



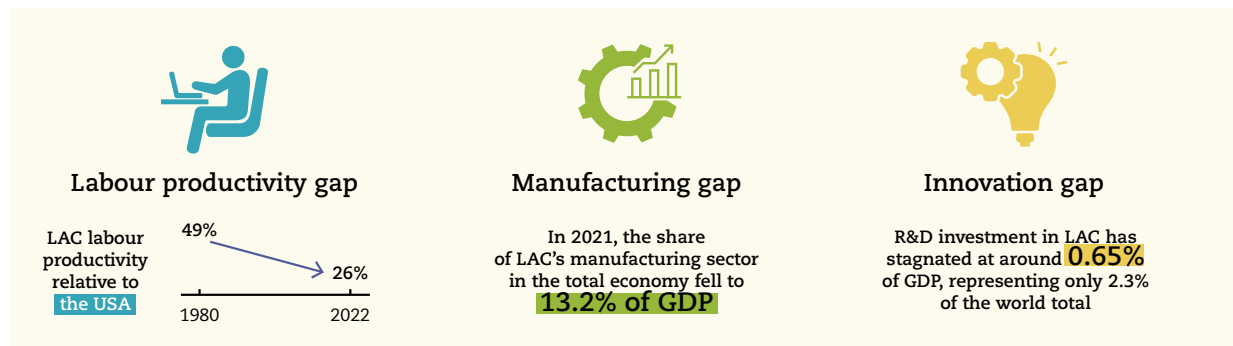
Chapter 3

Towards a new structure of production and employment: The role of investment

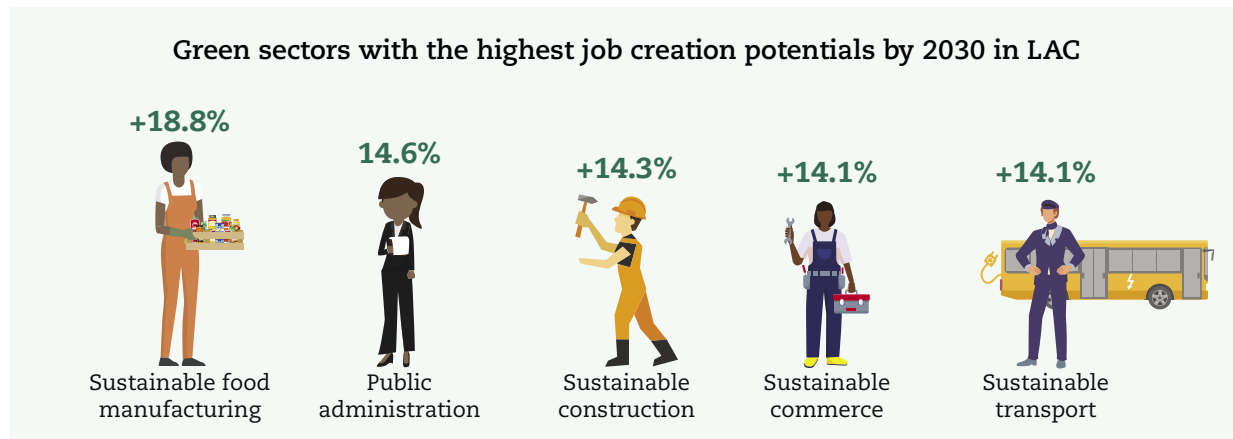
More and better investments could help transform the production structure of the Latin America and the Caribbean (LAC) region to advance a more sustainable and just development model that creates quality formal jobs. This chapter analyses the current structure of production in the region. It explores the dynamics of the labour market, the importance of advancing a renewed investment agenda to create formal jobs and the role of human talent in the production transformation. Finally, the chapter identifies strategic sectors to drive investment and advance sustainable development. The chapter concludes with key policy messages.

LAC needs more strategic investments to transform its production and employment structures

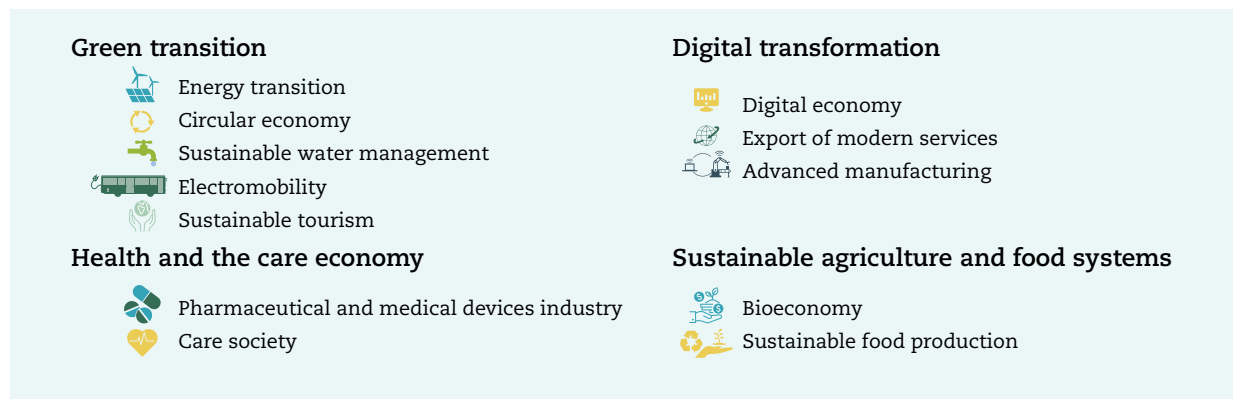
The region should rethink its production transformation model



Investment in green and digital can create better jobs and increase dynamism



Strategic sectors for public and private investments to drive sustainable development



Introduction

Countries in Latin America and the Caribbean (LAC) face the challenge of creating a better production structure to increase productivity, generate quality job opportunities and move towards a more sustainable and inclusive development model.

Against this background, the region needs strategic actions to narrow the gaps in human capital, technological and production standards with respect to more advanced economies (ECLAC, 2022^[1]). Such actions must aim to upgrade and diversify the economy and involve various factors, including: i) changing the production and service delivery by shifting from low knowledge content activities to those of higher knowledge for transformative change which boosts economic growth (OECD, 2016^[2]); ii) creating new sources of dynamism for a better development model with a fairer distribution of income, while minimising environmental impacts and improving quality of life (ECLAC, 1996^[3]); and iii) creating better jobs through the collaborative work of governments, firms and individuals (CAF, 2014^[4]).

Among these actions, promoting and facilitating investment in physical capital, knowledge and innovation, whether from domestic or foreign sources, can be a fundamental driver of production transformation. Investment can increase dynamism – through productivity growth, technological upgrading, development of suppliers and production linkages, as well as territorial development, human capital and formal job creation – in ways that are more environmentally sustainable. Both the scale and the focus of the investment matter.

In LAC the high degree of informal employment poses challenging conditions for governments to increase investment and redesign their production structure (Chapter 1). In such circumstances, education and technical training are particularly relevant as they can provide workers with the necessary skills to seize the benefits linked to incorporating more advanced technologies across different economic sectors and activities.

Improving the structure of production should be based on a comprehensive set of policies at national and local levels, capable of addressing all the different and interconnected dimensions of productive development. Such policies must aim to enhance, in particular: technology adoption and innovation; supply chain development; diversification of production capabilities; export promotion; incorporation of informal enterprises into the formal sector; and the development of human talent.

The public sector should play an active role in facilitating production transformation – in co-ordination with the private sector, academia and civil society – by identifying and prioritising sectors and strategic areas with greater technological intensity and greater potential for learning, innovation and market expansion, while also prioritising societal challenges. Global transformations are creating new opportunities, hence the need to adapt production transformation efforts to harness the potential of the green and digital transitions, the increasing demands for healthcare, and the need to guarantee a sustainable supply of food (ECLAC, 2022^[1]; ECLAC, 2020^[5]; OECD et al., 2021^[6]; OECD et al., 2022^[7]).

This chapter has five sections. The first section analyses the challenges of productivity in LAC countries, as productivity growth is at the heart of production transformation and remains a fundamental driver of quality job creation. The second section delves more deeply into the analysis of the production structure in the region, to identify key challenges and opportunities and to highlight the role of investment for production transformation. The third section examines the dynamics of labour markets in LAC, underscoring the importance of boosting job formalisation and reducing education and

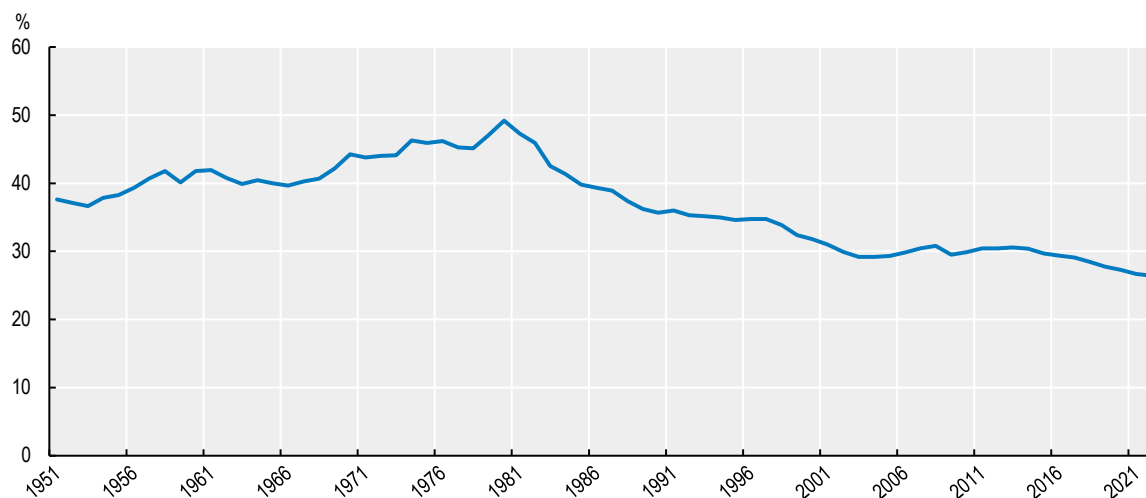
skill gaps, which will require further investments. The fourth section identifies strategic sectors with potential for driving sustainable development and that show opportunities for investment in the region. The chapter concludes with key policy messages.

