities for companies in the region and for the establishment of new and sophisticated companies in the CMO and API manufacturing sectors.

Lastly, the development of clinical trials represents one of the key stages of the pharmaceutical value chain and is one of the most promising markets for Latin America and the Caribbean. Although the region has increased its share in and capacities for the development of clinical trials, most of the clinical studies that advance to phase III are conducted by international laboratories or institutes. Investing in capacity-building for clinical trials represents an opportunity to strengthen R&D capacities at the regional level, to exploit the market potential of CMOs as is the case internationally, and to strengthen regional chains by developing services for the region's biotechnology companies. Latin America and the Caribbean could learn from successful international experiences to invest in the development of a regional platform for clinical trials that meet the requirements of the global industry. A regional platform would allow capacity-building at the local level and attract investment in the more knowledge-intensive stages (see box II.7). To that end, it is essential to invest in the training of professional staff, the introduction of good clinical practices and the harmonization of regulatory processes.

**Box II.7**
Investing in R&D capacity-building: the Republic of Korea

In the modern pharmaceutical industry, clinical trials play a fundamental role in new drug development. The success of research processes carried out by major companies depends largely on clinical trials and the time needed to conduct them. The implementation stage of clinical trials has become one of the longest, most regulated and most capability-intensive in the pharmaceutical industry.

The Republic of Korea is one of the countries that have achieved stronger growth in clinical trial development. In 2020, almost 5% of clinical trials worldwide were conducted in that country (ClinicalTrials.gov, 2022) and more than 80% were financed by the industry.

The positioning of the Republic of Korea in the clinical trials segment derives from a proactive government policy to develop local capacity and attract global studies.

Since the early 2000s, the Government of the Republic of Korea has actively supported capacity-building for clinical trials and considered the country's positioning in this stage of strategic national interest. In 1995, the government approved rules on good clinical practices, which met international standards and facilitated the development of clinical trials in the country. Since then, the government has devised specific measures to streamline and strengthen clinical trials. In 2001, it adopted the standards of the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) on good clinical practices (GCP) and in 2002 it streamlined clinical trial authorization (CTA). In just one year, the number of clinical trials increased from 55 to 143. In 2004, the Regional Clinical Trial Centre was inaugurated in Seoul and in 2007 the government created the Korea National Enterprise for Clinical Trials (KoNECT)[a] to promote local capacity-building. Today, KoNECT manages 15 clinical trial centres, a training academy for professionals and a technology development fund that fosters innovation in clinical trials.

The Government of the Republic of Korea has also established a global centre of excellence to manage the Korea Clinical Trials Global Initiative (KCGI) with the aim of attracting international trials. Lastly, it created the Collaboration Centre, a one-stop shop for clinical trial planning, the creation of commercial networks and associations, and a space for experimenting and innovating. At present, most major pharmaceutical groups and contract research organizations (e.g. Janssen, MSD (Merck & Co.) and Novartis) conduct clinical trials in the Republic of Korea.

**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official information; Clinicaltrials.gov, 2022 [online database] https://clinicaltrials.gov/; D. Chee, M. S. Park and J. H. Sohn, "New initiatives for transforming clinical research in Korea", *Journal of Medicines Development Sciences*, vol. 1, No. 2, 2015; D. H. Chee, "Korean clinical trials: its current status, future prospects, and enabling environment", *Translational and Clinical Pharmacology*, vol. 27, No. 4, 2019.

[a] See [online] www.konect.or.kr.

CELAC approved a plan for self-sufficiency in health matters in Latin America and the Caribbean of which the ultimate goal is the development, expansion and competitive strengthening of research, development and production capacities for vaccines and medicines at the regional level (ECLAC, 2021a). The plan aims to promote regional cooperation in strengthening the pharmaceutical sector to leverage existing complementarities in the region with the objective of:

(i) Providing a stable, large-scale market that gives clear signals and certainty for firms to invest in.

(ii) Encouraging and facilitating research and development in innovative projects.

(iii) Supporting local production and integration into regional production chains.

As seen throughout this chapter, R&D and innovation capacities are a determining factor in the investment decisions of multinational pharmaceutical companies. Although the countries of the region have invested in developing a solid base of researchers in the pharmaceutical and biotechnology sectors, traditional market incentives and capacities of the production ecosystem are not enough to attract quality investment in the pharmaceutical sector. Thus, it is necessary to prioritize capacity-building in the pharmaceutical industry at the national and regional levels, implementing activities that enable the leveraging and expansion of existing capacities.

# Bibliography


Agência BNDES de Notícias (2021), "BNDES apoiou com recursos não reembolsáveis centro tecnológico da Fiocruz que produzirá IFA da vacina Covid-19", 9 June [online] http://agenciadenoticias.bndes.gov.br/detalhe/noticia/BNDES-apoiou-com-recursos-nao-reembolsaveis-centro-tecnologico-da-Fiocruz-que-produzira-IFA-da-vacina-Covid-19/.

Agencia EFE (2014), "Abbott amplía su presencia en Latinoamérica y su portafolio de productos genéricos de marca con la adquisición de CFR Pharmaceuticals", 16 May [online] https://www.efe.com/efe/america/comunicados/abbott-amplia-su-presencia-en-latinoamerica-y-portafolio-de-productos-genericos-marca-con-la-adquisicion-cfr-pharmaceuticals/20004010-3688891.

ATKearney (2019), *Complexity: The Big Challenge for Today's Top Pharma* [online] https://www.de.kearney.com/health/article/-/insights/die-pharmaindustrie-in-der-komplexitatsfalle.

Bogliacino, F. and M. Pianta (2016), "The Pavitt Taxonomy, revisited: patterns of innovation in manufacturing and services", *Economía Política*, vol. 33, July.

Bumpas, J. and E. Betsch (2009), *Exploratory study on active pharmaceutical ingredient manufacturing for essential medicines. Health, Nutrition and Population (HNP) discussion paper*, Washington, D.C., World Bank [online] https://openknowledge.worldbank.org/handle/10986/13682.

Carrasco, J. A. and R. Harrison (2020), *Impacto de la industria farmacéutica en Chile: "The Economic Footprint"*, Federation of Chilean Industry (SOFOFA) [online] https://cnlaboratorios.cl/wp-content/uploads/2020/07/Estudio-Impacto-Economico-de-la-Industria-Farmaceutica-en-Chile-The-Economic-Footprint_2020-julio.pdf.

Chopra, S. S. (2003), "Industry funding of clinical trials: benefit or bias?", *Jama*, vol. 290, No. 1, July.

Coriat, B. and L. Orsenigo (2014), "IPRs, public health and the pharmaceutical industry: issues in the post-2005 TRIPS agenda", *Intellectual Property Rights: Legal and Economic Challenges for Development*, M. Cimoli and others (eds.), Oxford University Press.

Coronel, M. R. (2017), "Las paradojas del caso Teva-Rimsa", *El Economista*, 29 March [online] https://www.eleconomista.com.mx/opinion/Las-paradojas-del-caso-Teva-Rimsa-20170329-0007.html.

Di Iorio, F. and M. L. Giorgetti (2020), "Launch of a product and patents: evidence from the US cardiovascular pharmaceutical sector", *Industry and Innovation*, vol. 27, No. 7.

ECLAC (Economic Commission for Latin America and the Caribbean) (2022a), "Statistics and Indicators", CEPALSTAT [online database] https://statistics.cepal.org/portal/cepalstat/dashboard.html?lang=en&temaIndicadores=394.

___(2022b), COVID-19 Observatory in Latin America and the Caribbean [online] https://www.cepal.org/es/subtemas/covid-19.

___(2021a), *Plan for self-sufficiency in health matters in Latin America and the Caribbean: lines of action and proposals* (LC/TS.2021/115), Santiago.

___(2021b), *International Trade Outlook for Latin America and the Caribbean, 2021* (LC/PUB.2021/14-P/Rev.1), Santiago.

___(2020), *Demographic Observatory, 2019* (LC/PUB.2019/24-P), Santiago.

EFPIA (European Federation of Pharmaceutical Industries and Associations) (2021), *The Pharmaceutical Industry in Figures: Key Data* [online] https://www.efpia.eu/media/602709/the-pharmaceutical-industry-in-figures-2021.pdf.

Ehrhardt, S., L. J. Appel and C. L. Meinert (2015), "Trends in national institutes of health funding for clinical trials registered in clinicaltrials.gov", *Jama*, vol. 314, No. 23.

*El Financiero* (2015), "Teva Pharmaceutical compra a Rimsa por dos mil 300 mdd", 1 October [online] https://www.elfinanciero.com.mx/empresas/teva-pharmaceutical-compra-a-rimsa-por-300-mdd/.

EMA (European Medicines Agency) (2020), "From laboratory to patient: the journey of a medicine assessed by EMA" [online] https://www.ema.europa.eu/en/documents/other/laboratory-patient-journey-centrally-authorised-medicine_en.pdf.

European Commission (2020a), "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Pharmaceutical Strategy for Europe" [online] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0761&from=EN.

___(2020b), "Communication from the Commission: guidance to the Member States concerning foreign direct investment and free movement of capital from third countries, and the protection of Europe's strategic assets, ahead of the application of regulation (EU) 2019/452 (FDI Screening Regulation)", 25 March [online] https://trade.ec.europa.eu/doclib/docs/2020/march/tradoc_158676.pdf.

___(2009), *Pharmaceutical sector inquiry final report* [online] http://ec.europa.eu/competition/sectors/pharmaceuticals/inquiry/staff_working_paper_part1.pdf.
Fan, E. X. (2002), "Technological spillovers from foreign direct investment–a survey", *ERD Working Paper Series*, No. 33, Asian Development Bank [online] https://hdl.handle.net/11540/2070.
FDA (Food and Drug Administration) (2018), "The drug development process" [online] https://www.fda.gov/patients/learn-about-drug-and-device-approvals/drug-development-process.
Fortune Business Insights (2022), "Contract research organization (CRO) services market size, share & COVID-19 impact analysis, by service type (early phase development services, clinical, laboratory service and others), by application (oncology, CNS disorder, cardiology, infectious disease, metabolic disorder, renal/nephrology and others), by end-user (pharmaceutical and biotech companies, medical device companies, academic and research institutes and others), and regional forecast, 2022-2029" [online] https://www.fortunebusinessinsights.com/industry-reports/contract-research-organization-cro-services-market-100864.
___(2020), "Contract manufacturing organization (CMO) market size, share & industry analysis, by type (API manufacturing, finished dosage from manufacturing (solid dosage forms, injectables, and others), and packaging), and regional forecast, 2019-2016" [online] https://www.fortunebusinessinsights.com/segmentation/contract-manufacturing-organization-cmo-market-102658.
Francas, D. (2021), "Global pharmaceutical supply chains and resilience strategies: overview and implications of the COVID-19 pandemic" [online] https://www.researchgate.net/publication/348994292_Global_Pharmaceutical_Supply_Chains_and_Resilience_Strategies_Overview_and_Implications_of_the_Covid-19_Pandemic.
Gautam, A. and X. Pan (2016), "The changing model of big pharma: impact of key trends", *Drug Discovery Today*, vol. 21, No. 3, March.
Görg, H. and D. Greenaway (2001), "Foreign direct investment and intra-industry spillovers: a review of the literature", *Research Paper*, No. 2001/37, Nottingham, Leverhulme Centre for Research on Globalisation and Economic Policy.
Government of India (2016), "Subject: Review of Foreign Direct Investment (FDI) policy on various sectors", *Press Note*, No. 5, 24 June [online] https://dpiit.gov.in/sites/default/files/pn5_2016.pdf.
___(2011), "Subject: Review of the policy on Foreign Direct Investment in pharmaceuticals sector- insertion of a new paragraph 6.2.25 to 'Circular 2 of 2011-Consolidated FDI Policy'", *Press Note*, No. 3, 8 November [online] https://dpiit.gov.in/sites/default/files/pn3_2011_1.pdf.
___(2001), "Subject: Revision of existing sectoral guidelines and equity cap on Foreign Direct Investment (FDI), including investment by Non Resident Indians (NRIs) and Overseas Corporate Bodies (OCBs)", *Press Note*, No. 4, 21 May [online] https://dpiit.gov.in/sites/default/files/press4_01.pdf.
Graham, S. J. and M. J. Higgins (2007), "The impact of patenting on new product introductions in the pharmaceutical industry", 4 April [online] https://ssrn.com/abstract=984628.
Haakonsson, S. J. (2009), "The changing governance structures of the global pharmaceutical value chain", *Competition & Change*, vol. 13, No. 1, March.
Han, K. and others (2021), "The dawn of China biopharma innovation", Life Sciences: Our Insights, McKinsey & Company, 29 October [online] https://www.mckinsey.com/industries/life-sciences/our-insights/the-dawn-of-china-biopharma-innovation.
Hasenclever, L. and others (2022), "O setor farmacêutico brasileiro: desafios e oportunidades para integração com a América Latina", unpublished.
Hay, M. and others (2014), "Clinical development success rates for investigational drugs", *Nature Biotechnology*, vol. 32, No. 1, January.
Interfarma (Research-based Pharmaceutical Manufacturers Association) (2020), *Guía 2020 Interfarma* [online] https://www.interfarma.org.br/library/guia-interfarma-2020/.
InvestChile (2022a), *The Pharmaceutical Industry in Chile: Installed Capacity, Stakeholders, Investment Incentives* [online] https://tools.investchile.gob.cl/the-pharmaceutical-industry-in-chile.
____(2022b), "Sinovac initiated construction of its new plant in Chile", 20 May [online] http://blog.investchile.gob.cl/sinovac-initiated-construction-of-its-new-plant-in-chile.
IQVIA (Institute for Human Data Science) (2022a), *The Outlook for the Latin American Pharmaceutical Market* [online] https://www.iqvia.com/library/publications/the-outlook-for-the-latin-american-pharmaceutical-market.
___(2022b), *The Global Use of Medicines 2022: Outlook to 2026* [online] https://www.iqvia.com/insights/the-iqvia-institute/reports/the-global-use-of-medicines-2022.

___(2020), *Global Medicine Spending and Usage Trends: Outlook to 2024* [online] https://www.iqvia.com/insights/the-iqvia-institute/reports/global-medicine-spending-and-usage-trends.
___(2019), *Emerging Biopharma's Contribution to Innovation* [online] https://www.iqvia.com/insights/the-iqvia-institute/reports/emerging-biopharmas-contribution-to-innovation#:~:text=Emerging%20biopharma%20companies%20originated%20and,the%20United%20States%20in%202018.
Kedron, P. and S. Bagchi-Sen (2012), "Foreign direct investment in Europe by multinational pharmaceutical companies from India", *Journal of Economic Geography*, vol. 12 No. 4, July.
Kim, D., A. McGuire and M. Kyle (2015), *Korean pharmaceutical industry policy: lessons for Korea*, Research Reports, No. 2015-37, Sejong, Korea Institute for Health and Social Affairs.
Knoerich, J. (2017), "How does outward foreign direct investment contribute to economic development in less advanced home countries?", *Oxford Development Studies*, vol. 45, No. 4.
Kolk, A., A. Kourula and N. Pisani (2017), "Multinational enterprises and the Sustainable Development Goals: what do we know and how to proceed?", *Transnational Corporations*, vol. 24, No. 3.
KPMG (2021), *Biopharmaceuticals deal trends: competition for innovation overcomes economic headwinds* [online] https://advisory.kpmg.us/articles/2021/biopharmaceuticals-deal-trends.html#:~:text=A%20new%20KPMG%20report%2C%20Biopharmaceuticals,2021%20in%20the%20deal%20market.
___(2020), *Generics 2030: three strategies to curb the downward spiral* [online] https://advisory.kpmg.us/articles/2020/generics-2030-curb-downward-spiral.html.
Lipsey, R. E. and F. Sjöholm (2005), "The impact of inward FDI on host countries: why such different answers?", *Does foreign direct investment promote development?*, T. H. Moran, E. M. Graham and M. Blomström (eds.), Centre for Global Development.
Malerba, F. and L. Orsenigo (2015), "The evolution of the pharmaceutical industry", *Business History*, vol. 57, No. 5, June.
Mantovani, I. and M. Wermelinger (2020), "Can FDI improve the resilience of health systems?", Organisation for Economic Co-operation and Development (OECD) [online] https://www.oecd.org/investment/Can-FDI-improve-the-resilience-of-health-systems.pdf.
Marani, M. and others (2021), "Intensity and frequency of extreme novel epidemics", *Proceedings of the National Academy of Sciences (PNAS)*, vol. 118, No. 35, August.
Moniz, S., A. P. Barbosa-Póvoa and J. Pinho de Sousa (2015), "On the complexity of production planning and scheduling in the pharmaceutical industry: the Delivery Trade-offs Matrix", *Computer Aided Chemical Engineering*, vol. 37, May.
OECD (Organisation for Economic Co-operation and Development) (2018), *Pharmaceutical Innovation and Access to Medicines,* OECD Health Policy Studies, Paris, OECD Publishing.
Ortiz-Prado, E. and others (2020), "Current trends for biosimilars in the Latin American market", *Generics and Biosimilars Initiative Journal (GaBI Journal)*, vol. 9, No. 2.
PAHO (Pan American Health Organization) (2022), *Regulatory System Strengthening in the Americas: Lessons Learned from the National Regulatory Authorities of Regional Reference*, Washington, D.C.
Pavitt, K. (1984), "Sectoral patterns of technical change: towards a taxonomy and a theory", *Research Policy*, vol. 13, No. 6, December.
Pharma Intelligence (2022), "Pharma R&D Annual Review: Navigating the Landscape", White Paper [online] https://pages.pharmaintelligence.informa.com/rdreview#.
*Pharmaceutical Executive* (2022), "2022 Pharm Exec 50", vol. 42, No. 6, June.
Pharmaceutical Online (1998), "Astra, Zeneca to merge", 9 December [online] https://www.pharmaceuticalonline.com/doc/astra-zeneca-to-merge-0001.
Pro Generika (2020), "Where do our active pharmaceutical ingredients come from? – A world map of API production", September [online] https://www.progenerika.de/app/uploads/2020/10/API-Study_short-version_EN.pdf.
Rasmussen, B. (2007), "Response of pharmaceutical companies to biotechnology: structure and business models", *Working Paper*, No. 33, Pharmaceutical Industry Project, Melbourne, Centre for Strategic Economic Studies, Victoria University.
Reuters (2010), "Aprueban venta de brasileña Medley a farmacéutica Sanofi-Aventis", 19 May [online] https://www.reuters.com/article/internet-farmaceuticas-sanofi-medley-idLTASIE64I1BJ20100519.
Richman, B. and others (2017), "Pharmaceutical M&A activity: effects on prices, innovation, and competition", *Loyola University Chicago Law Journal*, vol. 48, No. 3.
Saggi, K. (2002), "Trade, foreign direct investment, and international technology transfer: a survey", *The World Bank Research Observer*, 17 No. 2, September.