Boosting productivity remains a persistent challenge in LAC

For several decades, LAC countries have experienced low aggregate productivity growth. Potential GDP per-capita growth has been below 1% since 1980, increasing slightly during the commodity boom (between 2003 and 2013). Since then, per-capita potential output growth has stagnated. Potential GDP per-capita growth has remained consistently below the level of advanced economies, hampering the convergence of per-capita income (Chapter 1) (OECD et al., 2022^[7]; OECD et al., 2021^[6]; OECD et al., 2020^[8]).

From a comparative perspective, LAC economies show a widening productivity gap relative to advanced economies. The productivity gap vis-à-vis the United States, for example, has been growing in the last decades (Figure 3.1). This gap cannot be attributed to variations in the use of human capital in the production process, as the average hours that workers dedicate to the production process are, in fact, greater in the LAC region.

Figure 3.1. Labour productivity in LAC countries relative to the United States, 1951-2022

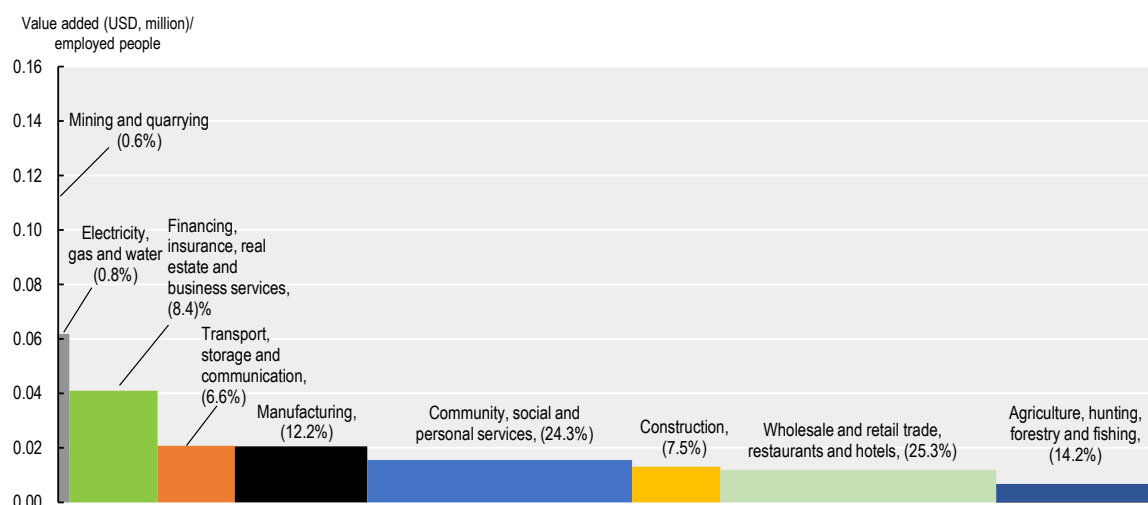


Source: Authors' elaboration based on (The Conference Board, 2023^[9]).

StatLink  <https://stat.link/kmxfeni>

In LAC countries for which data are comparable, variation in labour productivity at the sectoral level has been evident since the 1990s. Agriculture productivity has increased twofold, while productivity of the industrial sector has followed the same trend as aggregate productivity in LAC economies, increasing by 60% (LA-KLEMS, 2021^[10]). Sectors with the lowest gains include mining, financial and business services, and commerce. Although productivity is improving in some sectors, high levels of heterogeneity persist. Even in some sectors in which productivity growth is observed (e.g. agriculture, forestry and fisheries), this growth often starts from low levels of value added per person employed – far below the levels observed in more developed countries (Figure 3.2). The productivity gaps are particularly large in labour-intensive sectors, which explains the difference in average labour productivity between LAC and developed economies.

Figure 3.2. Labour productivity and employment participation in LAC, by main economic sectors, 2021



Note: Data on the vertical axis refer to labour productivity per person employed. On the horizontal axis, data refer to the share of employment across main industries, as defined by ISIC Rev. 3 classification. Sectors are ranked according to the respective level of productivity (from highest to lowest). Data shown in the labels refer to the share of employment in each sector.

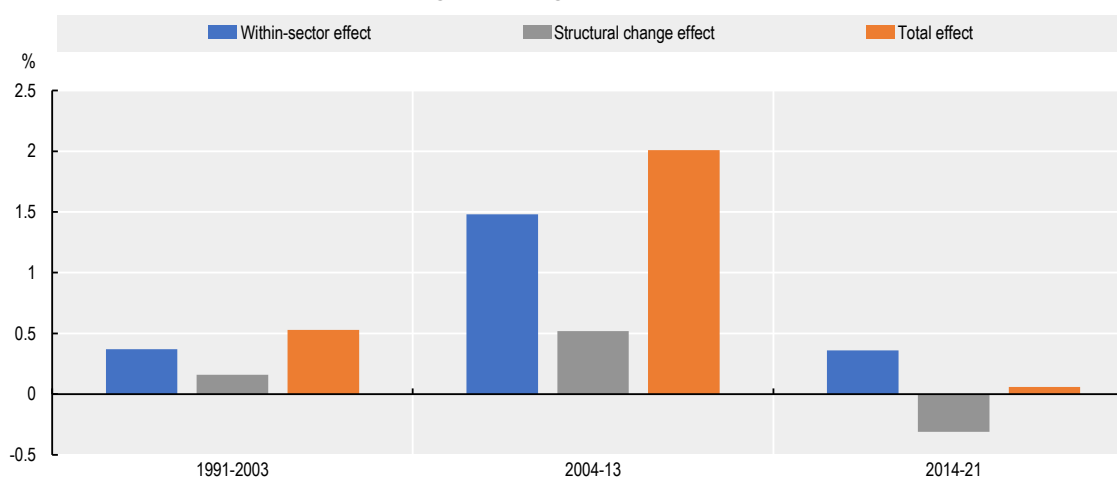
Source: ECLAC estimates based on data from national statistical offices.

StatLink <https://stat.link/xdm12r>

Intersectoral improvements have driven productivity growth in LAC, while resource reallocation has not. Shifting resources to higher productivity sectors (“structural change effect”) is usually a driver of growth; however, this has not yet been the case in LAC (Figure 3.3). Rather, sectoral productivity increases (“within sectors effect”) via increases in physical/human capital, technological changes, closing low-productivity businesses and starting efficient ones have been the main drivers of LAC productivity growth. Ideally, intersectoral improvements and resource reallocation happen together. Stimulating productivity growth based on resource reallocation therefore remains an important opportunity in the region (CAF, 2018^[11]; ECLAC and ILO, 2022^[12]).

Figure 3.3. Decomposition of labour productivity growth in LAC countries, 1991-2021

Unweighted average of 18 LAC countries



Note: The data refer to an unweighted average of data from the following countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela (Bolivian Republic of).

Source: (ECLAC and ILO, 2022^[12]).

StatLink <https://stat.link/mjrlcv>

A complex set of policies is needed to support the increase of productivity within and among sectors. The institutions that shape the productive environment of firms (regardless of sectors in which they operate) need to be strengthened (CAF, 2018_[11]). In addition, incentives and profitability signals must be aligned to enable the redirection of investments towards sectors that benefit from greater market and technological dynamism and innovation potential (ECLAC, 2020_[5]; ECLAC, 2022_[11]). To have a positive impact on productivity and economic growth, these policies must be complemented by others aimed at strengthening the local capacities essential for investment.

Examining the structure of production in LAC

The sectors and activities in which a country's production and exports are concentrated are key factors in its development model, determining different growth paths. When technology- and productivity-intensive sectors are more prevalent, greater efficiencies are generated in the form of technological development, learning and positive spillover effects to other sectors (ECLAC, 2022_[11]). When sectors are part of an expanding international market, they will also boost demand for skilled labour and better-paid jobs (ECLAC, 2022_[11]).

Traditionally, the competitiveness of most LAC countries has been based on natural resources and low-skilled labour. These factors have led to an incomplete industrialisation and are the basis of static comparative advantages. These are known as “spurious competitiveness”, as opposed to “authentic competitiveness”, based on technology and innovation, which delivers dynamic competitive advantages (Fajnzylber, 1983_[13]). The region has made some progress in terms of digitalisation and modernisation of production. By moving towards a model in which the generation and adoption of technology and innovation are at the centre, LAC should achieve high levels of competitiveness and be able to guarantee growth that is compatible with better income distribution and environmental protection.

Structural heterogeneity is another key feature of the LAC region. This can be observed by significant productivity differentials both between and within sectors: very dynamic and high-productivity sectors, that are generally export oriented, coexist with less dynamic sectors and with high rates of informality. Broad heterogeneity in productivity is also evident at the subnational level. The difficulty in achieving greater convergence is due not only to the low technological intensity of production, but also to insufficient linkages among sectors, companies and territories, and the low capacity of diffusion of technical progress of natural resource branches to the whole structure of production (OECD, 2016_[2]). Such features condition the fragile insertion of LAC in global value chains, deepen external constraints and increase vulnerability to external shocks (Chapter 1). Nearshoring can help further LAC's integration into global value chains by relocating investments in global production chains to nearby geographical locations. When implemented effectively, it can help bridge productivity differentials, promote linkages among sectors and territories, and foster a more dynamic and interconnected regional economic landscape.

The pattern of production and exports presents important specificities at the subregional level in LAC. In South America, production linked to natural resources and primary activities dominates and it is increasing. Central America and Mexico have a greater focus on manufacturing, contract manufacturing, and service export industries. The Caribbean relies on natural resources in sectors from manufacturing to tourism (ECLAC, 2022_[11]).

Cross-cutting aspects will be key to effectively advancing sectoral strategies and to successfully promoting investment in LAC. Sectoral strategies should be aligned with overarching horizontal aspects as well as with cross-sectoral implications such as institutional frameworks, sound analytical tools and co-ordinated policy responses (Chapters 2 and 4) (CAF, 2018_[11]).

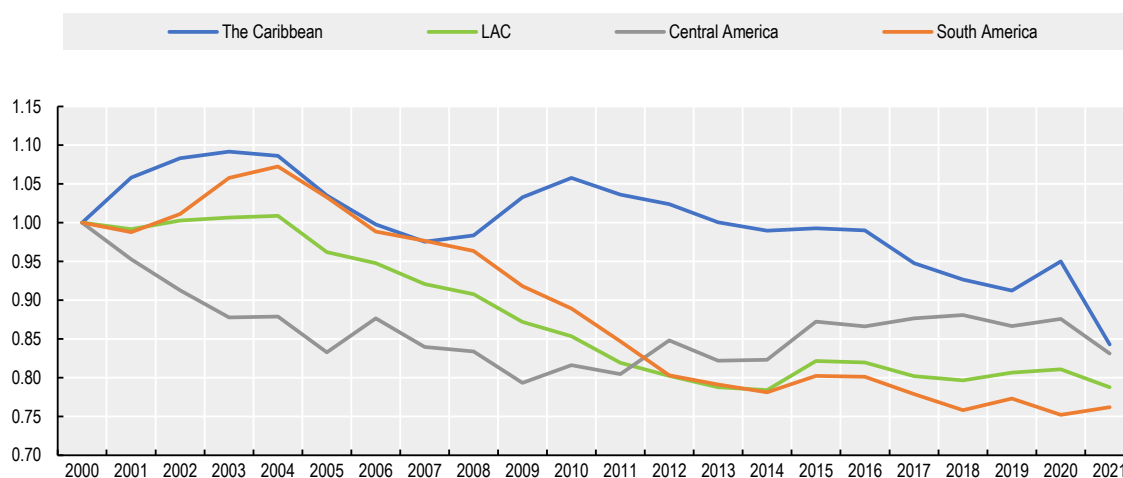
Manufacturing is losing ground in LAC as services become more dynamic

Manufacturing remains relevant to long-term growth in the LAC region. It can provide rapid productivity increases, generate quality jobs, and be a source of innovation and dissemination of technical knowledge throughout the economy. Its importance also derives from the significant complementarities with the agricultural and services sectors. Measures to strengthen these tie-ins are a crucial step towards generating technological spillovers and backward and forward linkages in the value chains (ECLAC, 2008^[14]).

The relative importance of manufacturing in the regional economy, however, has been declining. The share of LAC's manufacturing sector fell to 13.2% of GDP in 2021, its lowest level in the last two decades (Figure 3.4). This has been driven by South American countries in which a gradual decline in the relative weight of the manufacturing industry is associated with increased specialisation in primary activities. At the same time, the services sector has gained relative importance in the composition of GDP in most LAC countries.

Figure 3.4. Change in the share of the manufacturing sector, LAC subregions, 2000-21

Index of manufacturing value added as a percentage of GDP, base year 2000 = 1



Note: Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Curaçao, Dominica, Ecuador, El Salvador, Netherlands Antilles, Grenada, Guatemala, Guyana, Haiti, Honduras, Cayman Islands, Turks and Caicos Islands, British Virgin Islands, Jamaica, Mexico, Montserrat, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Dominican Republic, Saint Kitts and Nevis, Sint Maarten (Dutch part), Saint Vincent and the Grenadines, Saint Lucia, Suriname, Trinidad and Tobago, Uruguay, Venezuela (Bolivarian Republic of).

Source: (ECLAC, 2023^[15]).

StatLink  <https://stat.link/2h3luk>

Foreign direct investment (FDI) directed towards manufacturing has declined from 40% in the period 2010-19 to 23% in 2021, while FDI inflows to the services sector has increased (ECLAC, 2022^[16]). The correlation between foreign capital inflows and the performance of a given sector demonstrates the importance of an integrated vision of processes of structural change and investment attraction and allocation. To promote more technologically sophisticated sectors and activities, as well as industries with expanding global demand, LAC policies for attracting and allocating investments must align with that objective (ECLAC, 2022^[16]).

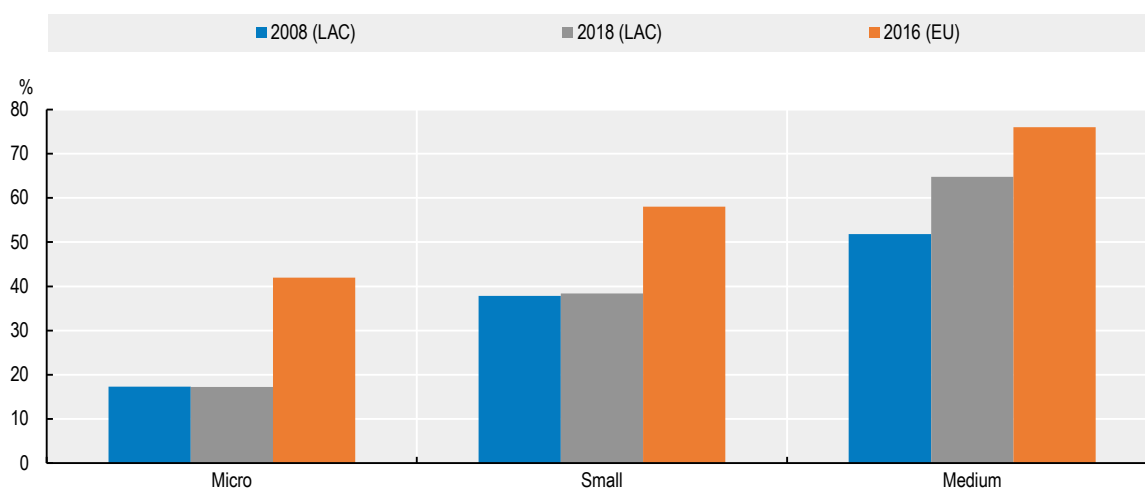
Closing the region's productivity and territorial gaps is key for better development

Micro, small and medium-sized enterprises (MSMEs) play an essential role in LAC economies, accounting for 99% of formal enterprises and 66% of formal employment (Dini and Stumpo, 2020^[17]). The difference between the labour productivity of smaller formal enterprises relative to large ones, however, is much more substantial in LAC than in

developed regions (Figure 3.5). In 2018, the labour productivity of LAC's medium-sized enterprises was only 65% of that of large enterprises, while much lower levels were reached for small (38%) and micro (17%) enterprises. The differentials are more pronounced when comparing firms' productivity in selected countries: microenterprise productivity in Brazil, for example, represents 4% that of large companies compared with 74% in France (OECD et al., 2020^[8]).

Figure 3.5. Labour productivity relative to large firms, by firm size, LAC and European Union (%)

LAC = 2008 and 2018; EU = 2016



Note: LAC data refer to Argentina, Brazil, Chile and Mexico.

Source: (ECLAC, 2022^[11]).

StatLink  <https://stat.link/z9maq8>

These differences stem from the fact that MSMEs in the European Union constitute a key, dynamic and integrated component of the structure of production, conditions that are not replicated in LAC (Dini and Stumpo, 2020^[17]). With rare exceptions, MSMEs in the LAC region tend to specialise in low-productivity sectors and their contribution to exports remains very limited. Only occasionally do they manage to establish relationships with large and more dynamic firms. Additionally, they often face difficulties in incorporating technologies and promoting innovation. Moreover, evidence suggests that low productivity in LAC MSMEs is also related to weak management practices, which could be improved through technological extension services (Bloom et al., 2013^[18]; McKenzie, 2020^[19]; Shapira et al., 2015^[20]). Thus, despite progress achieved, policy efforts to support MSMEs in LAC could be strengthened.

Heterogeneity among production units of similar size also stands out in LAC. The region's many informal, low-productivity MSMEs coexist with technology-based and fast-growing start-ups. These start-ups are an important source of innovation, and thus of the creation and transformation of industries and business models. In addition, they carry the potential to contribute to renewing business leadership in the region. Although investments in this domain are high risk and uncertain, if successful they pay off with great potential for contributing to economic growth, job creation and sustainable development (Audretsch et al., 2020^[21]). As such, promoting entrepreneurship and innovative start-ups deserves attention and action from policy makers, independent of the need for addressing low productivity and informality.

LAC shows a significant rise in the number of start-ups in the last decade, concentrated particularly in South America. They tend to be digitally based and operate mostly in

the software and financial intermediation sectors although some companies focus on commerce, education and health-related services (Box 3.1).

Box 3.1. The start-up landscape in LAC

Start-ups are concentrated in South America and in digital sectors

South America is home to 83% of the LAC region's start-ups, with 58% of companies headquartered in Brazil, 8% in Argentina, 8% in Chile and 5% in Colombia. Another 12% are based in Mexico. According to a new study by the UN Economic Commission for Latin America and the Caribbean (ECLAC), the main sectors for the region's start-ups are software (19%), financial intermediation (19%), commerce (9%), education (8%) and health-related activities (6%). Their business models rely predominantly on the internet and internet-based activities: in fact, 58% of LAC start-ups are digital services providers or offer digital-based solutions.

Financing is challenging for most start-ups in the region

Accessing development funding is challenging for most start-ups in the LAC region. A mere 20 companies raised half of the region's total start-up development funds. Remarkably, nine of those companies each received at least USD 20 million. This contrasts sharply with the funding reality experienced by the remaining companies in the sample, which received USD 714 000 per start-up on average. Given this huge gap, median funding was considerably lower, at USD 171 000 per start-up.