Schlander, M. and others (2021), "How much does it cost to research and develop a new drug? A systematic review and assessment", *PharmacoEconomics*, vol. 39, No. 11, November.
Sertkaya, A. and others (2014), *Examination of Clinical Trial Costs and Barriers for Drug Development*, United States Office of the Assistant Secretary for Planning and Evaluation.
UNCTAD (United Nations Conference on Trade and Development) (2021a), "Promoting investment in health post-pandemic: a global trend?", *The IPA Observer*, No. 11, 21 July [online] https://unctad.org/system/files/official-document/diaepcbinf2021d4_en.pdf.
___(2021b), "UNCTAD awards agencies for promoting investment in health and the blue economy", 19 October [online] https://unctad.org/news/unctad-awards-agencies-promoting-investment-health-and-blue-economy.
___(2012), *World Investment Report 2012: Towards a New Generation of Investment Policies*, Geneva [online] https://unctad.org/system/files/official-document/wir2012_embargoed_en.pdf.
Vargas, V., M. Rama and R. Singh (2022), "Pharmaceuticals in Latin America and the Caribbean: players, access, and innovation across diverse models", *Other Papers*, World Bank, January [online] https://doi.org/10.1596/36871.
Visnji, M. (2019), "Pharma industry merger and acquisition analysis 1995 to 2015", Revenues and Profits, 11 February [online] https://revenuesandprofits.com/pharma-industry-merger-and-acquisition-analysis-1995-to-2015/.
Wang, R. L. D. (2008), "Biomedical upstream patenting and scientific research: the case for compulsory licenses bearing reach-through royalties", *Yale Journal of Law and Technology*, vol. 10, No. 251.
WHO (World Health Organization) (2021), "Noncommunicable diseases", 13 April [online] https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases.
___(2022a), Global Observatory on Health Research and Development [online] https://www.who.int/observatories/global-observatory-on-health-research-and-development.
___(2022b), "WHO Coronavirus (COVID-19) Dashboard with Vaccination Data" [online] https://covid19.who.int/data.
___(1990), *The role of the pharmacist in the health care system*, Geneva [online] https://apps.who.int/iris/bitstream/handle/10665/61679/WHO_PHARM_DAP_90.1.pdf?sequence=1&isAllowed=y.
Williams, L. (2009), "Big pharma gets bigger", fDi Intelligence [online] https://www.fdiintelligence.com/article/21623.
Wong, C. H., K. W. Siah and A. W. Lo (2019), "Estimation of clinical trial success rates and related parameters", *Biostatistics*, vol. 20, No. 2, April.
Yadav, L. (2021), "Indian pharmaceutical industry needs to explore increased trade with Latin America: expert", Pharmabiz, 21 August [online] http://www.pharmabiz.com/NewsDetails.aspx?aid=141985&sid=1.
Zeller, C. (2010), "The pharma-biotech complex and interconnected regional innovation arenas", *Urban Studies*, vol. 47, No. 13, November.
Zeller, C. and A. Van-Hametner (2018), "Reorganizing value chains through foreign direct investment: Austria's pharmaceutical industry international expansion", *Competition & Change*, vol. 22, No. 5, August.

CHAPTER III

# The emerging electric vehicle industry: opportunities for Latin America

# Introduction

Profound transformations are about to take place in urban mobility. Oil has traditionally been the predominant source of energy for transport, making it responsible for around 25% of global greenhouse gas emissions (UNEP, 2021a). At the same time, the consolidation of urbanization has generated greater concern over vehicular congestion, air quality and their effects, leading to changes in consumer preferences. Traffic congestion is estimated to cost about 1% of GDP, through lost time and productivity and its negative impacts on health and the environment (Calatayud and others, 2021).

The automotive sector's future is electric. Driven by a renewed sense of urgency, regulators in many countries —mainly those with developed economies— have set much more ambitious targets for reducing greenhouse gas emissions from vehicles. In response, manufacturers are adapting quickly, offering an increasing number of electric vehicles in their product portfolios and setting deadlines for the production of internal combustion engine vehicles to come to an end. These developments are driving and consolidating the global market for electric vehicles, the sales of which could surpass those of their conventional counterparts by the end of this decade.

The new technological paradigm will also mean a profound change in the industry's supply chains. As regards the inputs needed, there will be higher demand for materials used in electrical and electronic parts and in charging systems (batteries), together with reduced demand for materials used in some systems, such as catalytic converters. New powertrains imply reductions in the number of components, moving parts and mechanical systems, and an increase in the number of high-voltage components and in electrical systems, which is having a significant impact on demand for semiconductors. Additionally, the redistribution of the weight of the engine and batteries requires the use of alternative chassis designs and body architectures to ensure vehicle safety.

In a very short period of time, electric vehicles have conquered a major share of the world market. Between 2018 and 2021, electric vehicles increased their share of global light vehicle sales from 2.2% to 8.3%. In the heavy-duty vehicle sector —buses in particular— electric models have also increased their presence, accounting for 4% of global fleets in 2021.

At the present juncture, one particularly interesting segment is the production of more environmentally friendly public transport vehicles, as they could play a key role in modern economies and societies. Not only can this segment of the automotive sector contribute to the GDP and competitiveness of the countries where production is located, it also represents an important source of direct and indirect employment. In addition, it can offer solutions to social and environmental challenges that impact life in cities, such as mobility.

On the demand side, although the vast majority of the urban public transport fleet still uses fossil fuels, the adoption of electric buses is expanding worldwide. In the coming years, the share of electric models in global sales is expected to rise swiftly. The expansion of electromobility will be one of the key drivers of growth in the global bus market; however, this dynamic will probably not manifest itself uniformly across the entire world.

In this scenario, several countries are competing to build new high-value industrial clusters for transport. China has taken the lead in electric bus manufacturing and, today, 90% of the world's electric buses in use are deployed in Chinese cities (IEA, 2022). At the same time, China is the world's largest exporter of electric buses and is increasingly geared to meet the growing demand of Latin American countries, including Argentina, Chile, Colombia and Mexico.

Far from being a spontaneous and natural evolution of the market, the success of China in this sector is the result of planned state intervention in the form of demand subsidies and industry supports intended to bolster local productive capacities. While that experience would be difficult to reproduce, it illustrates the urgency and importance of including urban electromobility among strategic industrial policy priorities. In addition, and beyond the case of China, the experiences of those economies that have managed to make progress in this transition through local production —the United States and the Netherlands, for example— also point to some of the difficulties that must be overcome by governments deciding to pursue this path.

Latin American countries have been unable to assume a clearly defined position in an international scenario characterized by the rapid consolidation of new market dynamics, business models, leading companies and technological options. Indeed, the region's automotive sector has not yet shown strong signs of taking advantage of the opportunities emerging in an industry that is undergoing a far-reaching transformation process. On the one hand, in the light vehicle sector, the strengthening of production capacity to respond to the growing demand for low-emission vehicles is concentrated in the United States, and only Mexico is receiving some investments as part of the transformation of North American value chains. On the other, in the heavy-duty vehicle segment —buses in particular— the industry is heterogeneous, fragmented and with evident problems of scale and technological backwardness, and electromobility investments are focusing on Brazil, where the most competitive and internationalized companies, several of them subsidiaries of transnational companies, are located.

Given the dynamics of the industry, the options available to Latin American countries for becoming part of a new sector that is rapidly consolidating at the global level must be explored. In particular, the manufacturing of electric buses offers an interesting alternative for strengthening productive capacities that could contribute to progress with a transformative recovery.

This chapter aims to describe the changes that are taking place in the electric vehicle manufacturing industry, particularly for city buses, across the world and specifically in Latin America. It also provides background information that will assist the strengthening of production capacities and the deployment of a transition from conventional to electric traction systems. Accordingly, it seeks to identify the key factors in developing and strengthening a diversified and innovative productive chain to support the advancement of electromobility in the region. It also presents a number of policy proposals intended to help consolidate this process, in consideration of the leading role played by national governments in establishing regulations, securing funding, consolidating purchasing power and providing services.

# A. The progress of electromobility: an emerging market with great potential?

## 1. Light electric vehicles are rapidly gaining market share

The automotive industry is currently undergoing what is perhaps the greatest revolution in its history: its boundaries are expanding and new players, products, technologies, regulatory requirements and business models are emerging. The convergence of traditional manufacturing with electronics and software, in conjunction with the development of more environmentally friendly technologies, is changing the structure of the production chain and the leadership of some of its main links.

The transport systems of the future will be very different from today's. Several current technological trends —from unconventional renewables eroding the paradigm of centralized energy systems to the Internet of Things (IoT) and artificial intelligence— are converging to bring about dramatic changes in transport systems. On the one hand, new technologies and applications are becoming increasingly important: electric vehicles, shared mobility and self-driving cars. On the other, because of growing pressure on urban areas, authorities are assigning increasing importance to issues such as liveability and sustainability. The emergence of new technologies makes shared mobility and electric vehicle options viable, which could mitigate congestion and pollution problems in large cities.

Faced with this scenario, the industry's main manufacturers are embarking on major transformations to adapt to these emerging and disruptive market trends. Many companies, supported by the rapid advance of connectivity, are seeking to diversify and reinvent themselves in order to evolve from being vehicle assemblers to become transport service providers. In the coming years, the more efficient use of public transport, the increase in car sharing and the growing number of trips by private transport services through digital platform companies will discourage private vehicle sales, and as a result vehicle manufacturers will be confronted by less dynamic or even falling levels of demand.

At the same time, new technological trends are placing stress on the entire vehicle manufacturing production chain. In this complex landscape, changes in industry leadership are likely to arise, including the arrival of new players, mainly from cutting-edge technology sectors.[1] There will also be strong pressures for traditional manufacturers to accelerate and strengthen innovation initiatives in the areas of technology, corporate governance and business models. At the same time, new strategic alliances between companies from different productive sectors are being forged.

Today, electric vehicles are beginning to be seen as one of the most interesting alternatives. It is estimated that electric propulsion will be the fastest growing segment, despite the uncertainty that still exists regarding consumer acceptance of this technology. However, continuous technological improvements —primarily in batteries— together with falling costs, the expansion of recharging infrastructure and the adoption of explicit goals and promotional policies by national governments confirm that this trend will continue. In this way, the cost competitiveness gap between electric vehicles and those with internal combustion engines will be gradually narrowed.

In this scenario, the passenger car segment has been the most dynamic, with the main manufacturers deploying ambitious strategies to bring new electric models to market (see figure III.1). However, heavy-duty vehicles such as buses and trucks have also been affected, where increasingly competitive electric options are rapidly becoming available.

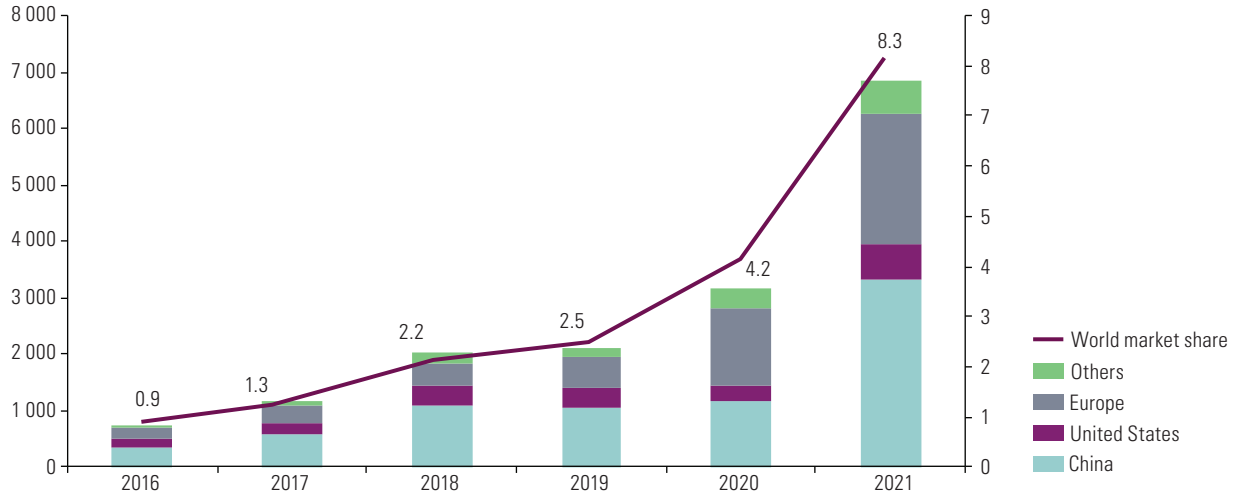
Between 2017 and 2021, sales of electric vehicles —passenger cars, vans, sport utility vehicles (SUVs) and trucks— grew from 1.18 million to 6.83 million units; with this, their share of total light vehicle sales rose from 1.3% to 8.3% (see figure III.1).[2] Similarly, electric vehicles —including hybrids— accounted for 20% of global light-vehicle output in 2021, compared to 12% the previous year (Niese and others, 2022). Thus, after this short period of rapid growth, the number of light electric vehicles on the world's roads already exceeds 16.5 million (IEA, 2022). While it is true that sales of light electric vehicles were affected during the height of the pandemic, their historical trend was restored in 2021 and, for 2022, sales are expected to total around 9.5 million (EV Volumes, 2022). This figure could increase as solutions are found to the logistical and

1 Major technology companies, such as Apple, Google and Uber, have detected that the automotive industry offers attractive opportunities to diversify and leverage their capacities for developing new products and business models. Similarly, companies with long histories in electronics and software, such as Intel and Samsung, are trying to position themselves in various critical links of the new value chain.

2 In 2021, battery-electric vehicles (BEVs) accounted for 71% of total electric car sales, with plug-in hybrid electric vehicles (PHEVs) taking a 29% share.

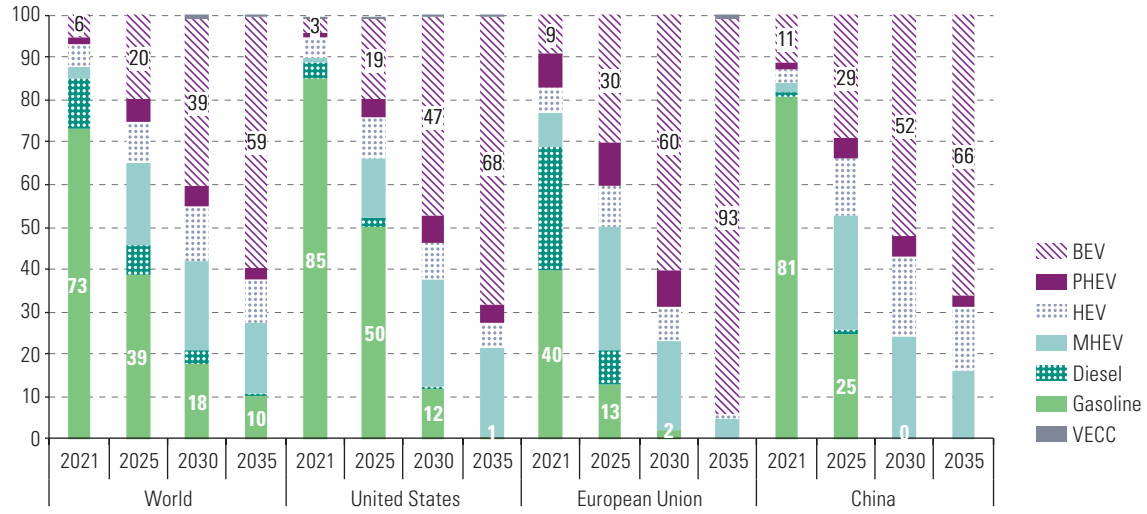
supply chain problems, including the semiconductor shortage, that are affecting the automotive industry as a whole. Moreover, it is estimated that battery-electric vehicles (BEVs) will account for 20% of global light vehicle sales by 2025 and for 59% by 2035. Their share of the market is expected to be particularly high in the European Union (93%), the United States (68%) and China (66%) (see figure III.2).

**Figure III.1**
Global sales and market share of light electric vehicles, 2016–2021
*(Millions of units and percentages)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the International Energy Agency (IEA) and EV Volumes [online database] https://www.ev-volumes.com/.

**Figure III.2**
Sales of new light vehicles, by vehicle type and selected countries and regions, 2021–2035
*(Percentages)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of N. Niese and others, "Electric cars are finding their next gear", Boston Consulting Group (BCG), 9 June 2022 [online] https://www.bcg.com/publications/2022/electric-cars-finding-next-gear?utm_medium=Email&utm_source=esp&utm_campaign=none&utm_description=ealert&utm_topic=none&utm_geo=Global&utm_content=202207&utm_usertoken=43460a8c886a27dee779d8aa8e53cacfbbf47721.

**Note**: MHEV: mild-hybrid electric vehicle; HEV: hybrid electric vehicle; BEV: battery-electric vehicle; PHEV: plug-in hybrid electric vehicle; FCEV: fuel-cell electric vehicle.

Despite advances in the adoption of light electric vehicles, this dynamic is heavily concentrated in China, Europe and the United States. In other large economies, such as Brazil, India and Indonesia, electric vehicles account for less than 0.5% of total sales, and while there has been some growth in sales in recent years, it was starting from a very low baseline.

- China currently has the world's largest fleet of light electric vehicles: nearly 7.8 million, more than double the number that existed before the COVID-19 pandemic. This dynamic can be seen in the growing share of electric versions in total light vehicle sales. Between 2018 and 2021, that figure rose from 4% to 16%, on the back of greater dynamism in electric vehicles than their conventional counterparts. Key to this growth have been the authorities' efforts to accelerate decarbonization and support the production and adoption of electric vehicles through a range of subsidies, tax exemptions and financial incentives. Thus, the 2021–2025 five-year plan aims to increase the share of electric models to 20% of total vehicle sales by the end of the period.
- In Europe, light electric vehicles have shown great dynamism in recent years, beating the results posted by China and the United States. In 2021, nearly 5.5 million electric vehicles were on the roads —triple the 2019 number— and accounting for a 17% share of total automobile sales. Their distribution from one country to the next, however, is still quite uneven. In terms of sales volume, Germany —which has some of the highest subsidies in Europe— is the most important market, followed by the United Kingdom, France, Norway, Italy and Sweden. At the same time, Norway is where electric vehicles have achieved the highest market share, accounting for 86% of total car sales in 2021, followed by Iceland (72%), Sweden (43%), the Netherlands (30%), Germany (26%), France (19%), Italy (9%) and Spain (8%). The solid growth in Europe is underpinned by strict $CO_2$ emission standards and by the expansion of purchase subsidies and tax breaks in major markets (IEA, 2022). In contrast to China and the United States, where battery-electric vehicles (BEVs) dominate the market, in Europe BEVs and plug-in hybrid vehicles (PHEVs) command similar market shares (see figure III.2). This may be on account of manufacturers seeking to leverage advances in conventional vehicle development by offering PHEV versions of many large and high-end car models, since their experience with electric powertrains is more recent.
- In 2021, after two years of low dynamism, sales of light electric vehicles in the United States rose considerably, bringing the total number on the roads to more than 2 million. This dynamic can be attributed to the increased production and availability of next-generation electric models from established manufacturers, especially Tesla.

Around the world, through purchase subsidies and tax breaks, governments spent nearly US$ 30 billion to encourage the adoption of electric vehicles in 2021, an increase of nearly 50% from the previous year (IEA, 2022). That notwithstanding, the share of government incentives in total EV spending has fallen from around 20% in 2015 to 10% in 2021. Most of the increased public spending was deployed in Europe, where many countries responded to the economic crisis with incentive plans that boosted electric car sales.

Given the ongoing expansion of the EV market, in many developed countries the catalysing effect of public policies is losing strength, while the dynamics of consumer take-up is becoming an increasingly relevant factor. In this scenario, the limited supply of electric vehicles is beginning to impose major constraints, preventing greater adoption of the technology by consumers (McKerracher and others, 2022).

In this context, automakers have progressively deployed strategies incorporating electromobility: not only to comply with regulations or capitalize on government incentives, but also as an opportunity to capture market share and maintain a competitive advantage. Thus, the main global manufacturers have announced plans to accelerate the transition to an all-electric future by developing new product lines and converting existing manufacturing capacities.

(i) Toyota raised its annual EV sales forecast from 2 million to 3.5 million by 2030, with a portfolio of as many as 30 models. Of that total, it expects one million to come from the group's high-end Lexus marque, which aims for 100% of its global sales to be electric models by 2035 (Reuters, 2021).

(ii) Volkswagen announced that by 2030, electric vehicles would account for 70% of its sales in Europe and 50% in China and the United States. It also estimated that, by 2040, almost 100% would be zero-emission vehicles. By 2025, Volkswagen will spend around 16 billion euros on its electromobility, hybridization and digitization plans (Rauwald, 2021). In 2026, Audi will stop designing new cars with internal combustion and hybrid engines and, starting in the early 2030s, the company will only manufacture fully electric vehicles (Eddy, 2021).

(iii) High-end manufacturer BMW aims for 50% of the vehicles it sells to be all-electric by 2030 or earlier (Paukert, 2021).

(iv) Mercedes-Benz announced its expectations for plug-in hybrid and battery-electric vehicles to account for 50% of its global volume by 2025, double the target it had originally set two years earlier. It also announced plans to switch completely to battery-electric vehicles by 2030, except in those markets where conditions, such as a lack of charging infrastructure, would make this difficult (Eisenstein, 2021).

(v) Swedish manufacturer Volvo, owned by the Chinese conglomerate Geely, will exclusively sell electric cars after 2030. Previously, the company had aimed for electric models to account for half of its car sales by 2025, but it decided to accelerate that target in light of growing demand for electric options (Vincent, 2021).

(vi) The Stellantis group[3] announced that BEVs will account for 100% of its European sales and 50% of its sales in the United States by 2030. This represents a significant increase in the targets of the previous electrification plan, in which the group estimated that sales of low-emission vehicles (electric and hybrid) would amount to 70% in the European market and 40% in the United States by 2030 (Randall, 2022a).

(vii) Ford expects a third of its sales to be all-electric by 2026, rising to 50% by 2030, building on the success of its F-150 electric model. After 2030, the company will sell only EVs in Europe and the United Kingdom, for which it will invest US$ 1 billion in an electric vehicle manufacturing plant in Cologne, Germany. This will be the first all-electric vehicle plant in Europe, with production starting in 2023 (Ghosh, 2021).

(viii) General Motors plans to offer electric vehicles only by 2035. The company has a target for 30 EV models and an installed BEV production capacity of 1 million units in North America by 2025. This move, one of the most ambitious in the automotive industry, is part of the company's broader plan to become carbon neutral by 2040 (Boudette and Davenport, 2021).

[3] Stellantis N.V., based in the Netherlands, is the result of the January 2021 merger between the Italian-United States manufacturer Fiat Chrysler Automobiles (FCA) and the French PSA group. Stellantis manufactures and markets the Fiat, Alfa Romeo, Lancia, Maserati, Abarth, Jeep, Chrysler, Dodge and Ram marques of FCA, and the PSA group's Peugeot, Citroën, DS Automobiles, Opel and Vauxhall brands.

(ix) Hyundai and Kia, two automakers from the Republic of Korea, have announced progress with the electrification of their models. Hyundai aims to increase its annual global sales of BEVs to 1.87 million units, to secure a global market share of 7% by 2030 and to end conventional vehicle sales in Europe by 2035 (RTT, 2022), while Kia aims to increase its BEV sales to 1.2 million by 2030.

(x) In China, some automakers are adapting to adjust to the 2030 emissions reduction target. Dongfeng plans to electrify 100% of its new passenger car models by 2024. BYD announced that it would exclusively produce BEVs and PHEVs as of April 2022. Geely expects electric cars to account for close to 30% of its sales by 2025.

With these announcements, specialized producers, dynamic Chinese companies and some of the largest traditional manufacturers are beginning to compete for leadership in the dynamic EV segment. In 2021, light electric vehicle sales were led by Tesla, the United States manufacturer that specializes solely in electric cars (936,172 units), followed by Volkswagen of Germany (757,994), SAIC Motor (including SGMW)[4] (683,086) and BYD (593,878) of China, and the Stellantis group (360,953) (Kane, 2022).

New investments in light electric vehicle production have been largely concentrated in China, the European Union and the United States. That dynamic should begin to diversify in the coming years, however, on the back of ambitious announcements by the leading manufacturers. The automotive industry installed in Latin America is beginning —albeit slowly— to join this transition in production. Currently, the major global manufacturers are supplying the region's local markets with imports. However, charging infrastructure shortcomings and low consumer awareness and confidence mean that EVs still account for a low share of total car sales, although the proportion is growing rapidly (see table III.1).

**Table III.1**
Latin America: electric vehicle sales, selected countries, 2020–2021
*(Number of units and percentage growth rate)*

| | Battery-electric vehicles (BEVs) | | | Plug-in hybrid electric vehicles (PHEVs) | | | Hybrid electric vehicles (HEVs) | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2020 | 2021 | Variation | 2020 | 2021 | Variation | 2020 | 2021 | Variation | 2020 | 2021 | Variation |
| Argentina | 39 | 55 | 41 | | 7 | ... | 2 344 | 5 809 | 148 | 2 383 | 5 871 | 146 |
| Brazil | 182 | 719 | 295 | 619 | 2 141 | 246 | 18 944 | 32 130 | 70 | 19 745 | 34 990 | 77 |
| Chile | 536 | 629 | 17 | 79 | 300 | 280 | 7 766 | 2 492 | 221 | 1 391 | 3 421 | 146 |
| Colombia | 1 321 | 1 296 | -2 | 460 | 1 712 | 272 | 4 230 | 14 694 | 247 | 6 011 | 17 702 | 195 |
| Costa Rica | 627 | 1 045 | 67 | ... | ... | ... | ... | ... | ... | 627 | 1 045 | 67 |
| Ecuador | 106 | 348 | 228 | 43 | 33 | -23 | 1 105 | 4 236 | 283 | 1 254 | 4 617 | 268 |
| Mexico | 449 | 1 140 | 154 | 1 986 | 3 492 | 76 | 21 970 | 42 447 | 93 | 24 405 | 47 079 | 93 |
| Peru | 26 | 33 | 27 | 10 | 58 | 480 | 542 | 1 364 | 152 | 578 | 1 455 | 152 |
| Dominican Republic | 396 | 746 | 88 | 42 | 144 | 243 | 246 | 1 121 | 356 | 684 | 2 011 | 194 |
| Total | 3 682 | 6 011 | 63 | 3 239 | 7 887 | 146 | 50 157 | 104 293 | 108 | 57 078 | 118 191 | 107 |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Asociación Nacional de Movilidad Sostenible (ANDEMOS), *Sector Automotor: anuario 2021*, 2022.

The first indications of production have been recorded in Mexico, as a result of the measures the leading manufacturers are taking to strengthen their electromobility manufacturing capacity in the United States. Mexico is a key location for production chains linked to the North American automotive industry.

[4] SAIC-GM-Wuling Automobile (SGMW) is an alliance between SAIC Motor, General Motors of the United States and Liuzhou Wuling Motors Co. Ltd. that manufactures commercial and passenger vehicles primarily for the Chinese domestic market under the Wuling and Baojun marques.

In 2021, the Ford Motor Company of the United States began producing its Mustang Mach-E electric model for the global market at its facilities in Cuautitlán, State of Mexico. The plant underwent a sweeping transformation to incorporate new technology and equipment, mainly in the stamping, bodywork, painting and assembly areas, and workers were provided with the necessary training. In addition to this first electric vehicle, the company has announced the production of a further two new models in Mexico —one for Ford and one for Lincoln— which will arrive on the market during 2023. Mexico could thus become a key location for Ford's ongoing transformation, joining the changes taking place at the plant in Cologne, Germany, which is being adapted to manufacture electric vehicles only.

Similarly, General Motors is making the investments necessary to adapt its Ramos Arizpe plant in the Mexican State of Coahuila. It will at first assemble batteries and electric motors and then, starting in 2023, it will manufacture electric vehicles. As part of GM's ambitious strategy to strengthen its position in the electric segment, Ramos Arizpe will be the fifth plant to manufacture electric vehicles in North America: the others are Spring Hill in Tennessee, United States; Factory Zero and Orion in Michigan, United States; and CAMI in Ontario, Canada. In 2021, the company announced a US$ 1 billion investment in the Ramos Arizpe plant to expand the assembly lines and global propulsion system facilities, in order to pursue the production of batteries and electric cars (Rodríguez, 2021).

German automaker Volkswagen has announced investments of more than US$ 7 billion over the next five years to enable its transition to zero-emission vehicle production in the United States. Volkswagen's initiatives are currently focused on the Chattanooga complex in Tennessee. However, speculation already exists that the company plans to upgrade other plants, such as those in Puebla and Silao in Mexico, to enable them to assemble electric vehicles and components by the middle of this decade.

Other manufacturers with a presence in Mexico —such as the Japanese firm Nissan and the German company BMW— have also announced medium-term plans to strengthen their EV production capacity in Mexico. Starting in 2027, BMW plans to manufacture the iX3 electric SUV and a battery-powered version of the 3 Series model at its San Luis Potosí plant, allowing greater progress towards its goal of focusing on electric vehicles. Likewise, Nissan announced a US$ 700 million investment to prepare its Aguascalientes plant for EV production.

In parallel to the progress made by some of the leading manufacturers, which are mainly oriented towards foreign markets, other smaller companies have begun to develop EV production capacities primarily to supply the Mexican domestic market. Notable in this regard is the Chinese company JAC: together with local investors, it has readied itself to assemble electric vehicles in the country. JAC currently has five models for the Mexican domestic market, which are assembled at its plant in Ciudad Sahagún, Hidalgo.

To summarize, despite the clear strategies of the main global automakers in pursuit of vehicle electrification, the Latin American response remains modest. The automotive industry in the region is dominated by transnational companies, and they will pursue this transformation process so long as the companies perceive a favourable environment for electromobility. At present, the main investments in the new light electric vehicle cluster in the Americas are concentrated in the United States, a reflection of determined public policies to support the industry, to promote the adoption of environmentally friendly vehicles and to strengthen the necessary enabling infrastructure. Mexico has been the region's country best favoured in the reconfiguration of North American value chains, as shown by the announcements of new investments to convert some of its existing plants.

## 2. Electromobility also reaches heavy-duty vehicle segments

The trend towards the electrification of light vehicles has also made inroads in the heavy-duty vehicle sector, mainly as regards buses. There are currently around 670,000 electric buses and 66,000 electric trucks in circulation worldwide, representing 4% and 0.1% of the respective global totals (IEA, 2022).

The rapid development of new motor technologies has made electromobility a genuine option, with which it has become the sustainable mode of public transport with the greatest potential for adoption in urban areas. Electric buses are rapidly moving towards technological maturity, mainly in terms of batteries, increased range and lower manufacturing costs. This evolution has been accompanied by numerous commitments from national and subnational governments that aim to establish specific goals and dates in the transition to public transport electromobility (see table III.2).

**Table III.2**
National and subnational governments with official targets towards 100% zero-emission bus fleets, March 2022

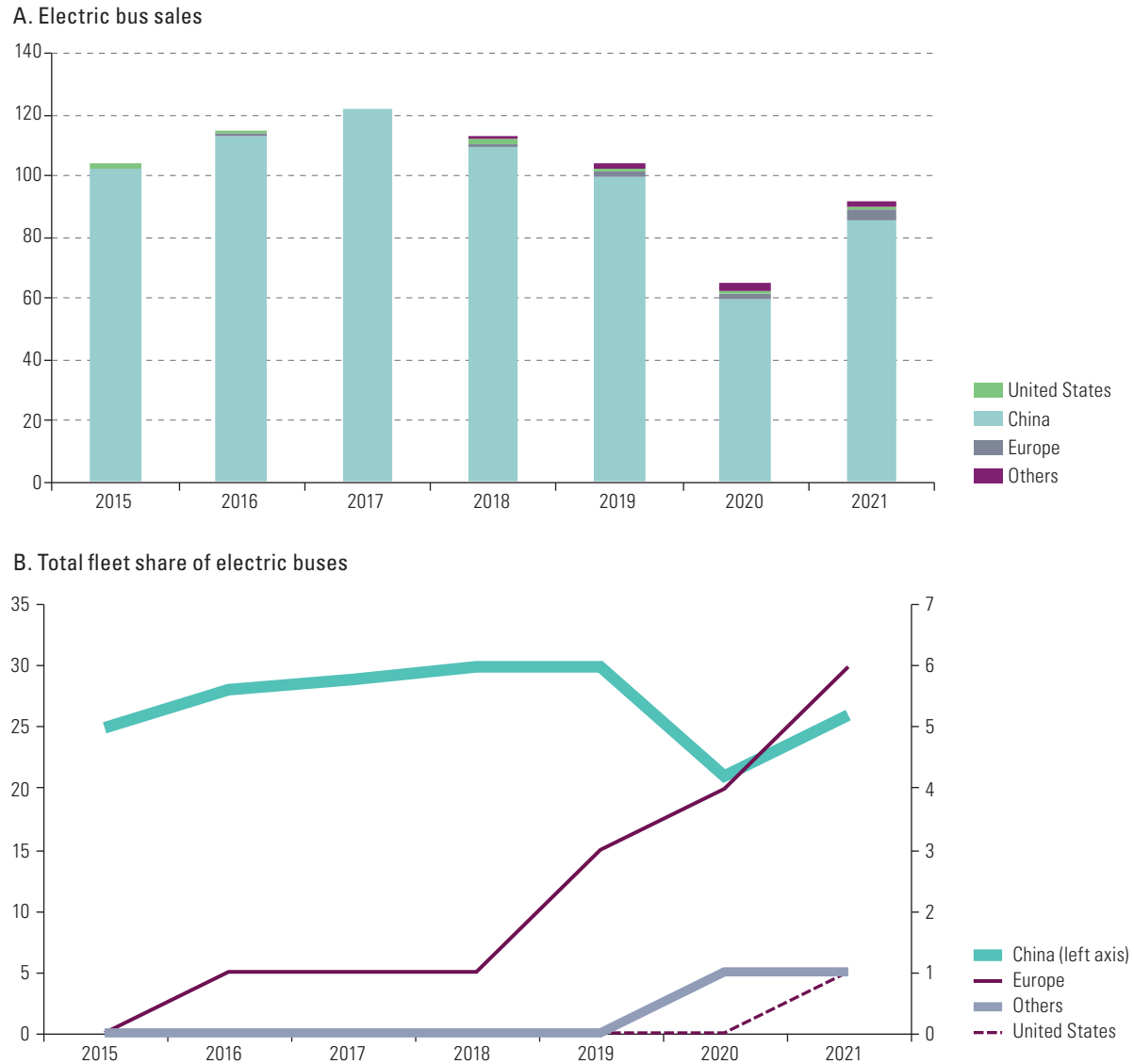
| | 2025 | 2030 | 2032 | 2035 | 2040 | 2050 |
|---|---|---|---|---|---|---|
| Austria | | | 100% of new buses must be zero-emission | | | |
| Denmark | 100% of new buses must be zero-emission | 100% of the bus fleet must be zero-emission | | | | |
| Netherlands | 100% of new buses must be zero-emission | 100% of the bus fleet must be zero-emission | | | | |
| Norway | 100% of new buses must be zero-emission (including biogas) | 75% of new long-distance buses must be zero-emission | | | | |
| Chile | | | | 100% of new buses must be zero-emission | | 100% of the bus fleet must be zero-emission |
| Colombia | | | | 100% of new buses must be zero-emission | | |
| Costa Rica | | | | | | 100% of the bus fleet must be zero-emission |
| New Zealand | 100% of new buses must be zero-emission | | | 100% of the bus fleet must be zero-emission | | |
| Israel | 100% of new buses must be zero-emission (2026) | | | | | |
| Pakistan | | 50% of new buses must be electric | | | 90% of new buses must be electric | |
| Cabo Verde | | | | 100% of new buses must be zero-emission | | 100% of the bus fleet must be electrified |
| United States (State of California) | | 100% of new buses must be zero-emission (2029) | | | 100% of the bus fleet must be zero-emission | |
| Multi-State Memorandum of Understanding, United States[a] | | 30% of new medium- and heavy-duty vehicles must be zero- emission | | | | 100% of new medium- and heavy-duty vehicles must be zero- emission |
| Global Memorandum of Understanding[b] | | 30% of new medium- and heavy-duty vehicles must be zero- emission | | | 100% of new medium- and heavy-duty vehicles must be zero- emission | |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of International Council on Clean Transportation (ICCT) [online] https://theicct.org/ice-phase-outs/.

[a] In mid-2020, 17 States (California, Colorado, Connecticut, Hawaii, Maine, Maryland, Massachusetts, Nevada, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia and Washington), the District of Columbia and the Canadian Province of Quebec signed a memorandum of understanding to work together for the accelerated development of the market for medium- and heavy-duty electric vehicles.