Start-ups operating in the financial services industry received the most individual funding, at USD 420 000 per start-up. This helps to explain why Colombia, which has a significant concentration of start-ups in this sector, stands out with the highest values for individual financing.

Start-ups in LAC also face financial constraints due to the limited availability of funding sources: 57% of companies have only a single investor. Overall, private investors provide 81% of the funding to such companies, which rely on credit for remaining 19%.

Other constraints faced by start-ups in the LAC region include lack of qualified human resources, a high tax burden and stringent labour regulations, as well as (to a lesser extent) factors linked to corruption and political instability (Federico and Ibarra Garcia, 2014^[22]).

Public policies can help promote the necessary conditions for start-up growth

In this context, it is important to highlight the role of public policies in promoting the conditions necessary for the growth of start-up ventures, such as incentives for the development of science, technology and innovation, along with education and facilitating access to financing (Mageste et al., forthcoming^[23]).

Market-based financing instruments, such as equity and debt, are essential tools in the development of medium-sized companies in emerging economies. However, LAC economies lag behind other emerging economies in the use of these instruments. To reverse this trend, the region needs to improve regulatory and institutional frameworks based on more and better information from SMEs on financing needs (Medina et al., forthcoming^[24]).

Note: The information in this box originates from an ECLAC study conducted by (Mageste et al., forthcoming^[23]) and elaborated on the basis of Crunchbase and Dataprovider (data for Brazil, Chile, Colombia and Mexico).

Source: (Mageste et al., forthcoming^[23]); (Medina et al., forthcoming^[24]); (OECD/UN, 2018^[25]); (Federico and Ibarra Garcia, 2014^[22]).

Although the LAC region has the potential to generate and nurture technology-based companies, the crisis caused by the COVID-19 pandemic affected both demand and funding in this segment. Globally, venture funding attracted by start-ups dropped from USD 21.5 billion in 2021 to USD 7.8 billion in 2022 (CBInsights, 2022^[26]). In line with a

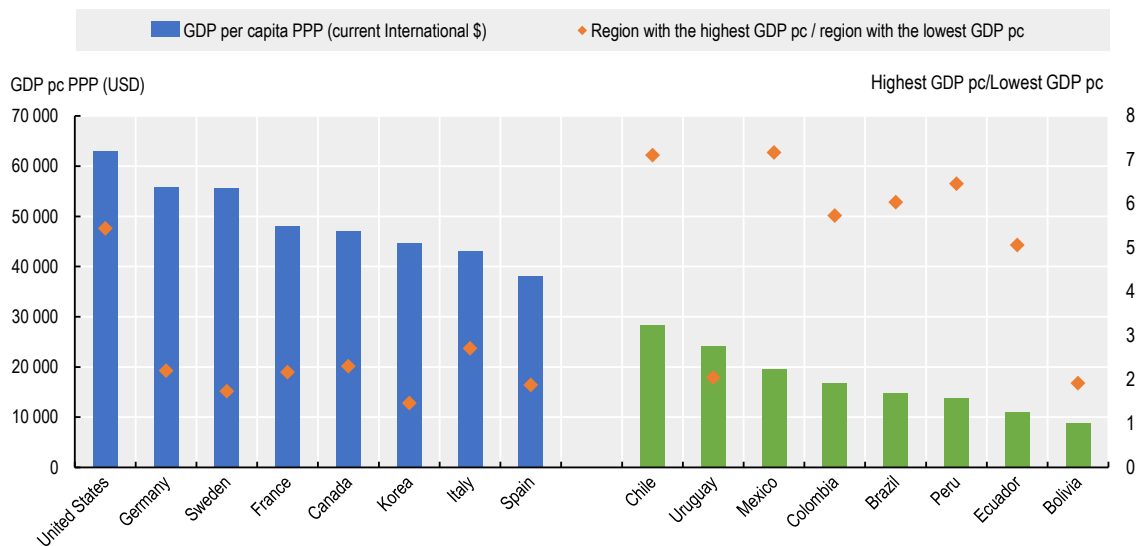
worldwide trend of decline after the boom in unicorn companies (start-ups valued at more than USD 1 million), the emergence of unicorns also slowed in LAC, falling from 17 in 2021 to 4 in 2022 (Kantis, Caicedo and Ibarra Garcia, 2023^[27]). As of April 2023, LAC counted 31 unicorn companies (CBInsights, 2022^[26]). Almost half were focused on fintech (45%), followed by e-commerce (23%), logistics and supply chains (13%), and artificial intelligence solutions (nearly 7%).

Promoting entrepreneurship and boosting risk capital should be parts of a broader strategy to promote production transformation and innovation in the LAC region. Given that smaller enterprises and start-ups are highly concentrated in certain areas within countries, significant disparities exist among territories.

The challenges of just and sustainable development models can be categorised into vertical and horizontal inequalities, which are closely interrelated. The vertical aspect – i.e. inequality among individuals or households – is crucial for individual development. Horizontal inequalities – i.e. inequalities among groups and especially territorial inequalities – persist throughout individuals' lives and contribute to reinforcing structural disparities among those residing in different territories (e.g. regions, provinces, urban areas and peripheral areas).

The region's economic dynamism, which is increasingly reliant on agglomeration economies, has resulted in a growing spatial and economic divide between territories that are lagging or declining and more prosperous ones that offer better employment prospects and well-being. As mentioned above, large productivity heterogeneity is evident across LAC countries. Even in countries transitioning to high-income status, pockets of economic stagnation still exist in certain regions (OECD et al., 2019^[28]). In other words, many impoverished territories have remained trapped in low-income conditions despite the overall economic growth of their country (Figure 3.6).

Figure 3.6. GDP per capita and territorial gaps in LAC vs. developed countries, 2020



Note: PPP refers to purchasing power parities. Data on the right-hand axis refer to the ratio between the GDP per capita of region with the highest GDP per capita and the GDP per capita of the region with the lowest GDP per capita. Two OECD datasets were used for GDP per capita: i) National Accounts; and ii) Regions and Cities databases. The regions considered in each country are: United States, District of Columbia and Mississippi; Germany, Hamburg and Saxony-Anhalt; Sweden, Stockholm and North Middle Sweden; France, Île de France and Mayotte; Canada, Nunavut and Prince Edward Island; Korea, Seoul and Jeju; Italy, Province of Bolzano and Calabria; Spain, Madrid and Canary Islands; Chile, Antofagasta and Ñuble; Mexico, Campeche and Chiapas; Colombia, Bogota Capital District and Vichada; Brazil, Distrito Federal and Maranhão; Peru, Moquegua and San Martín. Source: Authors' calculations based on (OECD.Stat, 2020^[29]) and ECLAC.

StatLink  <https://stat.link/grcu7w>

Colombia illustrates these disparities. The regions of Bogotá, Antioquia, Cundinamarca, Valle del Cauca and Santander, which account for 48.6% of the population, hold 63.3% of the country's domestic income, while six regions that comprise 13% of the total population have a mere 7% of the national income. In another example, with 8.6% of its population living in extreme poverty, poverty in Chile appears to be relatively low. In reality, extreme poverty ranges from 2.1% in XII Region (Magallanes and Chilean Antarctica) to a staggering 17.2% in IX Region (Araucania). Addressing this local dimension of inequality is crucial for ensuring the long-term stability of economic development. A strong focus on reducing disparities and promoting equitable development is essential at the regional level (OECD/UN/UNIDO, 2019^[30]; OECD/UN, 2018^[25]).

Territorial inequalities have wide-ranging effects on development progress beyond just GDP per capita. They impact aspects such as access to opportunities, health, education, the labour market and public goods. Disparities are evident not only between urban and rural areas but also within metropolitan areas. Being born or residing in a particular locality has a profound influence on the distribution of people's opportunities (OECD et al., 2019^[28]).

Developing a robust production foundation is crucial for expanding opportunities, particularly for individuals whose prospects are heavily influenced by their geographic circumstances. It is through territorial development policies that governments can establish the appropriate conditions to stimulate new investments, improve access to human capital and skills upgrading, accelerate the adoption of new technologies, and enhance resource efficiency. In the LAC context, internationalisation can offer opportunities to develop regions in resilient and sustainable ways, fostering new economic sectors and creating quality formal jobs linked to new investments (OECD, 2023^[31]). Given the pronounced territorial needs and opportunities in LAC, relying solely on national sectoral and industrial policies may yield limited results. Instead, policy development needs to be approached with a territorial lens, considering and adapting to the specific assets of each local area. In this regard, it is essential to put in place policies and programmes that boost local and regional development, strengthen community resilience and foster formal job creation (OECD, 2023^[31]).

Reducing large productivity heterogeneity among sectors, companies and territories is fundamental to reducing the gaps that LAC presents compared to more developed economies. To this end, cluster-based policy initiatives can be effective for strengthening territorial productive development.

The necessary production and territorial convergence must be stimulated through improved public support of MSMEs – such as nurturing the conditions for their formalisation, better integration and performance – so that they can play a central role as agents of change in the development model.

Investment in R&D and innovation is necessary to transform LAC's production structure

Both the quantity and quality of investments matter in efforts to promote technological sophistication and the upgrading and diversification of production via new industries and production linkages, innovation capabilities, and capacities to use medium and high technologies.

Investments also need to reflect strategic choices, including a focus on sectors with competitive advantages based on technology and growing demand (as noted earlier, these entail Schumpeterian and Keynesian efficiencies). Such strategic choices can stimulate

change from a vicious specialisation pattern to a virtuous one, capable of moving workers from low-productivity sectors to those with higher productivity and higher wages (ECLAC, 2022^[1]).