[b] The Global Memorandum of Understanding was launched at the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 26) held in Glasgow, Scotland, to accelerate the market for zero-emission medium- and heavy-duty vehicles. The signatories are Austria, Canada, Chile, Denmark, Finland, Luxembourg, the Netherlands, New Zealand, Norway, Switzerland, Türkiye, the United Kingdom, Uruguay, Scotland and Wales.

**Figure III.3**
Electric buses: sales and total fleet shares, by selected countries and regions, 2015–2021
*(Thousands of units and percentages)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the International Energy Agency (IEA), "Electric bus registrations and sales shares by region, 2015–2021", 2022 [online] https://www.iea.org/data-and-statistics/charts/electric-bus-registrations-and-sales-shares-by-region-2015-2021.

The electric bus market has been strongly concentrated in China, as a result of an ambitious strategy adopted in pursuit of multiple objectives: (i) environmental decontamination of large cities, (ii) deployment of a renovated public transport system, and (iii) strengthened local technological and productive capacities. Currently, about 90% of the electric buses in operation in the world can be found in Chinese cities (IEA, 2022) (see figure III.3A). In fact, most Chinese cities are expected to complete the electrification of their public transport fleets in the near future. In 2018, for example, Shenzhen became the first major city in the world to have a fully electrified bus fleet (Keegan, 2018). The Chinese Government claims to have invested nearly US$ 1.9 billion in sector incentives and subsidies between 2009 and 2016; however, other estimates indicate that the amount invested between 2009 and 2017 totalled more than US$ 48.3 billion (Cruz, 2022). Ultimately, China succeeded in creating a collaborative environment involving government agencies, fleet operators, bus manufacturers, financial institutions and freight companies, which significantly alleviated technological uncertainty and reduced the public transport systems' operating costs.

Analysts expect the electric bus market to grow rapidly over the coming years. Between 2022 and 2027, annual worldwide sales of electric buses could increase from 112,041 to 671,285 units (Sustainable Bus, 2022a). Although China will continue to maintain its leadership, significant growth is expected in Europe and, most particularly, in the United States. In addition, some developing countries —especially India and several Latin American economies— will gradually begin to participate more actively in this market.

In Europe, the combination of stricter environmental regulations and the proliferation of measures, such as subsidies and tax breaks, to support and promote the electrification of public transport are rapidly changing the landscape. Various measures —including European Union directives for member States, national policies and municipal actions— have mobilized market players to test and develop advanced vehicles, which has sped up the adoption of electric buses (see figure III.3B). Today, in most European countries, the electrification of public transport bus fleets is a trend that is beginning to take hold.

Between 2019 and 2021, the number of electric buses added to European fleets rose from 1,685 to 3,282, for a total number of vehicles registered on the continent since 2012 of more than 8,500 (Sustainable Bus, 2022b). In the past year, Germany (555 new electric buses), the United Kingdom (540) and France (512) were the largest markets, while the highest electric bus adoption rates were seen in Finland (96.4%), Norway (92.5%), the Netherlands (80.4%), Denmark (72.6%) and Sweden (60.2%) (see table III.3). By the middle of this decade, as transition programmes come online and targets become more urgent, it is estimated that new electric buses will surpass 10,000 units per year, accounting for 60% of total bus sales. By 2030, two thirds of new buses are expected to be zero-emission, most of them electric (Luman, 2021).

Faced with that scenario, the response capacity of the European manufacturing sector has rapidly expanded and diversified. This has eroded the position of the Chinese manufacturers, mainly BYD and Yutong, which previously supplied the European market through their own plants, strategic partnerships and imports. In 2019, just under half of the market was controlled by three manufacturers: VDL (36.9%), BYD (14.0%) and Solaris (8.6%). Two years later, five companies accounted for 50% of the market: Solaris (11.9%), BYD+ADL (11.4%), Daimler (10.1%), Yutong (9.2%) and CNH Industrial (8.3%) (Sustainable Bus, 2022c). Domestic companies, or subsidiaries of foreign companies located in their territories, have won the highest shares of European domestic markets: Daimler in Germany, IVECO-Heuliez (CNH Industrial) in France and BYD+ADL in the United Kingdom.

**Table III.3**
Electric buses in Europe: sales and share of total, by country, 2020–2021
*(Units and percentages)*

| | Sales | | Electric buses as a share of total city bus sales, 2021 *(Percentages)* |
|---|---|---|---|
| | 2020 | 2021 | |
| Germany | 350 | 555 | 14.1 |
| United Kingdom | 288 | 540 | 44.2 |
| France | 133 | 512 | 19.2 |
| Denmark | 1 | 217 | 72.6 |
| Poland | 196 | 215 | 38.9 |
| Finland | 25 | 190 | 96.4 |
| Sweden | 206 | 189 | 60.2 |
| Italy | 97 | 178 | 15.3 |
| Netherlands | 445 | 152 | 80.4 |
| Spain | 42 | 127 | 14.0 |
| Norway | 210 | 86 | 92.5 |
| Others | 217 | 321 | ... |
| Total | 2 210 | 3 282 | 21.7 |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from Sustainable Bus, "Electric bus market 2021. Mercedes gets on the podium. Going high", *Sustainable Bus Magazine*, May 2022 [online] https://www.yumpu.com/en/document/read/66810855/sustainable-bus-2022-05.

In the United States, the electrification of public transport got off to a slow start. Despite that, the first place in the world to implement a fleet of all-electric buses was the small town of Seneca in the State of South Carolina in 2014 (Metro Magazine, 2015). Various obstacles prevented that experiment from spreading, however, including the lack of charging infrastructure, the low range of the first models —making them unsuitable for areas with cold climates, as cabin heating quickly drained their batteries— and the scarcity of local production capacity to provide the vehicles needed. In fact, the Chinese manufacturer BYD dominated the earliest phase of electric bus production in the United States, which meant that most of the cities' initial orders were placed with BYD. However, technological advances that enabled improvements in range, efficiency and availability encouraged other manufacturers to install new manufacturing facilities. Thus, established producers such as Daimler, Volvo and New Flyer, together with new entrants such as Proterra and GreenPower, began to market new and improved electric vehicles.

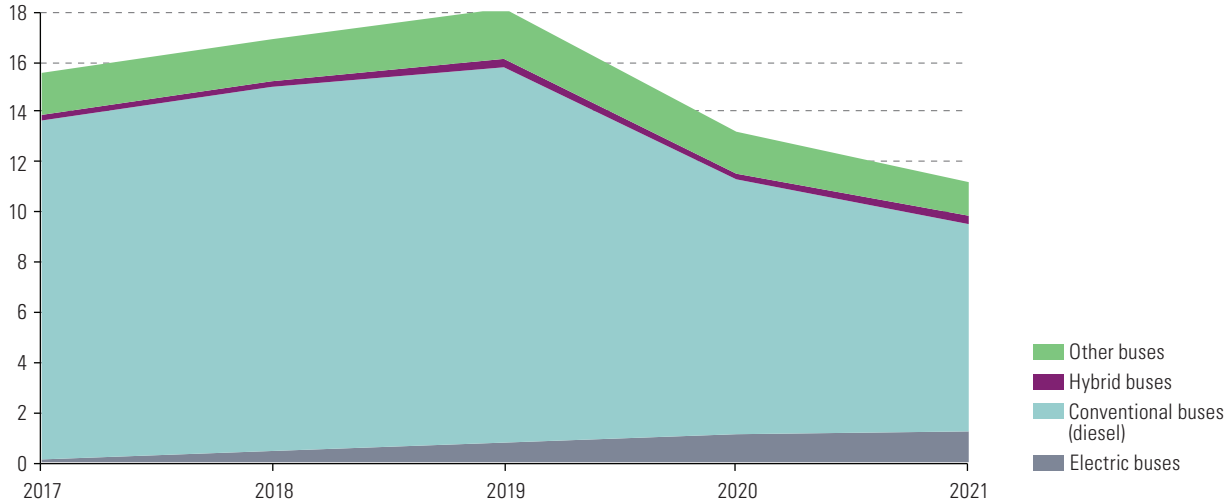
With the availability of more choices and better performance figures, cities in the United States are engaged in an accelerated process of change. The city of Los Angeles is leading the way, with its plans to electrify its entire bus fleet by 2028, and the same goal has been set by the entire State of California for 2040 (Mulkern, 2020; St. John, 2018). Other cities have also joined this trend: New York, for example, aims to have an all-electric bus fleet by 2040 (Lewis, 2020). In that context, in mid-2020, 17 States (California, Colorado, Connecticut, Hawaii, Maine, Maryland, Massachusetts, Nevada, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia and Washington), the District of Columbia and the Canadian Province of Quebec signed a memorandum of understanding to work in coordination to develop and accelerate the market for medium- and heavy-duty electric vehicles, including vans, trucks and school and transit buses. The aim is for 100% of new truck and bus sales to be zero-emission vehicles by 2050, with an intermediate target of at least 30% by 2030 (NESCAUM, 2022) (see table III.2). Similarly, the managers of the country's ten largest bus fleets have made the decision to purchase at least one zero-emission bus (Gerrard, 2021). It was also decided that as of 2027, United States federal government agencies will exclusively purchase electric vehicles (Manthey, 2021).

More recently, this transition has been strongly promoted by the federal government. The administration of President Joe Biden has deployed an ambitious agenda to tackle climate change. The most notable component is the Build Back Better Act, which allocates US$ 7.5 billion for electric bus purchases (Bellon, 2021). In 2022, the federal government is awarding grants worth nearly US$ 1.5 billion to modernize bus fleets and to install infrastructure. Of these resources, US$ 1.1 billion will go to the Low or No Emission Vehicle Program, intended to enable transit companies to purchase or lease low- or zero-emission vehicles manufactured in the United States (FTA, n/d). Some US$ 5.5 billion will be allocated over a five-year period: a ten-fold increase in funding compared to the previous five years and the largest investment ever made in this area in the United States (Randall, 2022b). A further US$ 2.91 billion has been earmarked for the development of a local value chain for battery manufacturing (Randall, 2022c). In this scenario, with a growing number of cities moving towards electromobility and far-reaching stimulus programmes, the electric bus manufacturing industry in the United States is expected to receive a major boost.

Recently, the international trade in electric buses has shown great dynamism after global exports of public transport vehicles were greatly affected during the pandemic (see figures III.4 and III.5). China accounts for nearly 50% of global exports. The remainder of the business is heavily skewed towards North America (the United States and Canada) and the European Union: primarily Belgium, the

Netherlands, Norway, Germany and France (see figures III.5A and III.5B). The main import markets include some Latin American countries, particularly Chile and Colombia (see figure III.5B). Between 2017 and 2021, China provided 99.7% of the electric buses imported by Chile and Colombia.

**Figure III.4**
Global exports of public transport vehicles, by type, 2017–2021
*(Billions of dollars)*

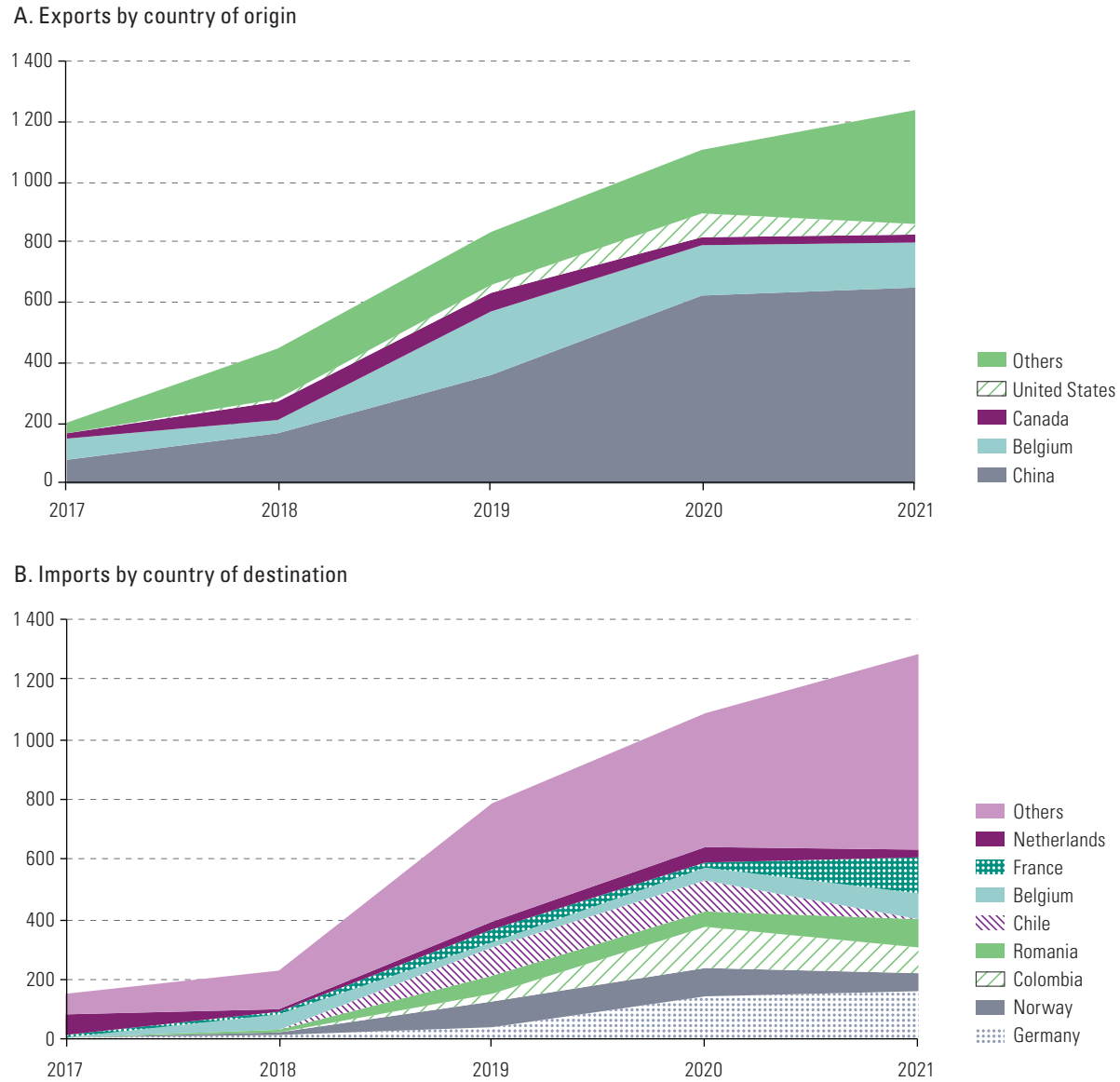



**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations International Trade Statistics Database.
**Note**: Uses Harmonized System classifications: 870210 (bus transport vehicles with internal combustion engines), 870220 and 870230 (hybrid public transport vehicles), 870240 (electric public transport vehicles) and 870290 (other public transport vehicles).

At present, global capacity for electric bus manufacturing is heavily concentrated in a small group of large Chinese companies: Yutong, BYD, CRRC, Zhongtong, Higer, Ankai and King Long. These seven companies account for more than 60% of global output. As noted above, the companies' rapid consolidation was made possible by a government strategy seeking, among other goals, to strengthen local productive and technological capacities in order to implement a new, more efficient and less polluting public transport system. In less than a decade, these companies have put more than 600,000 electric buses onto the road, mainly in Chinese cities (see figure III.3). More recently, however, they have begun to turn their gaze towards foreign markets, primarily in Europe, the United States and several Latin American countries. Initially, the Chinese companies supplied the growing external demand through exports (see figure III.5A); however, some of them have begun to establish production facilities close to the markets with the greatest potential, in some cases in partnership with local companies.

An interesting case is that of BYD, a company that produces a wide range of electromobility products —cars, buses, trucks, bicycles, forklifts and batteries— and has enjoyed particular success in the bus segment. In the early 2010s, the company commissioned the world's first fleet of all-electric buses, in Shenzhen, China, where its headquarters are located. To date, BYD has manufactured more than 70,000 electric buses, which can be found in service in 70 countries and more than 400 cities around the world (BYD, 2022). Its foreign markets include Europe, primarily the United Kingdom, where it has nearly 1,800 electric buses in circulation, and Latin America, mainly Colombia and Chile, with a similar number of units (BYD, 2022; E-Bus Radar, 2022).

**Figure III.5**
Global trade in electric buses, 2017–2021
*(Millions of dollars)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations International Trade Statistics Database.
**Note**: Uses Harmonized System classifications: 870210 (bus transport vehicles with internal combustion engines), 870220 and 870230 (hybrid public transport vehicles), 870240 (electric public transport vehicles) and 870290 (other public transport vehicles).

BYD is supplying foreign markets through a strategy that combines exports and the establishment of production plants in key markets. In 2013, two plants were inaugurated in Lancaster, California, United States: one to manufacture electric buses, and the other to produce batteries. In 2015, it opened a plant for the manufacture of electric bus chassis in Campinas, São Paulo, Brazil, which was later expanded with other facilities for the production of batteries (ECLAC, 2021). That same year, the company entered into a partnership with one of the largest European bus manufacturers, Alexander Dennis Limited (ADL), to jointly produce electric buses for the United Kingdom market, which has manufactured more than 1,000 units (Bates, 2022). This partnership has remained in place despite the acquisition of ADL by the Canadian manufacturer New Flyer for

more than US$ 405 million in 2019 (CISION, 2019). In 2017, it opened an electric bus manufacturing plant in Hungary, which in turn supplies chassis to the joint venture with ADL in Scotland (Bo, 2017). In 2019, BYD opened an electric bus assembly plant in Newmarket, Ontario, Canada (Hampel, 2019). BYD has thus become the European market's leading supplier of electric buses, delivering 632 units in 2021 alone, of which 375 were produced through the joint venture with ADL (Sustainable Bus, 2022c).

In a context where Chinese manufacturers are in the lead, European and North American companies have adopted ambitious strategies to secure a position in the emerging and attractive electric bus market. In this process of industrial reorganization, original equipment manufacturers (OEMs) of heavy-duty vehicles that are well established in the conventional bus segment have accelerated their transitions to electromobility.

- In 2015, the Swedish company AB Volvo was the first bus manufacturer to completely stop production of conventional vehicles for the European market, a risky bet for the world's leading supplier of diesel buses (Cedar, 2021). The company has sold more than 5,000 electric and hybrid buses and has recently received orders for over 850 units from more than 50 European cities, mostly for the Volvo 7900 articulated model (Volvo Buses, 2020).
- Since 2018, Germany's Daimler has been producing an all-electric bus, eCitaro by Mercedes-Benz, of which some 600 units are already in use in Europe (Sustainable Bus, 2022d). The company announced that it will offer zero-emission vehicles in all segments in Europe and Latin America by 2030 and will only sell all-electric city buses in Europe (Randall, 2022d). It plans to invest 1.25 billion euros to make this a reality (Joris, 2022).
- In 2015, the German automobile consortium Volkswagen created a new integrated commercial vehicle group, called Truck & Bus, covering the company's commercial vehicle businesses, Scania and MAN, in order to create synergies and advance the development of electromobility solutions. In 2020, MAN began producing its first all-electric bus at its plant in Poland. Electric buses are produced alongside conventional diesel models on a single production line. MAN expects to have 50% of its city bus production running on battery power by 2025, rising to 90% by 2030 (Fan Bus, 2022). In turn, Scania AB started testing electric buses in 2018. However, Scania is the only one of the bus segment's major manufacturers that does not have a significant share in the growing electric bus market, and it has only supplied small fleets in Sweden. To reverse this situation, it has launched a new all-electric version of the Citywide and announced an investment of over 100 million euros in a battery assembly plant (Sustainable Bus, 2022e).
- The Italian group CNH Industrial[5] has two companies in the passenger transport segment: IVECO Bus and Heuliez, a historic French brand that is now focused entirely on electric buses. With a 44% share, Heuliez is the French market leader and has invested heavily in its Rorthais plant to develop a centre of excellence specializing in the production of all-electric buses (3BL Media, 2021). Since 2013, IVECO Bus and Heuliez have been working together to develop zero-emission public transport systems. The two marques currently operate more than 600 electric buses in Europe (Business Wire, 2022). IVECO Bus expects to offer a full range of electric buses by 2023, and to implement alternative (electric/hybrid) powertrain technologies in all its vehicles by 2030 (Sustainable Bus, 2021).

[5] CNH Industrial is the result of the unification of activities not directly related to automobile production that Fiat S.p.A. spun off in January 2011.

Similarly, smaller manufacturers specialized in city buses, including some with a focus on electric vehicles, have also begun an accelerated process to strengthen and expand their production and technological capabilities in order to position themselves in the nascent electromobility market.

- The Polish company Solaris, part of the Spanish group Construcciones y Auxiliar de Ferrocarriles (CAF), offers a wide range of zero-emission vehicles: electric and hydrogen buses, trolleybuses and hybrid buses.[6] It is at present one of the European market's leading suppliers of battery-electric buses, second only to BYD. In 2021, it put 390 electric buses onto the roads, bringing its total number of units in circulation in different European cities to more than 1,200, mainly of its Urbino model (Hampell, 2022; Sustainable Bus, 2022c).
- With 25 years' experience in electric transport, the Dutch manufacturer VDL Groep has more than 800 electric buses in operation in ten European countries. In 2021, it unveiled its new generation of electric buses, the Citea model, which offers significant improvements in design, energy efficiency and range. Manufacturing of the electric buses produced by VDL is concentrated in the Netherlands and Belgium. As part of its growth strategy, VDL announced the construction of a new production plant in Belgium.
- The Canadian company New Flyer is the largest and most diversified manufacturer of public transport buses in North America. The company began developing electric vehicles in 2011, its first zero-emission bus entered service in 2014 and scaled-up production of electric buses began in 2018. The following year, it acquired the Scottish manufacturer ADL as a way to expand its product offering, diversify its business model and create a platform for international growth, thereby accelerating innovation and technological development in the electromobility segment. With this purchase, New Flyer consolidated a leading position in the United Kingdom, North America and Hong Kong (CISION, 2019). It currently has placed into circulation more than 8,600 electric-motor and battery-propelled units, 1,900 of which are zero-emission, in more than 80 cities across six countries (NFI, 2022).
- The United States company Proterra, which specializes in low-emission vehicles, has production facilities for electric and battery buses in California and South Carolina, as well as a state-of-the-art R&D laboratory in Silicon Valley. Since its creation in 2004, Proterra has taken advantage of various federal and local support programmes for its development and growth. It has also entered into partnerships with Germany's Daimler for the development of school buses and to advance its capacity for larger-scale manufacturing of commercial vehicles, and with body manufacturer ADL for the production of double-decker buses. Currently, it has more than 850 electric buses in operation in various North American cities (Proterra, 2022).

To summarize, over a very short period of time, an electric bus industry for public transport has begun to consolidate. These advances are the result of increasingly stringent environmental policies, global, regional, national and subnational targets set to mandate the transition to zero-emission vehicles and the introduction of significant supply- and demand-side incentives that have helped to make progress with electromobility economically viable. At the same time, major technological advances have made it possible to improve the range, efficiency and safety of larger electric vehicles. In this scenario, many original equipment manufacturers, city bus manufacturers and newcomers to the EV industry have begun to offer new alternatives that are increasingly competitive with their conventional diesel counterparts. Although the dominance of Chinese manufacturers is still very evident, European and North American companies

[6] CAF specializes in the manufacture of trains and railway equipment for tramways, metropolitan railways, rubber-tyred metros and suburban, commuter, long-distance and high-speed rail networks. In 2018, the group entered the city bus segment with the 100% acquisition of the Polish company Solaris.

are gaining important market shares in their respective spheres of influence. Indeed, a judicious alignment between public policy guidelines, technological progress and the existence of helpful incentives for the use, acquisition and manufacturing of electric vehicles has allowed the development of new production capacities in some of the world's most promising markets. Of particular interest in this scenario is an exploration of the potential that exists in Latin America to create productive capacities to meet the growing demand for zero-emission vehicles.

# B. Potential for electric bus production in Latin America

## 1. The advance of electromobility in Latin American public transport

In Latin America, the advance of electromobility remains nascent and patchy, but national and subnational governments are taking steps to accelerate the process. Within the framework of their nationally determined contributions (NDCs) to address climate change, a high proportion of the region's governments are prioritizing the transport sector as a key element in achieving emission reduction targets, and some of them have identified electric mobility as the most promising option (UNEP, 2021b). In addition, several countries are making progress with the design of national electromobility strategies, which aim to strengthen earlier initiatives to support the use of electric vehicles, improve vehicle energy efficiency and deploy charging infrastructure.

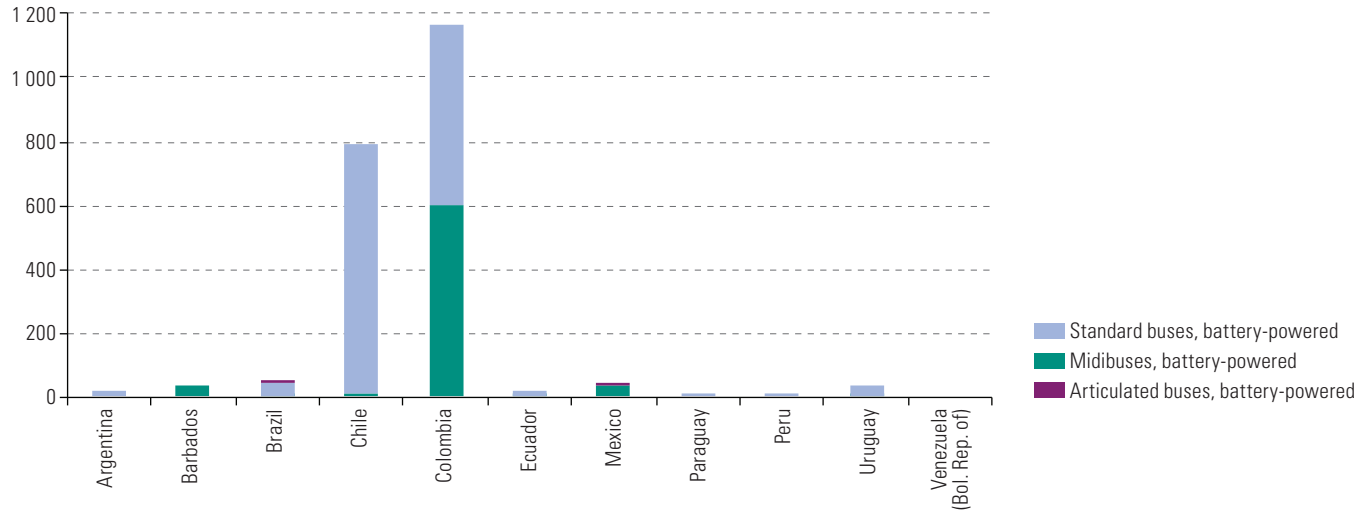
With the adoption of stricter environmental standards and emission-reduction regulations, major steps have been taken to promote electromobility. In addition, some countries have set targets for the electrification of their public transport fleets, including Chile, Colombia and Costa Rica (see table III.2). Efforts have also been made to plan and build a shared vision of the future of urban mobility among different social actors —albeit with varying degrees of success— as countries begin to develop their national electromobility plans.

Among the region's countries, instruments to promote the acquisition, use and deployment of electric buses have been at the forefront. Most of these initiatives, however, fail to prioritize the procurement of locally produced buses. Moreover, in some cases, tax breaks and tariff exemptions have been granted for the purchase and import of electric buses: for example, in Colombia (Bocarejo, 2022) and Mexico (Vázquez, 2022). Coupled with the lack of policies and incentives to support the manufacture or assembly of electric buses, this situation has discouraged local production. At the same time, the instruments put in place to promote electromobility have presented coordination and structuring problems, and this has hampered the establishment of a predictable road map with respect to future demand, which is necessary so that companies can plan their investments appropriately.

As seen above, despite sustained growth, light EVs still represent a very low proportion of the total number of vehicles in circulation (see table III.1). At the same time, interesting experiences, albeit still very limited, have been seen in the incorporation of electric buses into the public transport fleets of some of the region's cities. In April 2022, there were 2,162 electric public transport buses in circulation in major Latin American cities —including battery-powered midibuses (8–11 meters), battery-powered standard buses (12–15 meters) and battery-powered articulated buses (over 18 meters)— which represents less than 4% of their total bus fleets. Colombia, with 1,165 units, currently leads the adoption of electric

buses, most notably in the city of Bogotá; it is followed by Chile (789 units), Brazil (49) and Mexico (48). Of the total number of battery-electric buses, 68% are models measuring between 12 and 15 meters in length (E-Bus Radar, 2022) (see figure III.6).

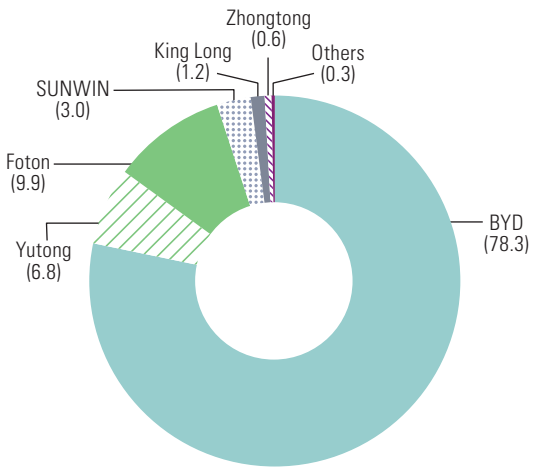
**Figure III.6**
Latin America: electric buses in circulation, by model and country, April 2022
*(Units)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of E-Bus Radar, Electric buses in Latin America, April 2022 [online] https://www.ebusradar.org/es/ [accessed on 23 June 2022].

In most cases, the first steps towards electrification are being taken by importing vehicles and much of the key support infrastructure. Chinese manufacturers are the main suppliers of electric buses in Latin America, accounting for more than 99% of purchases (see figure III.7). More than two thirds of the total number of electric buses come from the Chinese company BYD and, in some cases, such as Colombia, the company accounts for more than 96% of new purchases.

**Figure III.7**
Latin America: electric buses in circulation, by manufacturer, April 2022
*(Percentages)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of E-Bus Radar, Electric buses in Latin America, April 2022 [online] https://www.ebusradar.org/es/ [accessed on 23 June 2022].

Despite the region's incipient increase in demand for electric buses and favourable outlook for the coming years, the regional supply is not keeping pace. The lack of appropriate incentives hinders investments in the transition to low-carbon and more energy-efficient options.

The absence of policies and incentives at the sectoral level contrasts with the historical existence of incentive programmes to bolster the competitiveness of the automotive sector in Argentina, Brazil, Colombia and Mexico. Currently, and particularly in Brazil, some instruments (subsidies, incentives and lines of financing) do exist, which the industry could use to make investments viable to create or improve capabilities: the Climate Fund Program and Low Carbon Financing Fund for Acquisitions of Industrial Machinery and Equipment of the Brazilian Development Bank (BNDES). Such instruments remain scarce, however, and in most cases do not have a specific focus on electromobility. One interesting exception is the legislative bill for the promotion of sustainable mobility under discussion in Argentina, which provides for the gradual replacement of the bus fleet with electric vehicles and for tax incentives to encourage investment and production by local manufacturers (Kulfas, 2021). However, the lack of a broad guiding strategy means that these initiatives often exist alongside programmes to support low-emission fuels (biofuels or natural gas) in the absence of policies to facilitate the transition of established companies to the new technological model, as a result of which efforts to decarbonize transport are fragmented and weakened.

Innovative business models have been implemented to break the inertia of several of the actors involved in the deployment of electric buses in Latin America, including such mechanisms as subsidies, funding and shared operation and ownership schemes. This has allowed the entry of new players historically not involved with the automotive sector, such as energy companies, which are essential for the deployment of recharging infrastructure.

In contrast to conventional business models, these new ones separate ownership and operation, thereby allowing risk to be spread among a wider range of players.[7] In Chile and Colombia, innovative business models have been adopted to promote the electrification of public transport. In the city of Santiago, for example, ownership of the electric buses, batteries and recharging infrastructure was transferred to new players with the capital necessary to make the initial investments, while the operation of the service was assigned to companies set up specifically for that purpose.

## 2. Conventional bus production capacity: a starting point for accelerating the electromobility transition

The existence of a mature automotive industry and a degree of conventional bus production capacity is a good starting point for a transition to electric public transport bus manufacturing. Thus, companies located at the automotive sector's main production poles, as well as potential new entrants, can incorporate and leverage the physical assets, resources and technical know-how accrued in the manufacture of diesel buses to accelerate the transition to the new technological model. This dynamic could lead to investments to create new productive capacities and to expand, modernize and refurbish existing ones.

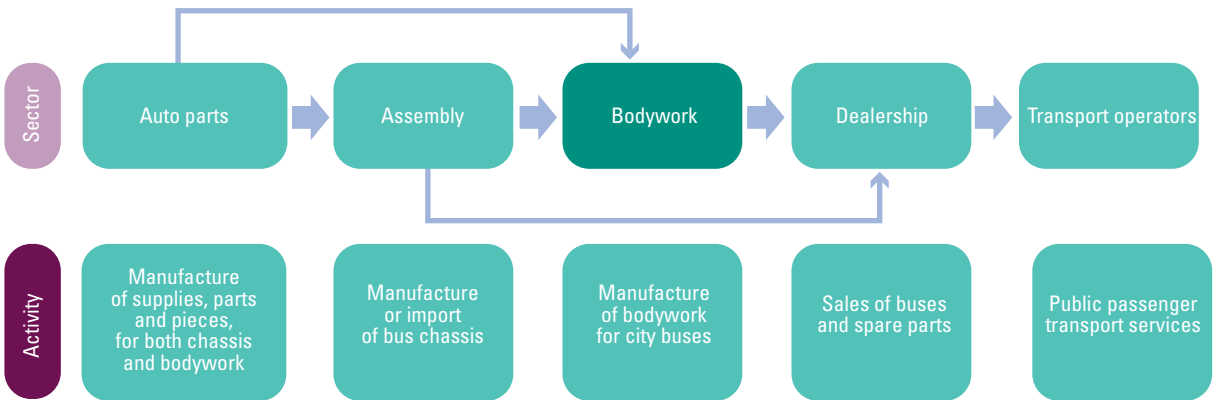
Although the manufacturing of city buses shares some common features with other segments of the automotive sector, it has a production logic that gives it its own identity. The main difference with the manufacture of light vehicles (cars, vans and trucks) is that buses are assembled in stages that involve different actors. In the first stage, one company manufactures the chassis —the frame that integrates and supports the mechanical components, the propulsion system (engine) and the suspension— and that

[7] In general, the provision of public transport services is based on a separation of roles and responsibilities. On the one hand, private operators own the vehicles and are responsible for providing the service and for operating and maintaining the buses, while on the other, government authorities supervise and control the operators' activities, assign routes and set fares through concessions or permits. From the financial point of view, the conventional model assigns the risk to the operators: since they are remunerated by user fares, they are vulnerable to fluctuations in demand.

subsystem is then transferred to another company that manufactures the bodywork. Chassis manufacture represents about 60% of the cost of a city bus. The city bus value chain therefore includes three industrial links (auto parts, assembly and bodywork), one commercial link (dealers) and one service link (passenger transport) (see diagram III.1).

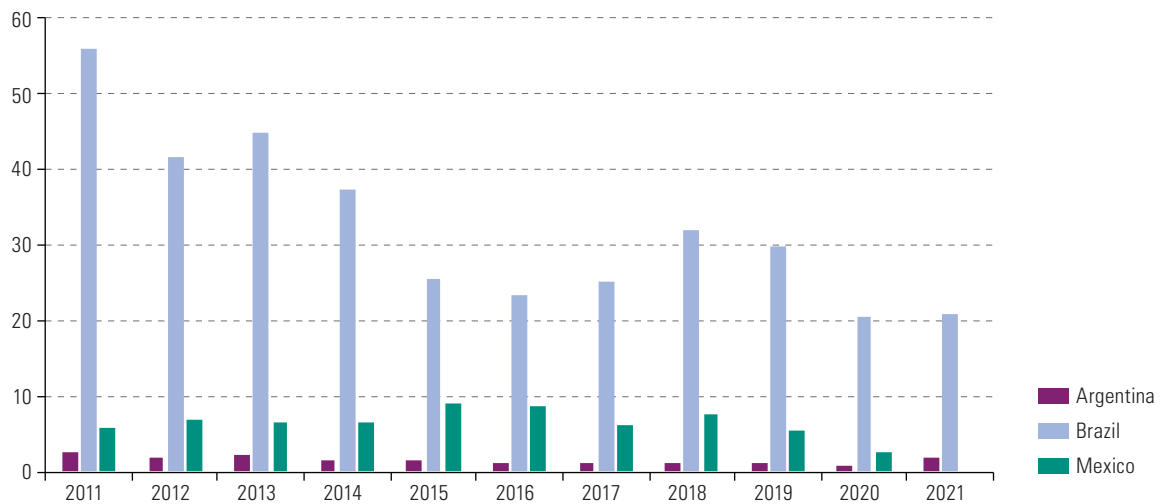
In Latin America, most bus manufacturing takes place in Argentina, Brazil, Colombia and Mexico. Those countries produce and assemble buses of various sizes, and chassis and body manufacturing facilities are available.