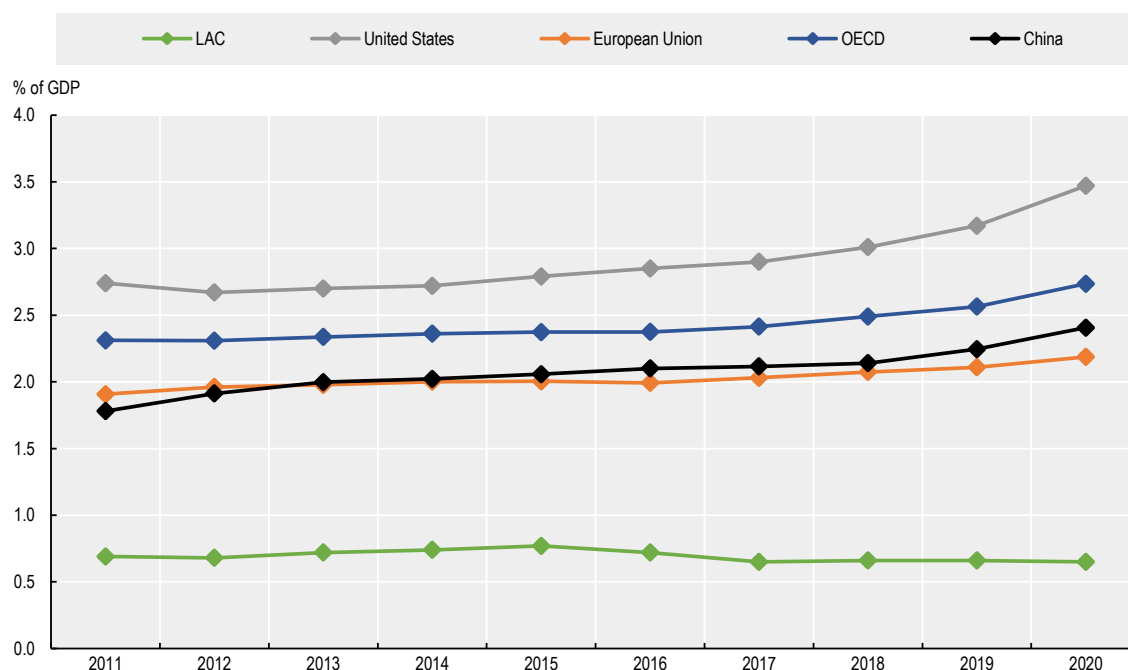
Public investment must be rolled out on adequate scales and in sustained manners over time. Public finance can work as a catalyst if it spans the entire innovation chain – including post-research stages, which are high-risk and capital-intensive, where support for companies is often lacking.

Innovation performance depends on a great deal more than investment. It relies on systems comprised of a complex set of interactions among a variety of actors, including firms, research institutions, funding bodies, regulatory bodies, users and others (Lundvall, 2010^[32]; Freeman, 1995^[33]). The main policy implications are twofold. On the one hand, a systemic approach is needed in each context to deal with the different factors and forces that shape innovation processes. On the other hand, it is important to stimulate and support interactions among actors to foster effective generation and diffusion of knowledge in more systematic ways.

Innovation – and the science and technology that underpin it – is an engine for development, as it is capable of spurring and sustaining long-term growth. New products, new processes, new ways of organising production and business, along with new technological paradigms open new opportunities while shaping different development patterns. In turn, some trajectories have greater potential than others to promote enhanced productive and territorial linkages and higher levels of quality employment.

However, investment in research and development (R&D) has stagnated in LAC in the last two decades. As a percentage of GDP, investment in R&D in LAC countries remained at around 0.65% between 2017 and 2020, representing only 2.3% of the world total (Figure 3.7). This contrasts with the world's leading economies, which have consistently increased R&D investment in recent years, a trend that intensified in the context of measures adopted to recover from the COVID-19 crisis. In LAC, low, fragmented and dispersed investment in R&D is combined with an emphasis on basic research. There is insufficient support for applied R&D, which is key to fostering innovative capacity. Given the backdrop of accelerated digital and green transformations, in which the frontiers of technology and innovation are rapidly shifting, it is all the more important to increase R&D investment in the LAC region. Otherwise, the asymmetries with more developed economies could widen.

Figure 3.7. Investments in R&D as a share of GDP, LAC vs. selected countries and blocs, 2011-20



Note: Data for LAC are estimated.

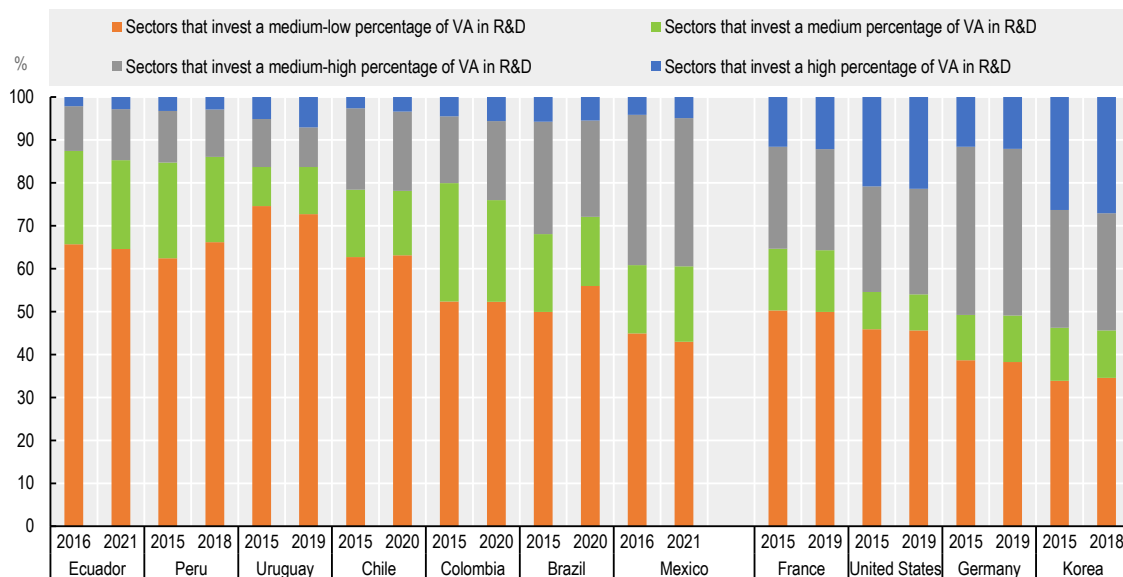
Source: Authors' elaboration on the basis of the Network for Science and Technology Indicators' Ibero-American and Inter-American (RICYT), http://app.ricyt.org/ui/v3/comparative.html?indicator=GASTOxPBI&start_year=2011&end_year=2020, for LAC; the OECD's STI Scoreboard, https://stip.oecd.org/stats/SB-StatTrends.html?i=G_XGDP&v=3&t=2011,2020&s=EU27_20, OECD, for the United States, European Union and OECD; and UNESCO, <http://data.uis.unesco.org/index.aspx?queryid=181>, for China.

StatLink  <https://stat.link/jwtyh6>

Significant heterogeneity is evident across LAC countries in R&D expenditures. In absolute terms, Argentina, Brazil and Mexico accounted for 86% of the region's R&D expenditures in 2020. Brazil, which alone accounted for 65%, invested the highest proportion of its GDP (nearly 1.2% in 2020), followed by Argentina and Cuba (0.52%). In contrast, investment levels in Guatemala and Trinidad and Tobago were close to 0.05% of GDP (RICYT, 2022^[34]). As capacities vary tremendously, countries in the region face specific policy challenges in terms of improving their technological sophistication and the innovative potential of their structures of production.

At the sectoral level, most sectors in LAC invest a medium or medium-low percentage of value added in R&D. This contrasts with more developed countries, in which more sectors invest a medium-high or high percentage of value added in R&D (Figure 3.8). Within LAC, Mexico's sectors invest the most in R&D, while sectoral investment in R&D is declining in Peru and Brazil. In developed countries, particularly the United States, Germany and Korea, the range of sectors that invest a high percentage of value added in R&D are increasing.

Figure 3.8. Distribution of sectors by investment rate in R&D, selected countries, 2015-21



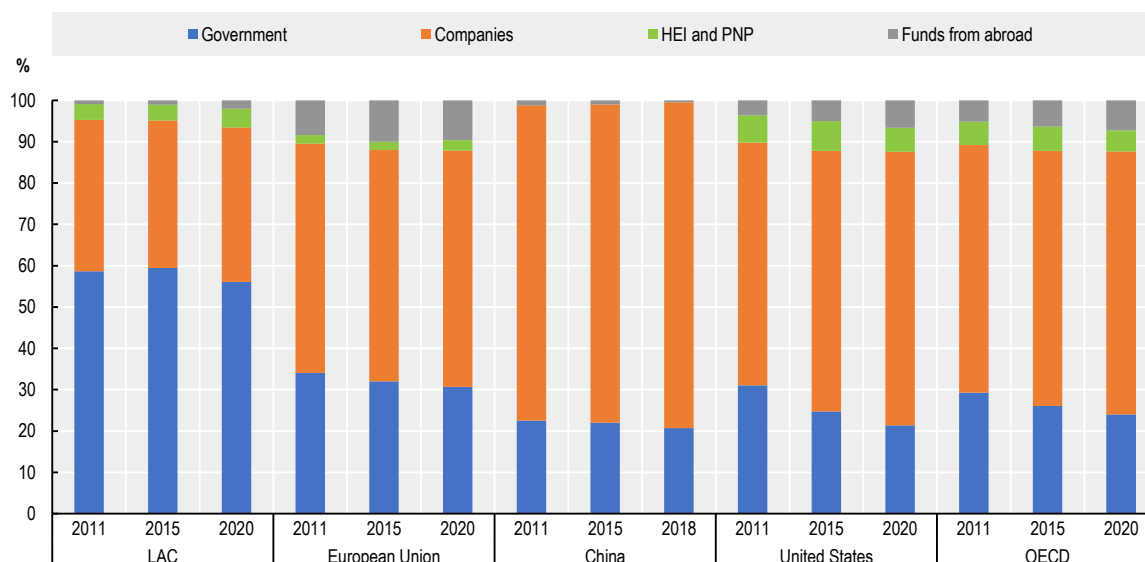
Note: VA = value added.