**Diagram III.1**
City bus value chain




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC).

**Figure III.8**
Latin America: production of conventional buses, by country, 2011–2021 or most recent year available
*(Thousands of units)*




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Motor Vehicle Manufacturers Association and Agrale for Argentina, National Association of Motor Vehicle Manufacturers for Brazil, and Asociación Nacional de Productores de Autobuses, Camiones y Tractocamiones (ANPACT) and National Institute of Statistics and Geography (INEGI) for Mexico.

Over the last decade, some fluctuations notwithstanding, the region's production of public transport buses declined (see figure III.8). Argentina and Brazil hit their maximum production levels in 2011, with 2,720 and 56,023 units respectively. Since then, there has been a downward trend in production in both countries. Mexico, in contrast, posted its highest production volume in the last ten years in 2015, with 8,922 units, after which its figures also began to drop. Against that backdrop, the economic crisis

fuelled by the COVID-19 pandemic struck an already weakened industry. In 2020, production recorded ten-year lows: 805 units in Argentina, 20,546 in Brazil and 2,584 in Mexico. In 2021, however, the industry appeared to show signs of a slight recovery, particularly in Argentina.

Public transport bus production in the region is mainly geared towards supplying domestic market demand. The Argentine and Brazilian industries supply almost all of the vehicles required by their domestic markets. In contrast, Colombia and Mexico supplement local output with a small volume of imports. Brazil stands at the forefront in terms of export capacity, with sales mainly to other markets in the region.

In Latin America, as in other parts of the world, a large and heterogeneous group of companies is involved in the production of conventional city buses. Thus, low-tech firms that produce small batches exist alongside large internationally competitive companies. Chassis and final products are manufactured by a small number of OEMs. This segment of the industry is dominated by subsidiaries of transnational companies with operations in Argentina, Brazil and Mexico, with Germany's Daimler and Volkswagen and Sweden's Volvo AB among the largest. In Colombia, in contrast, chassis are assembled locally with mostly imported components by General Motors of the United States and by HINO, a subsidiary of Japan's Toyota group (see table III.4).[8]

Table III.4
Original equipment manufacturers of conventional bus chassis with operations in Latin America, 2022

| | Argentina | Brazil | Colombia | Mexico |
|---|---|---|---|---|
| Daimler | X | X | | X |
| Volkswagen (MAN/Scania) | | X | | X |
| Volvo AB | | X | | X |
| Toyota (HINO) | | | X | |
| General Motors | | | X | |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC).

The range of participants in bodywork manufacturing, the other major segment of the city bus production chain, is much more heterogeneous. Although the companies have standardized models, products are manufactured according to customer specifications. Those characteristics and a lower degree of automation than among chassis OEMs make the bodywork segment more labour-intensive, and it is dominated by smaller, locally owned companies.

One major exception is the Brazilian company Marcopolo which, with more than 400,000 units produced, is among the world's largest manufacturers in the bus body and assembly segment. For more than a decade, the company has focused its international growth on developing markets, often through partnerships with companies in the target markets (ECLAC, 2009). This Brazilian transnational company currently has manufacturing operations in Argentina, Brazil, Colombia, Mexico, Australia, China, Egypt and South Africa.[9]

To summarize, despite some differences between countries, the city bus industry in Latin America has been able to provide productive and technological responses to both consumer demands and the regulatory requirements of each market. The most connected and best internationally positioned productive pole is in Brazil, with the presence of some of the global leaders in the manufacture of chassis and final products,

[8] Colombia also imports fully finished chassis, especially for articulated buses. The leading chassis suppliers are Daimler, Volkswagen (Scania), Volvo and BYD, with production mainly taking place in Brazil.

[9] In late 2020, following the impact of the pandemic and strong competition from a local manufacturer, Marcopolo announced its withdrawal from India. That operation was finalized at the beginning of 2021, when it completed the sale of its stake in its bus manufacturing joint venture with Tata Motors.

together with highly competitive local companies, especially in the bodywork segment. Marcopolo has already consolidated a solid position in other major Latin American markets: Argentina (Metalsur), Colombia (Superpolo) and Mexico (Marcopolo México). However, the strength of the conventional industry does not guarantee that it will be able to respond adequately to the global changes taking place. Thus, possible future disruptions will require major efforts to structure the change process, in order to ensure the predictability of demand and thereby make the investments required feasible. Accordingly, given the existing international commitments and national policies aimed at mitigating climate effects, it is necessary to start developing new products, to use environmentally friendly technologies and to pave the way for investment, taking advantage of existing capacities and assets.

## 3. Brazil: epicentre of the first steps towards electric bus production

The transition to electric bus production entails various challenges. While some components and parts are common to both diesel and electric vehicles, there are also key differences, and this has an impact on their respective production chains. The main differences relate to the propulsion and charging subsystems, which are not present in internal-combustion models and therefore require local manufacturers to acquire new technical and production skills (see table III.5) (De los Santos, 2022). Additionally, an electric bus requires modifications to its chassis and its steering and control systems. Taken together, these differences involve changes in cost, production processes and supplier relationships, which may result in the destruction or creation of entire segments of the supply chains for components and systems (Barassa, 2022). The transition to electric bus manufacturing must therefore take place following plans and in harmony with the supply chain development process.

The existence of a consolidated and competitive conventional diesel city bus industry, comprising an extensive network of suppliers with a wealth of technical skills accrued, places Brazil in a privileged position to pursue the production of electric buses. In recent years, manufacturers have been adapting to increasingly stringent requirements and have adopted more environmentally friendly technologies.

**Table III.5**
Comparison between conventional and electric bus subsystems

| Subsystem | Elements of a conventional bus powertrain | Elements of an electric bus powertrain | Change required |
|---|---|---|---|
| Propulsion and charging | Internal combustion engine, transmission, fuel tank and after-treatment system | Electric motor, battery modules, fast-charge connectors and recharging socket | High |
| Electrical components | Low-voltage systems | High-voltage systems | High |
| Steering and control | Hydraulic | Electric | High |
| Brakes, axles, suspension and differential | Standard | Regenerative brakes and suspension adapted to increased battery weight | High |
| Chassis | Standard | Adapted for installation of the battery set | Low |
| Interiors | Standard | Standard | No change |
| Frame and bodywork | Standard | Standard | Low |
| Instrument panel | Standard (analogue and/or digital) | Minor changes for power charging | Low |

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of S. Galarza, "Sesión 2: Introducción a los autobuses eléctricos y sus beneficios", November 2020 [online] https://movelatam.org/wp-content/uploads/2020/12/Presentacion-Sesion-2.pdf.

In contrast to Mexico's experience with light electric vehicles, Brazil is beginning to become the priority destination for the first —and no less important— investments in heavy-duty electric vehicle manufacturing. Thus, despite the absence of an explicit public policy to support the production of EVs, the largest OEMs in Brazil, which are primarily chassis manufacturers, have begun to position themselves in the electric bus production chain or have announced future plans for the electrification of their products.

- Since 2014, Chinese manufacturer BYD has invested more than US$ 150 million in electric bus production in Brazil. Most of this investment was earmarked for the construction of an electric bus chassis assembly plant in Campinas in the State of São Paulo. The plant currently has the capacity to produce 2,000 chassis per year, or 1,000 for articulated models (Verotti, 2021). In 2020, the company opened a battery factory at the Manaus industrial pole, located in the State of Amazonas. BYD also sells other all-electric light and heavy-duty vehicles in the country, albeit imported from China, along with EV charging stations. BYD currently markets six battery-electric chassis models in the Brazilian market and works in partnership with national bodywork companies, such as Marcopolo, Volare and CAIO.
- As part of its global strategy, the German company Daimler has chosen Brazil as the focus of its electric bus production efforts in the Latin American market. In 2021, Daimler announced the launch of the first fully developed electric bus chassis in the country (model eO500U), with a range of 250 km. About US$ 20 million (100 million reais) was earmarked for this purpose, as part of the some US$ 460 million (2.4 billion reais) allocated to the 2018–2022 investment cycle (Fan Bus, 2021). Daimler's new chassis, which will be available in the second half of 2022, is intended for countries with suitable infrastructure for electric buses in Latin America, Europe and Oceania (Romero, 2022). Daimler has not yet made any new investment announcements in Brazil, which would seem to indicate a certain caution with respect to Latin American markets within its global strategy, where it aims to reduce inflows until 2025 and to make intelligent use of the capital already invested (Riato, 2022). This situation could change, however, as the company has announced that it could adapt its plant in Mexico for the simultaneous production of both conventional and electric vehicles (Ortega, 2022).
- In late 2020, Volkswagen Truck & Bus, a member of the Volkswagen Group, announced investments worth around US$ 390 million (2 billion reais) for the 2021–2025 period. Styled "e-Delivery", this initiative is the largest investment in its 40-year history, and it is earmarked for the development of electric and hybrid models in Brazil. The funds will also be used for the development of the Euro VI emission system and for improvements at the Resende plant in the State of Rio de Janeiro (Kutney, 2020). Similarly, albeit somewhat more conservatively, another Volkswagen group member, Scania, announced investments of about US$ 350 million (1.4 billion reais) for the 2020–2024 period. The funds were earmarked for the modernization of its plant in São Bernardo do Campo, São Paulo, for the development of new technologies —including alternative fuels and emission systems (Euro VI, natural gas and biogas)— and an expansion of the R&D centre (Matsubara, 2022). These announcements seem to indicate that while they will continue to produce conventional heavy-duty vehicles, there is a growing concern for the development of more environmentally friendly technologies and production processes.
- In early 2022, Volvo AB announced investments worth some US$ 280 million (1.5 billion reais) for the 2022–2025 period for bus and truck production at its Brazilian plant in Curitiba (Reuters, 2022). The company's expansion project in the bus market is driven by an increase in its exports to Latin America and Africa. Initially, the company plans to conclude the execution of investments made to develop new products, most particularly engines adapted to the Euro VI emission standards that are due to come into force in Brazil in January 2023. It also plans to develop service digitization and connectivity in order to target the development of EVs in the final stage of the investment cycle (Olmos, 2022).

Volvo recently announced that it is conducting tests with its Polish-built electric bus model (Volvo 7900 Electric), which it also plans to produce at its Mexican plant in Tultitlán (Juárez, 2021). These investments are part of the company's strategy to leverage new and familiar technologies through partnerships with other companies and digital innovation to accelerate electromobility solutions, focusing its international growth on the Asian and United States markets (Volvo, 2022).

In line with the leading global manufacturers, some Brazilian companies are also resolutely moving into electromobility.

- Established in 2000, Eletra is a manufacturer of electric and hybrid buses and trolleybuses, and it also retrofits conventional buses to convert them to electric. In 2013, the company launched the first electric bus manufactured in Brazil, an 18-meter articulated model. It also works in partnership with other chassis and bodywork manufacturers, such as Mercedes-Benz, CAIO and Marcopolo, as well as with engine and battery suppliers, such as WEG and Grupo Moura; it is responsible for the integration of several systems and components which, excluding batteries, have a national-origin rate of 82% (Barassa and others, 2022). In early 2022, Eletra announced the transfer of its industrial operations to a new plant located in São Bernardo do Campo, in the State of São Paulo, where it will be able to produce up to 1,800 electric and hybrid buses a year, intended not only for the Brazilian market, but also for other Latin American countries such as Argentina, Ecuador and Mexico. The company also announced plans to market a line of recharging stations for buses and trucks (Eletra, 2022).
- The bodywork company Marcopolo has partnered with local electric chassis manufacturers, such as BYD, to develop an electric bus project of its own: the Marcopolo Attivi. The company wants to further expand its skills and presence in this segment and announced the development of its own electric chassis. In 2021, during the 18th National Science and Technology Week, Marcopolo presented its first electric bus with a chassis developed in-house, under a partnership with several national suppliers including WEG, Baterias Moura, Dana do Brasil, Meritor, Metalsa and Suspensys, and which maintains a national-origin rate of around 50% (Barassa, 2022). The Marcopolo Attivi has already been approved, and production is due to start in the second half of 2022 (Estradão, 2022). The company will also offer to provide its customers with recharging infrastructure.
- The Brazilian company Agrale has deployed a gradual internationalization strategy, with a presence in Latin America, Africa and the Middle East. The company is currently betting on certain product niches through innovation and partnerships with other players. It began by building trucks and later became the leading manufacturer of minibuses in Brazil. The federal government's "Road to School" programme has been particularly important for the company in this venture (Feltrin, 2021). In Argentina, its affiliate controls around 25% of chassis production for the domestic city bus market (Quiroga, 2022). Based on this strong market position, Agrale Argentina formed a partnership with the British start-up Equipmake, which allowed it to start manufacturing an electric bus in 2018 with the aim of developing an integrated electric chassis. Agrale assembled a prototype that was shipped to the United Kingdom, where the battery pack was incorporated and integrated, and tests were carried out by putting the vehicle on the road. The initial project envisioned importing the finished vehicle in 2020, but the pandemic and other difficulties delayed the process. The company also plans to put these buses into circulation in the city of Buenos Aires and, subsequently, to import Equipmake's batteries and electric motors for integration into locally produced chassis. Initially, they would aim at supplying the local market, to be potentially followed by exports to other countries in the region, such as Chile, Colombia and Uruguay (Quiroga, 2022).

In Brazil, in addition to original equipment manufacturers and bodywork companies, there are several players that have a key role in both production chains —the mature conventional bus chain and the nascent electric bus chain— and that are currently engaged in interesting transformation processes. This is the case among most of the companies that supply basic inputs (except those used in batteries), auto parts and systems. Similarly, actors that did not previously have a significant participation in the bus chain are beginning to emerge, most notably the electric motor manufacturer WEG (see box III.1).

**Box III.1**
WEG: motors for the new generation of electric vehicles

The Brazilian company WEG has been producing electric motors and components for more than 60 years. The company currently has industrial operations in 12 countries and a commercial presence in 135. In the Brazilian market, WEG has collaborated with other companies that are developing electric buses, such as Marcopolo, Volkswagen, Mercedes-Benz and Eletra, by offering them its motors. WEG's production has a considerable degree of flexibility and it makes efforts to meet the needs and specifications of each customer. However, according to the company's own estimates, the demand for electric motors and powertrains would need to rise to between 500 and 700 units per month to make a dedicated production line for those technologies viable (Barassa and others, 2022).

In addition to supplying electric motors, WEG has started to produce ultra-fast charging stations for heavy-duty vehicles. The company has supplied some of the stations used by Mercedes-Benz at its electric bus plant in São Bernardo do Campo, São Paulo, and, in collaboration with the German firm, it will offer charging infrastructure to customers who purchase its electric vehicles.

**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of E. Barassa and others, "Oferta de ônibus elétrico no Brasil em um cenário de recuperação econômica de baixo carbono", *Project Documents* (LC/TS.2022/9), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2022.

Finally, interesting developments are also under way in Brazil with players initiating activities in the final links of the electric bus production chain, such as the sale of new buses and components, vehicle repairs and the supply of recharging infrastructure. In particular, new actors who did not previously participate in the chain are getting involved in the provision of infrastructure and energy. Today, several bus manufacturers and equipment suppliers are offering charging infrastructure solutions as well as energy generated from renewable sources. In addition, energy companies such as Enel, Energias de Portugal (EDP) and CPFL Energia are participating in the financing of electric fleets in cities or in the development and implementation of urban transport electrification projects.

In sum, several positive aspects characterize the incipient capacity-building process for electric bus manufacturing in Brazil. First, there is the presence of companies specializing in the production of electric buses, both OEMs and local firms, such as BYD and Eletra. Second, subsidiaries of some of the leading OEMs in the global market for conventional buses are gradually moving towards the production of electric units in their Brazilian plants, such as Daimler and, with the projects they have announced, Volkswagen and Volvo. Finally, other suppliers are strengthening their production capacities and technologies to adapt to a scenario in which electromobility will be gaining ground; Marcopolo and WEG are notable in this regard.

However, this process has also revealed weaknesses, as regards both the supply of electric buses and the predictability of the demand. On the supply side, the main problems are in the capacity for producing batteries, their components and semiconductor-based

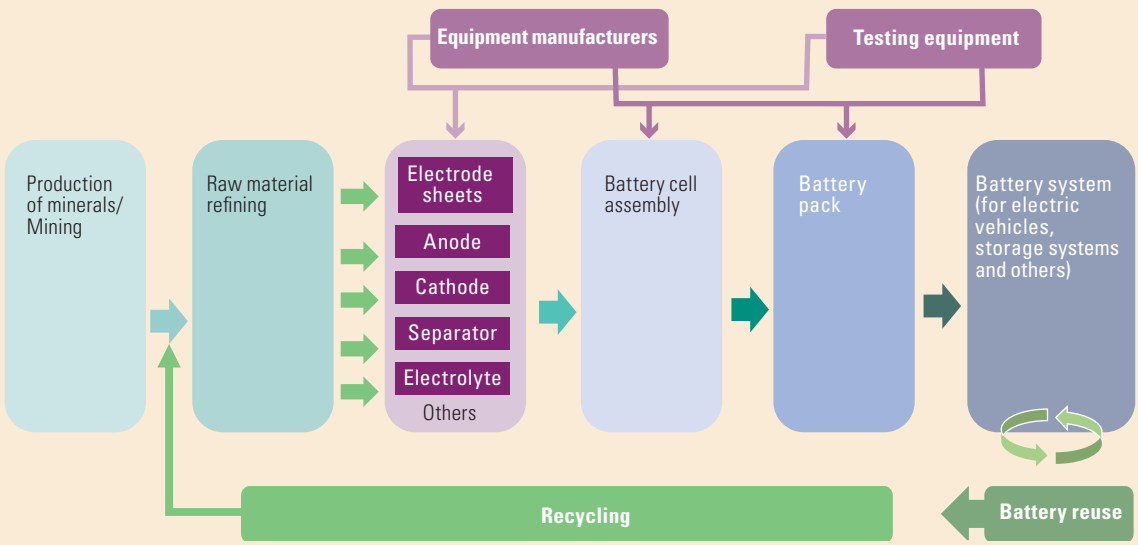
electronic modules (see box III.2). Batteries are the most expensive component in electric vehicles, and their production involves high levels of technical complexity in a fiercely competitive global environment (Barassa, 2022). The battery production chain involves various suppliers of raw materials, processed chemicals, advanced materials and components, as well as cell manufacturers and battery integrators. Despite the promotion initiatives in place in various countries around the world, China is the clear leader in this value chain. Brazil has a well-established lead-acid battery industry, made up mostly of domestic companies. Research and development are also emerging at research institutions, including the Mineral Technology Centre (CETEM) and the Institute for Technological Research (IPT). In addition, there are cooperative projects between companies that could be considered the first steps towards the creation of a national lithium-ion battery production chain. From a technical, economic and public policy point of view, however, there are still many challenges to overcome in order to create an effective domestic battery production chain for electric buses.

**Box III.2**
Lithium-ion battery production: opportunities and challenges for Latin America

Lithium-ion batteries are a key component in the production of electric vehicles and of other consumer, industrial and military products. The availability of the raw materials used in them, especially lithium, and the capacity to manufacture batteries have therefore become strategic assets and the subject of disputes between countries.

Lithium-ion batteries are obtained by processing minerals such as lithium, cobalt, manganese, graphite and nickel. The manufacturing process involves several stages, including mineral extraction, refining, production of intermediate components, assembly of cells and battery packs, and final use (see diagram). In general, the production of cells and batteries is concentrated near the main industrial centres that manufacture electric vehicles, where they supply the technical needs of original equipment manufacturers (OEMs). Recent years have seen a greater vertical integration and regionalization of the value chain. This trend is assumed to respond to the need of large industrial conglomerates and OEMs to guarantee the supply of raw materials and the quality of processing.

Stages and products in the lithium-ion battery value chain




**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of KnowMade, "e-mobility: the new Eldorado for Li-ion batteries", n/d [online] https://www.knowmade.com/press-release/news-power/e-mobility-new-eldorado-li-ion-batteries/.

China currently leads the world in lithium battery production (62%), followed by the United States (13%), Japan (12%) and the Republic of Korea (10%). One of the leading players in this industry is the Chinese company Contemporary Amperex Technology Co. Limited (CATL), whose four plants in China (Jiangsu, Qinghai, Ningde and Liyang) can produce a combined total of 82.5 GWh. The Ningde plant, with a capacity of 30 GWh, is the largest in the world, with only Tesla's Gigafactory in Nevada, United States, coming close to that figure (Jones, Acuña and Rodríguez, 2021).

**Box III.2 (concluded)**

One of the main drivers of the lithium-ion battery industry has been the public policies to encourage EVs adopted by a range of countries, including China, the United States and the member countries of the European Union. Thus, under the American Recovery and Reinvestment Act of 2009, the United States Department of Energy earmarked US$ 2.4 billion to increase domestic manufacturing capacity for batteries and their components, as well as for the development of electric vehicles (United States Department of Energy, 2009).

Despite significant reserves of strategic raw materials —such as the lithium deposits in Argentina, Chile and the Plurinational State of Bolivia— Latin America does not manufacture lithium batteries. However, there are indications that they could encourage the emergence of a future value chain for battery production. Brazil has a lead-acid battery manufacturing industry, and some R&D initiatives related to lithium-ion batteries, led by public and private institutions, are under way (Barassa, 2022). Among public research facilities, the Mineral Technology Centre (CETEM) and the Institute for Technological Research (IPT) have developed capacities in the study of some materials, especially lithium, nickel, cobalt and rare earths. In addition, the University of São Paulo (USP) and the Brazilian transnational company Tupy have launched a joint battery-recycling project (ABIFA, 2021). In the private sector, the initiatives of the Edson Mororó Moura Institute of Technology (ITEMM) and the Centre for Research and Development in Telecommunications (CPQD) are also notable. ITEMM has played an important role in the field of energy accumulators, contributing its experience in the assembly of cells into modules and in the design of battery packs.

Three players stand out in the manufacture of lithium batteries for vehicles: one transnational company (BYD) and two domestic companies (Baterias Moura and WEG). Since 2020, the Chinese company BYD has been manufacturing lithium batteries at its Manaus plant, with an annual production capacity of up to 1,000 batteries, to supply the electric buses it builds in Campinas. BYD will also produce battery modules for use in other electric vehicles. The Brazilian firm Baterias Moura, the largest lead-acid battery company in Latin America, is assembling lithium batteries using cells imported from China under an agreement with CATL. In turn, WEG, one of the world's largest manufacturers of electrical equipment, is also importing lithium cells to assemble battery packs, with a particular focus on the energy storage, bus and truck markets.

Although there are favourable signs that Latin America will be able to gain a foothold in the next links of the lithium-ion battery value chain, the challenges are great. First, further progress is needed in the development of a competitive business capacity. Second, electric vehicle take-up must be accelerated, through the adoption of public policies that combine stricter regulations with effective incentives.

**Source**: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of B. Jones, F. Acuña and V. Rodríguez, "Cadena de valor del litio: análisis de la cadena global de valor de las baterías de iones de litio para vehículos eléctricos", *Project Documents* (LC/TS.2021/86), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2021, United States Department of Energy, "President Obama announces $2.4 billion in grants to accelerate the manufacturing and deployment of the next generation of U.S. batteries and electric vehicles", 5 August 2009 [online] https://www.energy.gov/articles/president-obama-announces-24-billion-grants-accelerate-manufacturing-and-deployment-next, E. Barassa, "Cadeia produtiva de ônibus a diesel e ônibus elétricos no Brasil", Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2022, unpublished, and Associação Brasileira de Fundição (ABIFA), "Tupy firma parceria com a USP, para pesquisa de reciclagem de baterias", 3 May 2021 [online] https://www.abifa.org.br/tupy-firma-parceria-com-a-usp-para-pesquisa-de-reciclagem-de-baterias/.

Semiconductors are essential components of all the electronic systems found in EVs. At present, there is a worldwide shortage of semiconductors and while this is affecting the production chains for conventional buses and light automobiles, its impact on the manufacture of electric buses is even more pronounced. For the time being, Brazil's local industry has insufficient capacity to supply the automotive sector's semiconductor demands. The country produces around 10% of the semiconductors it consumes and is largely focused on supplying the cell phone and computer industries (Barassa, 2022). Government initiatives are currently in place to attract investments in the local production of semiconductors and strategic inputs for this chain, such as the Programme to Support the Technological Development of the Semiconductor Industry (PADIS). Even so, the feasibility of increasing local content in the production of key components is uncertain, on account of the keen competitiveness of Chinese manufacturers and the technological and productive limitations of Brazilian industry.

On the demand side, electric bus manufacturers are concerned about the lack of predictability, the low number of orders placed and the lack of standardization in different municipalities' bus specifications (Barassa, 2022). These factors combine

with the decentralization and lack of coordination of existing policies and the federal government's scant support for domestic production to create a scenario in which the incentives available appear to be insufficient.

## C. Policy recommendations and conclusions

The current juncture —marked by the need to address dangers relating to climate change and the accelerated transformation process within the automotive sector— opens a window of opportunity for developing new productive capacities in Latin America.

In the electric car segment, in developed countries and Latin America alike, more ambitious and long-term coherent policies are required to boost demand. It would therefore be timely to combine stricter standards for vehicle energy efficiency and $CO_2$ emissions with incentives and subsidies for the acquisition and adoption of electric vehicles, the scrapping of conventional cars and the refitting of internal combustion vehicles. A gradual reduction in fossil fuel incentives is also needed. At the same time, coordinated public and private actions should support the deployment of charging infrastructure. Government action, through regulation and incentives, must guarantee and expand access to charging infrastructure, both in public areas and at homes. In addition, vehicle manufacturers and energy companies, through the deployment of more proactive business models, can become key agents for the dissemination, development and expansion of technologies of this kind.

Support for demand should be combined with actions to accelerate the transformation of existing local capacities and to create new ventures for the development of the electromobility production chain. As in previous stages of the development of the Latin American automotive industry, public policies should play a key role in the new phase that, after some delays, is now beginning. Given that most of the region's productive capacity is the result of actions taken by transnational companies and that those firms have already shown a willingness to move towards a new low-emissions business model, public policies should be aligned with and strengthen those global guidelines. It is very likely that the patterns of specialization that arose in conventional auto manufacturing will be replicated in the EV sector: Mexico integrated into the North American value chain, and Argentina and Brazil serving the subregional market. In this scenario, public policies should at first offer incentives for accelerating the refitting of production lines and give signals regarding the creation of a stable and growing local EV market.

One segment that is particularly attractive is electric bus manufacturing. The deployment of that industry in Latin America requires the creation of a market that ensures predictable demand and an adequate scale of production. This requires progress with the planning of a gradual, progressive and time-bound transition to electromobility.

One pending task for the region's countries is defining objectives, goals and strategies for sector policies and improving their design, implementation and interconnections, especially if those States are to achieve a competitive insertion into the regional market for electric public transport buses.

### 1. Progress with public-public and public-private interconnections

A strategy for electrification, coordinated and agreed upon by public and private stakeholders, is key to attracting and mobilizing investment. Agreeing on priorities and planning, coordinating and ensuring the legitimacy of the relevant policies and measures requires improved dialogue and conversations in the public-public and public-private spheres.

The interconnection of public sector actors encompasses three complementary dimensions. The first relates to the need for coordination among the various government agencies and ministries involved with domestic vehicle production and its environmental impacts. For example, the ministries responsible for transport, energy, industry, foreign trade, science and technology, the environment and other areas could benefit from an institutional mechanism for dialogue and coordination allowing them to orient and align their individual agendas. Equally important are interconnections between the actors that make up the different levels of government: national or federal, state, provincial and municipal. This would allow a better alignment of government agendas at different administrative levels and would facilitate and make feasible the implementation of plans for the electrification of public transport fleets. Finally, partnerships and collaboration mechanisms between universities and research networks must also be built in order to enhance and accelerate the generation of knowledge in key areas for driving the electrification of bus production.

In addition, public sector coordination is crucial to promote and facilitate public-private interconnections, which are essential during technological transitions in which there is still a high degree of uncertainty. Institutional venues that encourage dialogue between the two sectors must therefore also be created. Being able to make their needs, demands and challenges explicit will provide public and private actors with a better chance of building a common vision of how to move forward, what limitations and opportunities they face, and what actions should be taken to strengthen and develop the production chain.

## 2. Promoting mechanisms to plan and structure demand

The industry's development in the region assumes the creation of a market that ensures a predictable demand for its products. Greater coordination between the public sector at the intersectoral level and the different levels of government would help the region's countries to make progress with planning a gradual, progressive and time-bound transition to electromobility. This planning would serve as a first parameter for guiding the industry's response. In addition, the signing of contracts between manufacturers and cities —whereby the government would commit to purchasing certain numbers of vehicles within a certain period of time— would allow production to be scheduled and the necessary funding to be secured.

The viability of production also depends on it having an adequate scale. Thus, overcoming the current fragmentation and disconnection of demand is crucial in achieving the economies of scale that would allow Latin American industry to compete with the largest global suppliers, particularly Chinese manufacturers. The creation of municipal consortiums or other joint purchasing instruments at the national and regional levels would encourage the consolidation of demand and improve conditions for negotiating unit prices. At the same time, it could facilitate access by small and medium-sized municipalities that would otherwise lack the financial or technical capacity to make such purchases on their own.

Defining common minimum requirements for products is a prerequisite for consolidating demand. Without common performance, capacity, safety and configuration parameters for electric buses, it will be very difficult to reach levels of production that would enable lower per-unit costs. The standardization of technical requirements for electromobility is therefore a key element in boosting production.

## 3. Accelerating the replacement of bus fleets

The public transport bus fleets in most of the region's countries are major pollutants and many of their vehicles have already been in circulation for years. Their gradual and progressive replacement is therefore advisable, and different instruments can be used for this purpose. First, the regulations setting the service life of internal combustion buses in cities could be reviewed. Second, municipal governments could establish clear timelines and targets, setting growing shares for electric vehicles. In this scenario, supporting innovative business models to accelerate the deployment of electric buses and the necessary charging infrastructure is essential. The success of these initiatives requires the coordinated participation of various relevant actors, public and private alike (vehicle manufacturers, auto part suppliers, transport operators, energy companies, investment funds, financial institutions and so on). One interesting experience in this area is that of the Zero Emission Bus Rapid-deployment Accelerator (ZEBRA), a joint venture between C40 Cities and the International Council on Clean Transportation (ICCT). Under the ZEBRA initiative, commitments from various investors and manufacturers have been secured, raising funds worth about US$ 1 billion to accelerate the deployment of zero-emission buses in the region's cities (Energiminas, 2021).

## 4. Supporting the creation and consolidation of electric bus manufacturing capacities

Creating a new industry requires a combination of policies and instruments to encourage local manufacturing and foster the development of a competitive production chain. The economies that have taken the lead in global EV production have achieved this through various subsidies, tax breaks and financial incentives for local manufacturing. Even those countries that aspire to become assemblers of vehicles with imported components and technologies, such as the Netherlands, have deployed measures to support domestic production (Cruz, 2022).

In order for the region's countries to accelerate the transition to electric bus production, they must overcome the lack of direct industry supports through public policies and a package of mutually reinforcing subsidies and incentives. The amount of public resources allocated for this purpose is as important as their efficient use. If the tax incentives for importing assembled vehicles are greater than the incentives for local production, a domestic industry is unlikely to develop. It is therefore important that efforts be made to at least level the playing field for imported and locally produced products, and to diversify incentives and subsidies in order to provide a more adequate system of incentives for local manufacturing.

Other advisable steps include following the movements of the governments of the world's most dynamic economies and developing incentives to build productive capacities in strategic areas in order to reduce external dependence. The development of a productive localization plan could help attract foreign direct investment and help reduce shortcomings in the battery and semiconductor segments, both of which are essential inputs for the green and digital transitions.

Long-term public financing through which companies can share part of the risks and capital costs implicit in the transition to electromobility can act as a catalyst in productive investments. Assembling a diverse set of financial instruments, including special credit lines for purchasing the capital goods needed to build the electric bus production chain and investment funds for higher risk projects, could help boost and mobilize investments in this area.

The creation and consolidation of production capacities for electric bus manufacturing means that manufacturers of finished vehicles can be supported by networks of local suppliers for components, parts and pieces. The region's main conventional vehicle production centres (Argentina, Brazil, Colombia and Mexico) have such supplier networks, albeit at different levels of development. In most cases, however, they are made up of smaller companies that are highly specialized in mechanical components. The electromobility transition means a reduction in the number of parts and pieces and an increase in the electronic and electrical components needed for finished vehicles. This factor demands special attention be paid to auto part suppliers when designing policies for the industry. The adoption of appropriate measures could help these companies introduce new capabilities to allow them to participate in the development of the emerging electric bus industry in Latin America and, thus, remain in the market.

Instruments to encourage the supply of electric buses must be interconnected with demand-side incentives. The adoption of national content standards for production, the adoption of preferential margins for public purchases of vehicles manufactured in the region's countries and the regulation of the industry could thus help forge the necessary interconnections between supply and demand, allowing them to mutual reinforce each other.

## 5. Promoting investment in R&D

The development and deployment of key EV technologies requires public-private cooperation and coordination to explore innovative cost-reduction solutions. The creation of industrial R&D laboratories would make it possible to associate universities, governments and the companies themselves around research projects dedicated to motorization and battery technologies. Also important is defining priority strategic areas and issues to guide the promotion of R&D through different instruments, such as grants, subsidies, credit, tax breaks, prizes and innovative public procurement. The creation of specific R&D support programmes in strategic areas for the development of the production chain could help develop local capabilities and contribute to the positioning of the industry.

## 6. Additional measures

The electrification of bus production is a challenge with technological, economic, environmental and social dimensions and, as such, must be accompanied by a broad set of complementary measures. First, efforts must be made to promote the development of renewable energies and sustainable production processes, including the introduction of mechanisms for battery disposal that observe the principles of the circular economy (Quiroga, 2022). Likewise, the industry's deployment presupposes the presence of recharging infrastructure to allow the efficient operation of the new city buses. Last but not least, the continuous training of qualified workers must be ensured to guarantee the operation and maintenance of electric buses in different Latin American urban contexts.

The electrification of public transport requires the countries of Latin America to ensure a stable power supply for charging stations and avoid overloading their existing power systems, some of which are already under stress due to climate change and inadequate investment. To this end, the promotion and support of a decentralized network of recharging stations should be accompanied by an investment strategy to improve and strengthen electric power generation and distribution systems. Agreements must also be struck between government authorities and energy system operators to guarantee

the operation of recharging stations, even in critical situations, and thus ensure the continuity of transport services. Another key issue is increasing the share of renewable sources in the energy mix. Failure to do so would compromise the environmental and health benefits arising from the adoption of electromobility for transport.

Charging stations are an indispensable component in the launch of EV-based transport systems. They can be located at terminals or along the route. Accordingly, they must be made available and accessible in sufficient numbers and with adequate capillarity standards throughout the territory to be served. The production of charging stations is typically not the job of vehicle manufacturers, but of companies specializing in electrical systems and energy supply. The complexity of the product requires production capabilities that, in Latin America, remain embryonic. However, the deployment of larger-scale charging networks could open up an opportunity for regional manufacturing.

Within the framework of the proposed guidelines, a very important role is played by foreign direct investment flows, as an expression of the strategies of original equipment manufacturers, specialized companies and their suppliers. The regional outlook appears favourable, albeit challenging. For example, some governments are deploying actions to accelerate the replacement of existing bus fleets, subsidiaries of global industry leaders are developing new products with cutting-edge technologies to promote electromobility, local companies are successfully competing with transnationals and initiatives are being adopted to complete and strengthen the value chain, mainly as regards batteries, electric motors, semiconductors and other important components. However, these developments are still insufficient to provide the certainty required for the key players to channel the huge amounts of investment that this transformation requires. Demand predictability —in terms of the unit numbers required and their technical specifications— and a rising supply require an explicit, credible and clear political will to align the various interests and needs involved.

# Bibliography

3BL Media (2021), "IVECO Bus and HEULIEZ: leaders in sustainable passenger transport", 25 February [online] https://www.3blmedia.com/news/iveco-bus-and-heuliez-leaders-sustainable-passenger-transport.

ABIFA (Associação Brasileira de Fundição) (2021), "Tupy firma parceria com a USP, para pesquisa de reciclagem de baterias", 3 May [online] https://www.abifa.org.br/tupy-firma-parceria-com-a-usp-para-pesquisa-de-reciclagem-de-baterias/.

ANDEMOS (Asociación Nacional de Movilidad Sostenible) (2022), *Sector automotor: anuario 2021*.

Barassa, E. (2022), "Cadeia produtiva de ônibus a diesel e ônibus elétricos no Brasil", Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), unpublished.