Source: ECLAC estimates based on data from National Statistical Offices.

StatLink  <https://stat.link/u6zp3w>

Both public and private sources of investment are needed to develop and disseminate innovations and technologies on the scale required to address contemporary challenges and achieve sustainable development in LAC. Deepening the share of private investment in R&D remains difficult in LAC countries, where governments are the main funding source, contributing nearly 60%¹ (Figure 3.9). In more developed economies, the business sector contributes far more to R&D, exceeding 60% in the United States, the European Union and most OECD member countries and reaching nearly 80% in the People's Republic of China (hereafter "China"). Moreover, the share of R&D financed by the business sector has been increasing in those countries over the last decade, possibly driven by new technological opportunities. The very low levels of private R&D investment in LAC deserve attention from policy makers.

Figure 3.9. Share of R&D investments by funding source in LAC and other territories, 2011-20



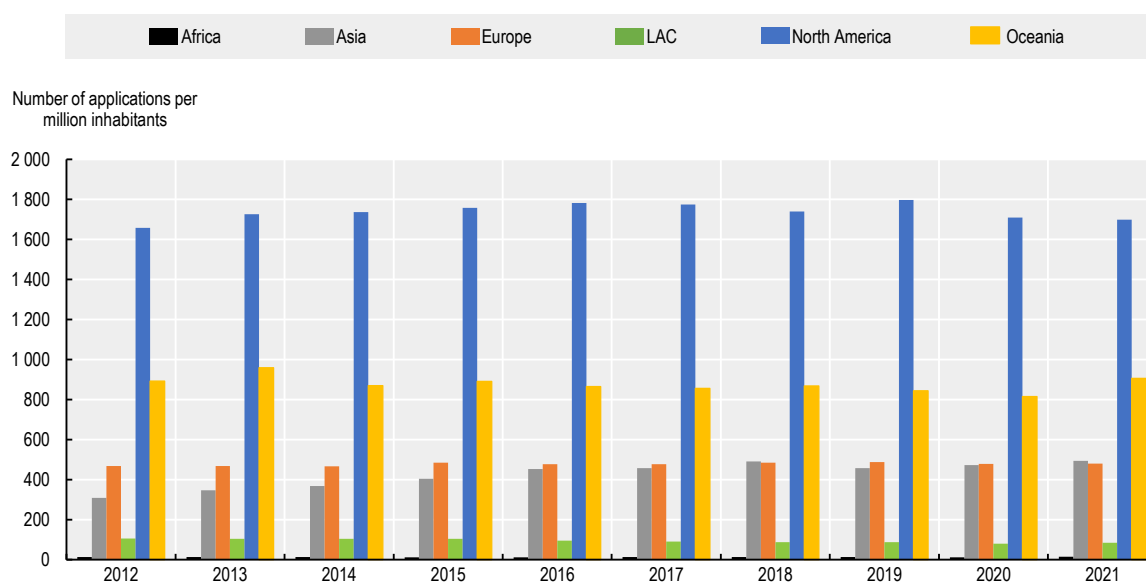
Note: HEI = higher education institutions. PNP = private non-profit organisations.

Source: Authors' elaboration based on (RICYT, 2020_[35]) for LAC and OECD's STI Scoreboard for the other territories.

StatLink <https://stat.link/4uge8z>

A worldwide trend towards an increase in patenting over the last decade is not evident in LAC. The region's patent applications have fluctuated over the years and remain low compared to other regions, both in absolute terms and as a proportion of the population (the latter being a better metric of technological development) (Figure 3.10) (WIPO, 2022_[36]).

Figure 3.10. Patent applications by region, 2012-21



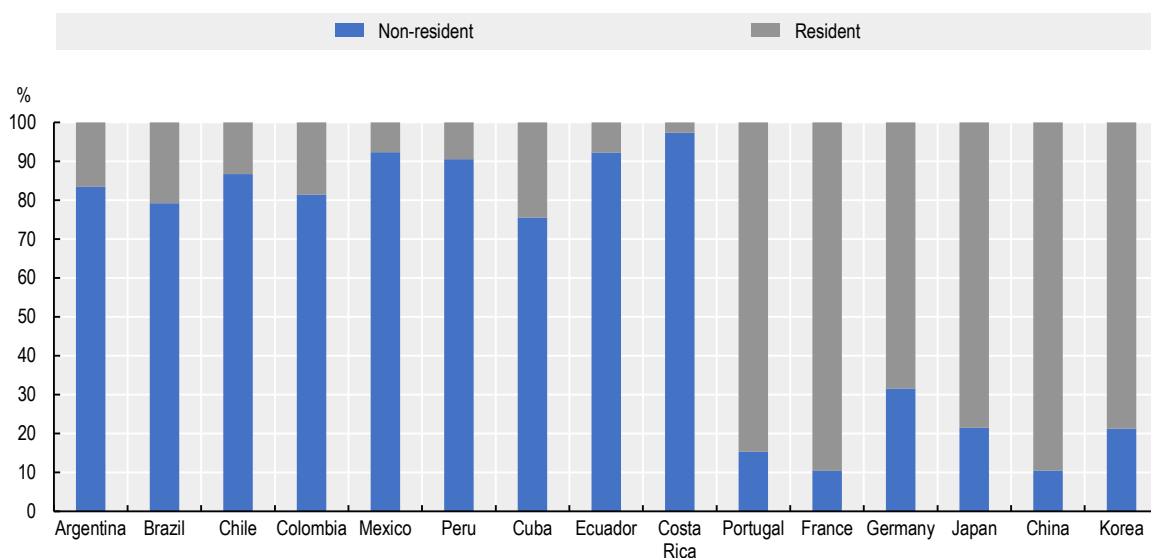
Source: Data from WIPO, www3.wipo.int/ipstats/key-search/indicator, and World Bank, <https://data.worldbank.org/>.

StatLink <https://stat.link/z9wlog>

Another particularity of LAC countries is that patent applications have been heavily dominated (87%) by non-resident applicants in recent years. This is in stark contrast to

more developed countries, where most patent applications are submitted by residents (Figure 3.11). This indicates who is appropriating the knowledge registered in a country, regardless of where it was generated. Moreover, as of 2020, the number of researchers in LAC represented 4.1% of the global total, well below Asia (43.3%), Europe (30.4%), and the United States and Canada (19.6%), but above Africa (1.4%) and Oceania (1.7%).

Figure 3.11. Share of resident applicants to national patent offices, selected countries 2019-21
Percentages (weighted averages)



Source: Data from WIPO, www3.wipo.int/ipstats/ips-search/patent.

StatLink  <https://stat.link/5mwzi3>

The development and accumulation of capabilities to generate, absorb and appropriate knowledge and technologies is a lengthy and difficult process that requires the collaboration of multiple actors. These capabilities can be fully developed only in a context of (formal and informal) networks among different types of players. The role of the state, however, goes beyond supporting actors and fostering these networks; it also involves establishing constituting innovation systems of various scopes (national, sectoral or subnational).

Indeed, aligning science, technology and innovation (STI) efforts and their actual contribution to addressing development needs or overcoming bottlenecks is not a natural or automatic process. Mission-oriented and transformative innovation policies are approaches that LAC countries are starting to explore in their endeavour to prioritise and mobilise resources and capacities towards solving national or subnational challenges. The effectiveness of innovation efforts also relies on horizontal factors such as education, institutional frameworks and development of physical, scientific and technological infrastructures – none of which may be disregarded. Equally relevant is ensuring that effective increases in public investment in R&D are properly directed – for example, geared to the digital paradigm and promoting a green and just transition, such that they align with national priorities. More generally, it is critical to align STI efforts with the productive development policies of LAC countries and their territories.

Dynamics of the labour market and human talent gaps: the role of investment

Analysing the labour market, investment dynamics and challenges regarding human talent and innovation capacity can help to clarify why the LAC region has, to date, not been able to increase productivity (OECD et al., 2020_[8]; CAF, 2018_[11]).

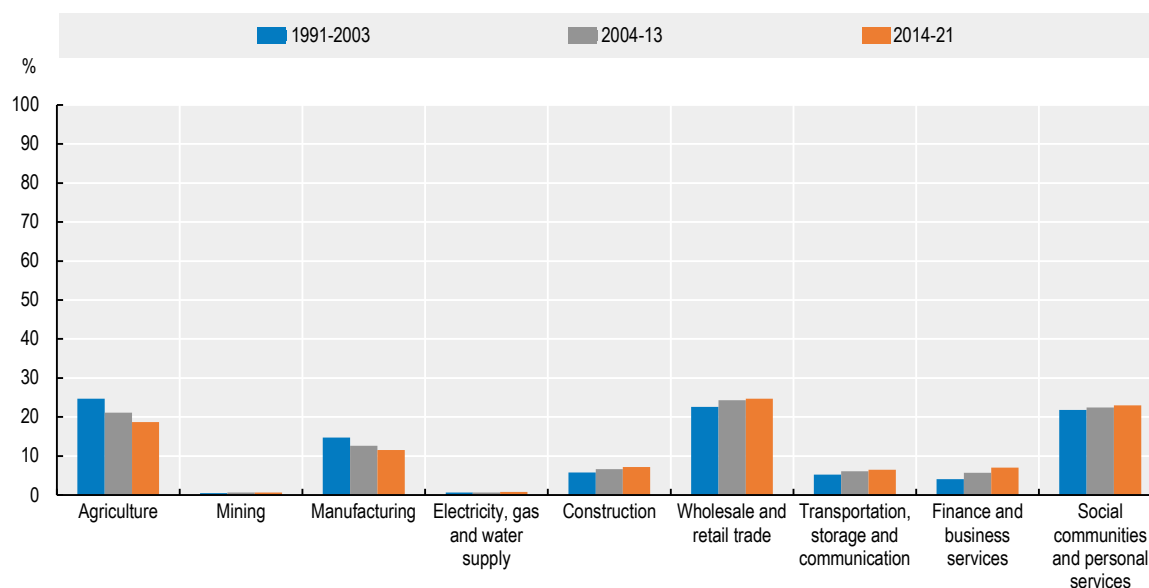
Since 1990, investments have not had the quality and impact desirable to advance towards better development in LAC. Investments have not been sufficiently correlated to productivity and employment growth. This section will show that improving physical and human capital investments in green sectors could be a way to contribute to creating better formal jobs.

In the last decade (as compared with previous trends), lower economic growth in LAC has been accompanied by lower employment growth, lower real hourly wages and lower productivity growth. Total employment in the region grew at a rate of 3.9% in the 1970s, 3.2% in the 1980s, and 2.4% in the 1990s and 2000s, but by just 1.5% in the 2010s (ECLAC, 2021^[37]; ECLAC and ILO, 2022^[12]). This dynamic is also reflected in real hourly wages, which have stagnated over the last three decades, growing at an annual rate of 2% at the aggregate level.

The shares of employment in market services in LAC countries, with low productivity growth, have been growing (ECLAC and ILO, 2022^[12]). The same is true in construction and in social communities and personal services; the share of employment in both manufacturing and agriculture, by contrast, has shrunk over the last two decades (Figure 3.12). The increase in the share of employment in market services with low productivity growth is associated with a lack of structural change to boost productivity and quality job creation in the region.

Figure 3.12. **Employment by sector of economic activity in LAC, 1991-2021**

Unweighted average of 18 LAC countries



Note: The data refer to an unweighted average for the following countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela (Bolivarian Republic of).

Source: Data from (ECLAC and ILO, 2022^[12]).

StatLink  <https://stat.link/t93uxc>

Boosting formalisation could have a strong impact on improving productivity

Informality is a complex and multifaceted phenomenon, with different connotations and meanings. Some people may choose not to become formal (in terms of employment) when the perceived costs of formalisation outweigh the perceived benefits. Informal employment often acts more as a subsistence strategy in the absence of decent job

opportunities. Such subsistence is associated with a low level of worker skills and productivity, as well as a lack of opportunities in the overall economy, which is closely related to a production model's ineffectiveness to absorb formal workers (Maloney, 2004^[38]; Fernández and Villar, 2016^[39]; Fernández et al., 2017^[40]; La Porta and Shleifer, 2014^[41]; OECD et al., 2019^[28]). In general, informality goes beyond workers' preference for self-employment or informal work based on economic considerations; rather, it is a consequence of limited opportunities to enter the formal labour market. The lack of formal employment opportunities in LAC reflects the absence of dynamism in the formal sector, meaning that formal firms do not grow much, and tend to remain at relatively low levels of productivity. As a result, the distribution of firms by size in the formal sector is skewed toward smaller firms (OECD et al., 2021^[6]; ECLAC, 2008^[14]).

The high levels of informality in LAC expose workers to significant vulnerabilities in terms of income stability, working conditions, access to labour rights and social protection. These inequalities are compounded by interconnected disparities based on gender, race, ethnicity and geographic location. The limited capacity of higher-productivity sectors to create formal employment leads to a segmented labour market with unequal access to quality jobs and social protection, contributing to significant income inequality within and among households (ECLAC, 2022^[1]).

As informality lowers the average productivity of an economy, it has direct impacts on economic growth. Workers in the formal sector are almost twice as productive as those working in the informal sector (CAF, 2013^[42]). Given that more than half of salaried workers in LAC are informal, this considerably reduces aggregate labour productivity. If labour and capital were totally reallocated into formal firms, hourly labour productivity and wages could increase by up to 24%, even controlling for the characteristics of workers (CAF, 2013^[42]). In the case of large-scale formalisation of firms, aggregate labour productivity would potentially increase by around 30% (CAF, 2018^[11]).

The reallocation of factors of production from informal to formal companies within each industry or sector is relevant in LAC. At the micro level in certain LAC countries, considerable disparities exist in the return to factors of production between companies within each industry (Pagés, 2010^[43]). Recent evidence from Mexico shows the interplay of the misallocation of labour and capital and low productivity, emphasising the role of the informal sector in shaping labour productivity dynamics (Levy, 2018^[44]).

The relationships among productivity, investment, real wages and employment growth

Understanding the relationships among productivity, wages and labour demand in developing and emerging economies is a complex challenge. Yet such understanding is crucial to interpret how the process of innovation may be interlinked with both productivity and wage growth.² As heterogeneity is high across the region's countries, the specific characteristics of LAC economies must be considered to understand the role of investment in shaping these relationships. Policy recommendations should be tailored to take account of this complexity and of each country's context.

In recent decades in LAC, empirical evidence has shown a positive correlation between labour productivity and real hourly wage growth at the sectoral level: 0.72 in the short term and 0.87 in the long term between 1990 and 2016 (Figure 3.13, Panel A). However, employment growth was weakly associated with productivity growth (Figure 3.13, Panel B). In the presence of low aggregate and sectoral productivity growth, labour was structurally allocated in sectors with very low growth potential.

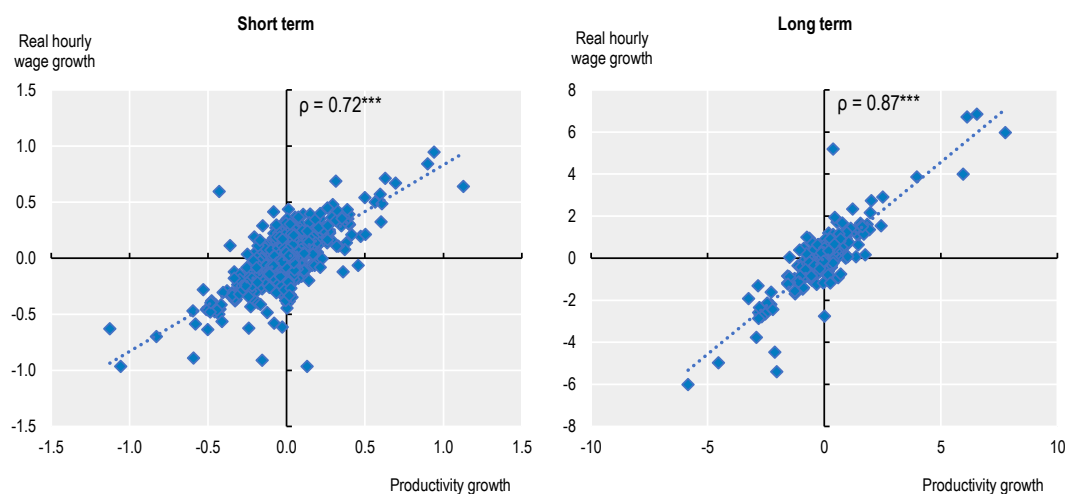
In the past, the disconnection between investment and productivity growth within each sector in LAC economies has been striking. From 1990-2016, the correlation between

investment growth and productivity growth was not statistically different from zero in the short term and was extremely low in the long term (Figure 3.14, Panel A). Investment was not particularly associated with employment growth (Figure 3.14, Panel B).

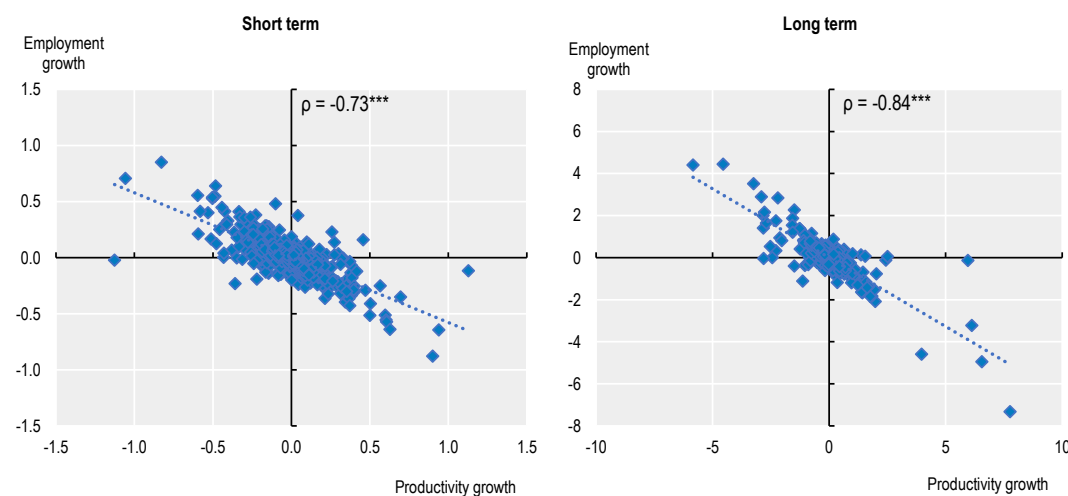
Figure 3.13. Labour productivity growth compared to real wages and employment growth in LAC

Percentage differences, 1990-2016

Panel A. Productivity and wages



Panel B. Productivity and employment



Note: Countries covered by data are: Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Honduras, Mexico and Peru. The charts show the correlation between productivity growth and hourly real wages growth (1990-2016) within the following sectors: agriculture; mining; manufacturing; electricity, gas and water supply; construction; wholesale and retail trade; transportation, storage and communication; finance and other business services; and communities and personal services (as defined following ISIC Rev. 3.1). Productivity is defined as value added per hour worked, deflated by the deflator of value added, in each industry. Real hourly wages are defined as compensation of employees per hour worked, deflated by the deflator of value-added, in each industry. Employment is defined as the number of people employed in each industry. Growth in the short term refers to year-on-year changes; in the long term refers to five years of cumulative changes. Both correlations are controlled for country-per-sector fixed effects (to show with-industries association) and for time-fixed effects (to control for possible shocks common to all industries across the countries covered). Stars refer to the significance level of each correlation: no star stands for insignificant, * stands for 10%, ** for 5%, *** for 1%.