Barassa, E. and others (2022), "Oferta de ônibus elétrico no Brasil em um cenário de recuperação econômica de baixo carbono", *Project Documents* (LC/TS.2022/9), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).

Bates, M. (2022), "Alexander Dennis celebrates delivery of 1,000th BYD ADL electric bus", NGT News, 27 May [online] https://ngtnews.com/alexander-dennis-celebrates-delivery-of-1000th-byd-adl-electric-bus.

Bellon, T. (2021), "U.S. infrastructure deal would boost electric buses, but trail demand", Reuters, 25 June [online] https://www.reuters.com/article/us-usa-biden-infrastructure-ev-buses-idTRNIKCN2E11NP.

Bo, L. (2017), "BYD opens electric bus plant in Hungary", China Daily, 6 April [online] https://www.chinadaily.com.cn/bizchina/motoring/2017-04/06/content_28812640.htm.

Bocarejo, J. P. (2022), "Dinámicas y perspectivas de la industria colombiana de buses libres de emisiones", Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), unpublished.

Boudette, N. E. and C. Davenport (2021), "G.M. will sell only zero-emission vehicles by 2035", *The New York Times*, 1 October [online] https://www.nytimes.com/2021/01/28/business/gm-zero-emission-vehicles.html.
Business Wire (2022), "IVECO France renews its partnership with Forsee Power to supply batteries for its electric buses", 2 March [online] https://www.businesswire.com/news/home/20220302005636/en/IVECO-France-Renews-Its-Partnership-with-Forsee-Power-to-Supply-Batteries-for-Its-Electric-Buses.
BYD (2022), "BYD celebrates a decade of bus electrification to support global zero-emission goals", 12 January [online] https://en.byd.com/news/byd-celebrates-a-decade-of-bus-electrification-to-support-global-zero-emission-goals/.
Calatayud, A. and others (2021), *Urban Road Congestion in Latin America and the Caribbean: Characteristics, Costs, and Mitigation,* Inter-American Development Bank (IDB).
Cedar, S. (2021), "5 electric bus makers shifting into next gear", Green Biz, 1 June [online] https://www.greenbiz.com/article/5-electric-bus-makers-shifting-next-gear.
CISION (2019), "NFI Group Inc. announces acquisition of Alexander Dennis Limited", 28 May [online] https://www.newswire.ca/news-releases/nfi-group-inc-announces-acquisition-of-alexander-dennis-limited-854362816.html.
Cruz, R. (2022), "Benchmarking Internacional das políticas industriais para E-bus", Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), unpublished.
De los Santos, S. (2022), "Modelo de evaluación técnico-económica para la fabricación de buses eléctricos en México y otros países de América Latina", Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), unpublished.
E-Bus Radar (2022), Electric buses in Latin America, April [online] https://www.ebusradar.org/es/ [accessed on 23 June 2022].
ECLAC (Economic Commission for Latin America and the Caribbean) (2021), *Foreign Direct Investment in Latin America and the Caribbean, 2021* (LC/PUB.2021/8-P), Santiago.
___(2017), *Foreign Direct Investment in Latin America and the Caribbean, 2017* (LC/PUB.2017/18-P), Santiago.
___(2009), *Foreign Direct Investment in Latin America and the Caribbean, 2008* (LC/G.2406-P), Santiago.
Eddy, N. (2021), "Audi CEO reveals timetable for brand to become electric-only", Automotive News Europe, 21 June [online] https://europe.autonews.com/automakers/audi-ceo-reveals-timetable-brand-become-electric-only.
Eisenstein, P. A. (2021), "Mercedes-Benz goes all-electric by 2030", Forbes, 4 October [online] https://www.forbes.com/wheels/news/mercedes-benz-all-electric-2030/].
Eletra (2022), "Eletra produzirá 1.800 ônibus elétricos/ano em nova sede na Anchieta", 17 May [online] https://www.eletrabus.com.br/2022/05/17/eletra-produzira-1-800-onibus-eletricos-ano-em-nova-sede-na-anchieta/.
Energiminas (2021), "La alianza ZEBRA anuncia US$1.000 millones para financiar buses eléctricos en Latinoamérica", 12 November [online] https://energiminas.com/la-alianza-zebra-anuncia-us1-000-millones-para-financiar-buses-electricos-en-latinoamerica/.
Estradão (2022), "Ônibus elétrico Marcopolo Attivi começa a ser feito no 2º semestre de 2022", 21 June [online] https://estradao.estadao.com.br/onibus/onibus-eletrico-marcopolo-attivi-comeca-a-ser-feito-no-2o-semestre-de-2022/.
EV Volumes (2022), Global EV Sales for 2021 [online database] https://www.ev-volumes.com/.
Fan Bus (2022), "MAN Truck & Bus entregará más de 700 autobuses eléctricos", 6 April [online] https://www.fanbus.cl/2022/04/man-truck-bus-entregara-mas-de-700.html.
___(2021), "Mercedes Benz do Brasil presenta el chasis e500U totalmente eléctrico", 1 September [online] https://www.fanbus.cl/2021/09/mercedes-benz-do-brasil-presenta-el.html.
Feltrin, A. (2021), "Agrale supera crise e foca nichos e parcerias para se fortalecer", Estradão, 17 February [online] https://estradao.estadao.com.br/caminhoes/agrale-supera-crise-e-foca-nichos-e-parcerias-para-se-fortalecer/.
FTA (Federal Transit Administration) (n/d), "Low or No Emission Vehicle Program - 5339(c)" [online] https://www.transit.dot.gov/lowno#:~:text=The%20Low%20or%20No%20Emission,leasing%20of%20required%20supporting%20facilities.
Gerrard, B. (2021), "Electric buses are finally catching on in America", Autonomy, 29 November [online] https://www.autonomy.paris/electric-buses-are-finally-catching-on-in-america/.

Ghosh, P. (2021), "Ford Motor vows to sell only electric cars in Europe by 2030", Forbes, 17 February [online] https://www.forbes.com/sites/palashghosh/2021/02/17/ford-motor-vows-to-sell-only-electric-cars-in-europe-by-2030/?sh=3265af5d650c.
Hampell, C. (2022), "Solaris electric buses bound for Serbia & Poland", Electrive, 3 April [online] https://www.electrive.com/2022/04/03/solaris-urbino-12-electric-bound-for-serbia-poland/.
___(2019), "BYD opens montage factory for e-buses in Canada", Electrive, 26 June [online] https://www.electrive.com/2019/06/26/byd-opens-montage-factory-for-e-buses-in-canada/.
IEA (International Energy Agency) (2022), *Global EV Outlook 2022: Securing Supplies for an Electric Future*.
Jones, B., F. Acuña and V. Rodríguez (2021), "Cadena de valor del litio: análisis de la cadena global de valor de las baterías de iones de litio para vehículos eléctricos", *Project Documents* (LC/TS.2021/86), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).
Joris, L. (2022), "Daimler stops producing diesel buses by 2030", New Mobility News, 3 May [online] https://newmobility.news/2022/05/03/daimler-stops-producing-diesel-buses-by-2030/.
Juárez, P. (2021), "Volvo busca ensamblar autobuses eléctricos en México", Milenio, 23 June [online] https://www.milenio.com/negocios/volvo-busca-ensamblar-autobuses-electricos-mexico.
Kane, M. (2022), "World's top 5 EV automotive groups ranked by sales: 2021", InsideEVs, 2 February [online] https://insideevs.com/news/564800/world-top-oem-sales-2021/.
Keegan, M. (2018), "Shenzhen's silent revolution: world's first fully electric bus fleet quietens Chinese megacity", *The Guardian*, 12 December [online] https://www.theguardian.com/cities/2018/dec/12/silence-shenzhen-world-first-electric-bus-fleet.
Kulfas, M. (2021), "Proyecto de ley de promoción de la movilidad sustentable", October [online] https://www.argentina.gob.ar/sites/default/files/2021/10/movilidad_sustentable.pdf.
Kutney, P. (2020), "VWCO investirá R$ 2 bilhões até 2025 e contrata 550 em Resende", Automotive Business, 10 December [online] https://www.automotivebusiness.com.br/pt/posts/noticias/vwco-investira-r-2-bilhoes-ate-2025-e-contrata-550-em-resende/.
Lewis, M. (2020), "EGEB: All of New York City's municipal vehicles will be fully electric by 2040", Electrek, 7 February [online] https://electrek.co/2020/02/07/egeb-new-york-city-municipal-vehicles-electric-by-2040/.
Luman, R. (2021), "All aboard Europe's electric bus revolution", ING, 29 September [online] https://think.ing.com/articles/all-aboard-europes-electric-bus-revolution-290921.
Manthey, N. (2021), "US plans to drive transport electrification becoming concrete", Electrive, 9 December [online] https://www.electrive.com/2021/12/09/us-plans-to-drive-transport-electrification-becoming-concrete/.
Matsubara, V. (2022), "Montadoras de veículos investirão mais de R$ 50 bilhões no Brasil até 2025", Automotive Business, 17 June [online] https://automotivebusiness.com.br/pt/posts/setor-automotivo/investimento-montadoras-brasil/.
McKerracher, C. and others (2022), *Electric Vehicle Outlook 2022*, BloombergNEF [online] https://about.bnef.com/electric-vehicle-outlook/.
Metro Magazine (2015), "Seneca, S.C. touts 'world's first all-electric bus fleet'", 3 March [online] https://www.metro-magazine.com/10037240/seneca-s-c-touts-worlds-first-all-electric-bus-fleet.
Mulkern, A. C. (2020), "Los Angeles accelerates efforts to electrify its infamous traffic", *Scientific American*, 30 July [online] https://www.scientificamerican.com/article/los-angeles-accelerates-efforts-to-electrify-its-infamous-traffic/.
NESCAUM (Northeast States for Coordinated Air Use Management) (2022), *Multi-State Medium- and Heavy-Duty Zero Emission Vehicle. Memorandum of Understanding*, 29 March [online] https://www.nescaum.org/documents/mhdv-zev-mou-20220329.pdf/.
NFI (2022), "NFI receives first order from California's Porterville Transit for 3 zero-emission buses", 16 June [online] https://www.nfigroup.com/news-releases/news-release-details/nfi-receives-first-order-californias-porterville-transit-3-zero.
Niese, N. and others (2022), "Electric cars are finding their next gear", Boston Consulting Group (BCG), 9 June [online] https://www.bcg.com/publications/2022/electric-cars-finding-next-gear?utm_medium=Email&utm_source=esp&utm_campaign=none&utm_description=ealert&utm_topic=none&utm_geo=Global&utm_content=202207&utm_usertoken=43460a8c886a27dee779d8aa8e53cacfbbf47721.
Olmos, M. (2022), "Volvo anuncia investimento de R$ 1,5 bilhão para produção de ônibus e caminhões no Brasil", Valor Investe, 2 February [online] https://valorinveste.globo.com/mercados/renda-variavel/empresas/noticia/2022/02/02/volvo-anuncia-investimento-de-r-15-bilhao-para-producao-de-onibus-e-caminhoes-no-brasil.ghtml.

Ortega, R. I. (2022), "CASE, el futuro de la electromovilidad de Mercedes-Benz Autobuses", *El Financiero*, 20 April [online] https://www.elfinanciero.com.mx/transporte-y-movilidad/2022/04/20/case-el-futuro-de-la-electromovilidad-de-mercedes-benz-autobuses/.
Paukert, C. (2021), "BMW amps up EV plans, sees 50% all-electric sales by 2030", CNET, 17 March [online] https://www.cnet.com/roadshow/news/bmw-ev-i4-ix-suv-mini-plans/.
Proterra (2022), "Canada's BC Transit selects Proterra's heavy-duty EV and charging technology for bus fleet electrification", 25 May [online] https://www.proterra.com/press-release/bc-transit-selects-proterra-ev-technology-for-fleet-electrification/.
Quiroga, M. (2022), "Dinámica y perspectivas de la industria argentina de autobuses libres de emisiones", Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), unpublished.
Randall, C. (2022a), "Stellantis raises EV targets once again", Electrive, 2 March [online] https://www.electrive.com/2022/03/02/stellantis-raises-ev-targets-once-again/#:~:text=Stellantis%20has%20presented%20its%20strategic,be%20purely%20battery%2Delectric%20vehicles.
___(2022b), "US government invests in electric bus fleets", Electrive, 8 March [online] https://www.electrive.com/2022/03/08/us-government-invests-in-electric-bus-fleets/.
___(2022c), "US to invest almost $3 billion in battery supply chain", Electrive, 14 February [online] https://www.electrive.com/2022/02/14/us-to-invest-almost-e3-billion-in-battery-supply-chain/.
___(2022d), "Daimler Buses wants to sell only electric city buses from 2030", Electrive, 2 May [online] https://www.electrive.com/2022/05/02/daimler-buses-wants-to-sell-only-electric-city-buses-from-2030/.
Rauwald, C. (2021), "Volkswagen brand doubles EV share target while maintaining margin goal", Bloomberg, 5 March [online] https://www.bloomberg.com/news/articles/2021-03-05/vw-brand-doubles-ev-share-target-while-maintaining-margin-goal.
Reuters (2022), "Volvo anuncia investimento de R$ 1,5 bilhão no Brasil até 2025", Globo, 2 February [online] https://g1.globo.com/economia/negocios/noticia/2022/02/02/volvo-anuncia-investimento-de-r-15-bilhao-no-brasil-ate-2025.ghtml.
___(2021), "Toyota launches $70B EV push; Lexus will be all-electric brand", *Automotive News Europe*, 14 December [online] https://europe.autonews.com/automakers/toyota-launches-70b-ev-push-lexus-will-be-all-electric-brand.
Riato, G. (2022), "Mercedes-Benz pondera sobre novos investimentos no Brasil", Automotive Now, 13 January [online] https://www.automotivebusiness.com.br/pt/posts/setor-automotivo/mercedes-benz-pondera-sobre-novos-investimentos-no-brasil/.
Rodríguez, I. (2021), "General Motors invertirá 1,000 mdd en México para producir vehículos eléctricos", *Expansión*, 29 April [online] https://expansion.mx/empresas/2021/04/29/general-motors-invertira-1-000-mdd-en-mexico-para-producir-vehiculos-electricos.
Romero, J. (2022), "Todo listo: Mercedes-Benz lanzará su primer ómnibus eléctrico desarrollado y producido en Brasil en el segundo semestre", Camiones y Buses, 4 May [online] http://www.camionesybuses.com.ar/todo-listo-mercedes-benz-lanzara-su-primer-omnibus-electrico-desarrollado-y-producido-en-brasil-en-el-segundo-semestre-202211224/.
RTT (2022), "Hyundai Motor acelera la estrategia de electrificación", 21 March [online] https://revistartt.cl/hyundai-motor-acelera-la-estrategia-de-electrificacion/.
St. John, J. (2018), "California commits to zero-emissions bus fleet by 2040", GTM, 18 December [online] https://www.greentechmedia.com/articles/read/california-commits-to-zero-emissions-bus-fleet-by-2040.
Sustainable Bus (2022a), "Global electric bus market to reach 670k units in 2027 (from 112k in 2022), according to study", 8 March [online] https://www.sustainable-bus.com/news/global-electric-bus-market-forecast-2027/.
___(2022b), "Electric bus market 2021. Mercedes gets on the podium. Going high", *Sustainable Bus Magazine*, May [online] https://www.yumpu.com/en/document/read/66810855/sustainable-bus-2022-05.
___(2022c), "EU electric bus market grew 50% in 2021 (over 3,000 registrations). Mercedes debuts in the leaders' group", 10 February [online] https://www.sustainable-bus.com/news/eu-electric-bus-market-2021/.
___(2022d), "Daimler to sell only zero emission city buses in Europe starting in 2030 (eCitaro with Toyota fuel cell range extender ready next year)", 2 May [online] https://www.sustainable-bus.com/news/daimler-only-zero-emission-city-buses-2030/#:~:text=ready%20next%20year)-,Daimler%20to%20sell%20only%20zero%20emission%20city%20buses%20in%20Europe,battery%20and%20hydrogen%2Dpowered.

___(2022e), "Scania Citywide fully electric presented to the press in Södertälje: «Production has begun»", 16 June [online] https://www.sustainable-bus.com/news/scania-citywide-fully-electric-production/.
___(2021), "Full electric bus range in 2023, in-house e-axles production by 2024. Iveco Group presents its business strategy", 18 November [online] https://www.sustainable-bus.com/news/iveco-group-full-electric-bus-range-2024/.
UNEP (United Nations Environment Programme) (2021a), "Movilidad eléctrica avanza en América Latina y el Caribe en el contexto de la pandemia – nuevo informe del PNUMA", 29 July [online] https://www.unep.org/es/noticias-y-reportajes/comunicado-de-prensa/movilidad-electrica-avanza-en-america-latina-y-el-caribe.
___(2021b), *Movilidad eléctrica: avances en América Latina y el Caribe, 4.a edición*, July [online] https://movelatam.org/4ta-edicion/.
United States Department of Energy (2009), "President Obama announces $2.4 billion in grants to accelerate the manufacturing and deployment of the next generation of U.S. batteries and electric vehicles", 5 August [online] https://www.energy.gov/articles/president-obama-announces-24-billion-grants-accelerate-manufacturing-and-deployment-next.
Vázquez, C. (2022), "Dinámicas y perspectivas de la industria mexicana de buses libres de emisiones", Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), unpublished.
Verotti, A. (2021), "BYD mostra toda a energia", Istoé Dinheiro, 5 November [online] https://www.istoedinheiro.com.br/byd-mostra-toda-a-energia/.
Vincent, J. (2021), "Volvo says it will only sell electric cars by 2030", The Verge, 2 March [online] https://www.theverge.com/2021/3/2/22308851/volvo-electric-cars-only-2030-online-sales.
Volvo (2022), "Strategic priorities" [online] https://www.volvogroup.com/en/about-us/strategic-priorities.html.
Volvo Buses (2020), "Volvo Buses continues to electrify Europe", 12 November [online] https://www.volvobuses.com/en/news/2020/nov/volvo-buses-continues-to-electrify-europe.html#:~:text=Volvo%20Buses%20has%20sold%20more,from%20over%2050%20European%20cities.

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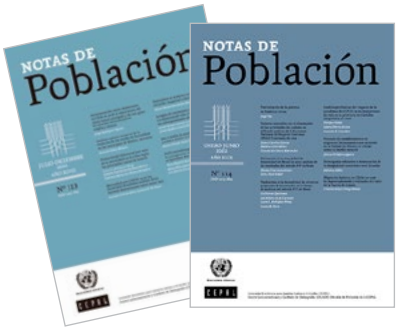


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ISBN 978-92-1-122090-2