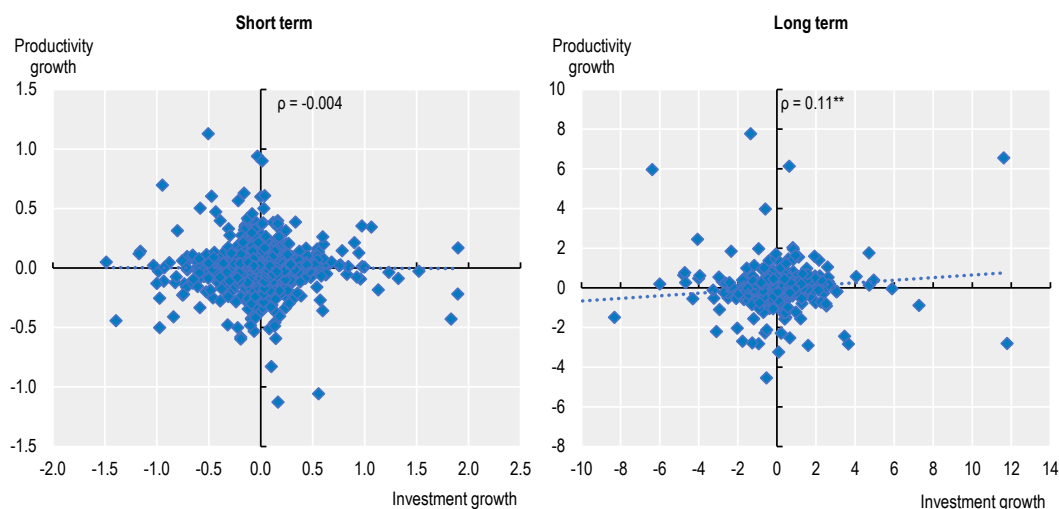
Source: OECD estimates based on (LA-KLEMS, 2021_[10]).

StatLink  <https://stat.link/k0mw7o>

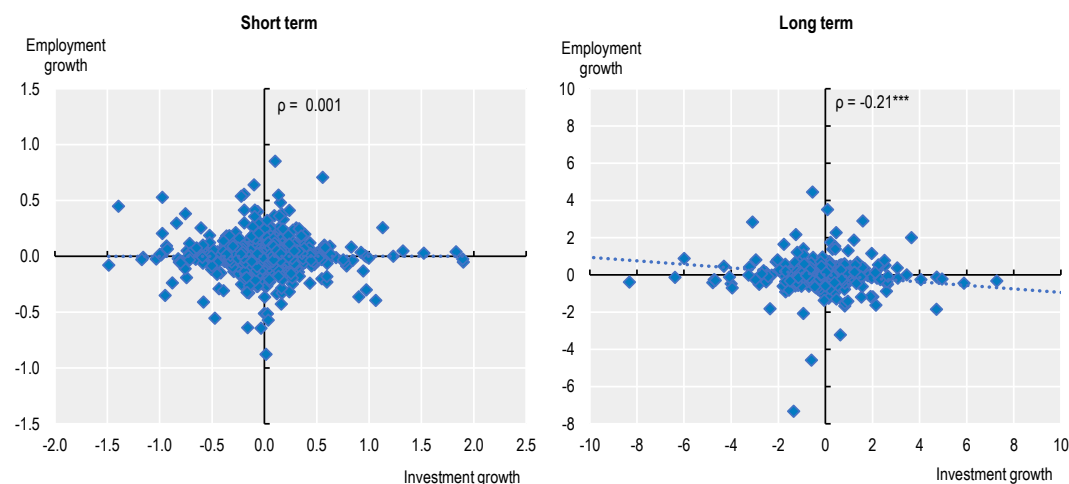
Figure 3.14. Investment growth compared to labour productivity and employment growth in LAC

Percentage differences, 1990-2016

Panel A. Investment and productivity



Panel B. Investment and employment



Note: Countries covered by data are: Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Honduras, Mexico and Peru. The charts show the correlation between productivity growth and employment growth (1990-2016) within the following sectors: agriculture, mining, manufacturing, electricity, gas and water supply, construction, wholesale and retail trade, transportation, storage and communication, finance and other business services, communities, and personal services (as defined following ISIC Rev. 3.1). Productivity is defined as value added per hour worked, deflated by the deflator of value-added, in each industry. Investment is defined as total real gross fixed capital formation. Employment is defined as the number of people employed in each industry. Growth in the short term refers to year-on-year changes; in the long term refers to five years of cumulative changes. Both correlations are controlled for country-per-sector fixed effects (to show with-industries association) and for time-fixed effects (to control for possible shocks common to all industries across the countries covered). Stars refer to the significance level of each correlation: no star stands for insignificant, * stands for 10%, ** for 5%, *** for 1%.

Source: OECD estimates based on (LA-KLEMS, 2021_[10]).

StatLink  <https://stat.link/da49p2>

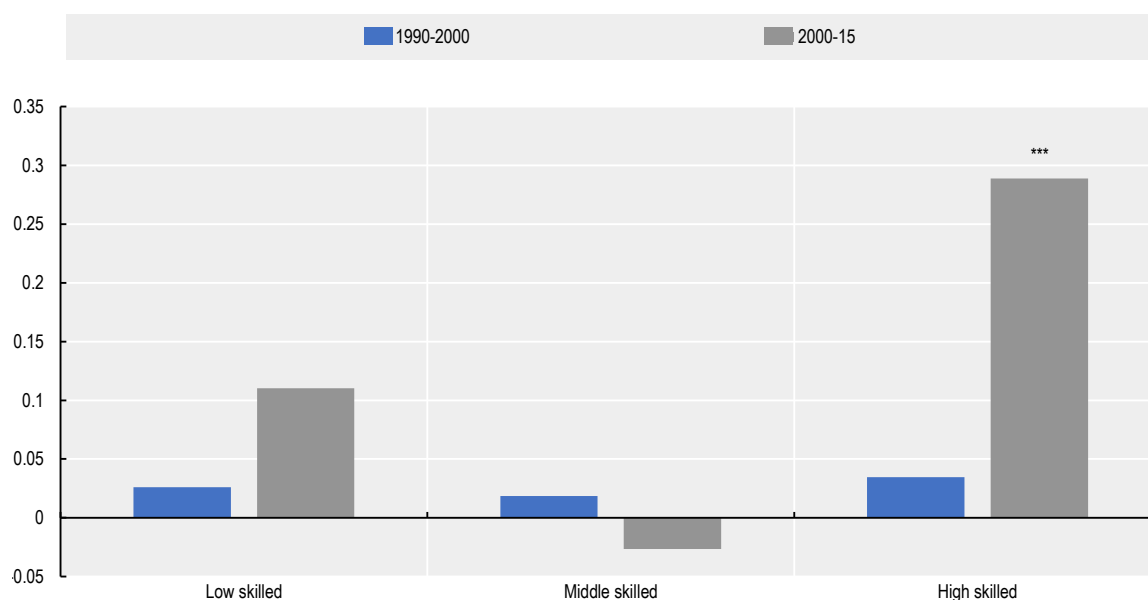
The decoupling between productivity and employment growth in LAC calls for specific policies to restore the right incentives for firms to innovate and invest more in both physical and human capital. The region's production transformation presents a unique

opportunity to provide workers with the right incentives to invest more in their skills, education and training, especially given that workers in LAC find themselves trapped in low-productive informal jobs (OECD et al., 2021^[6]; OECD et al., 2020^[8]).

Notably, high-skilled job creation in LAC was significantly correlated with investment growth in information and communications technology (ICT) between 2000 and 2015 (Figure 3.15). Channelling both public and private investment more effectively is a key policy priority in LAC countries to foster the recoupling of productivity, real wages and high-quality jobs. Increasing the number of interventions based on industrial policy initiatives for ICT investment, such as in broadband or other digital fixed capital investments, is crucial in LAC. For instance, closing the broadband quality gap in LAC compared to OECD countries would generate more than 15 million direct jobs, boost regional GDP by 7.7% and increase productivity by 6.3% (IDB, 2020^[45]). Moreover, these policies could help to advance the formalisation of workers, given that employment is highly formal in this industry (ILO, 2022^[46]).

Figure 3.15. Investment in ICT and high-skilled jobs in LAC, 1990-2015

Correlation coefficients between ICT investment and the growth of high-skilled jobs



Note: Countries covered by data are: Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Honduras, Mexico, and Peru. The charts show the correlation between productivity growth and employment growth (1990-2016), within the following sectors: agriculture, mining, manufacturing, electricity, gas and water supply, construction, wholesale and retail trade, transportation, storage and communication, finance and other business services, communities, and personal services (as defined following ISIC Rev. 3.1). Investment in ICT is defined as real gross fixed-capital formation in computer and communication equipment and software. Employment is defined as the number of people employed, in each industry, by level of education, following the ISCED classification. The correlations refer to five years of cumulative changes in ICT investment and employment by educational attainment. Both correlations are controlled for country-per-sector fixed effects, so that they show with-industries association, and for time-fixed effects, to control for possible shocks common to all industries across the countries covered. Stars refer to the significance level of each correlation: no star stands for insignificant, * stands for 10%, ** for 5%, *** for 1%.

Source: OECD estimates based on (LA-KLEMS, 2021^[10]).

StatLink  <https://stat.link/8z23qu>

The role of education, skills and evolving job tasks for the production transformation

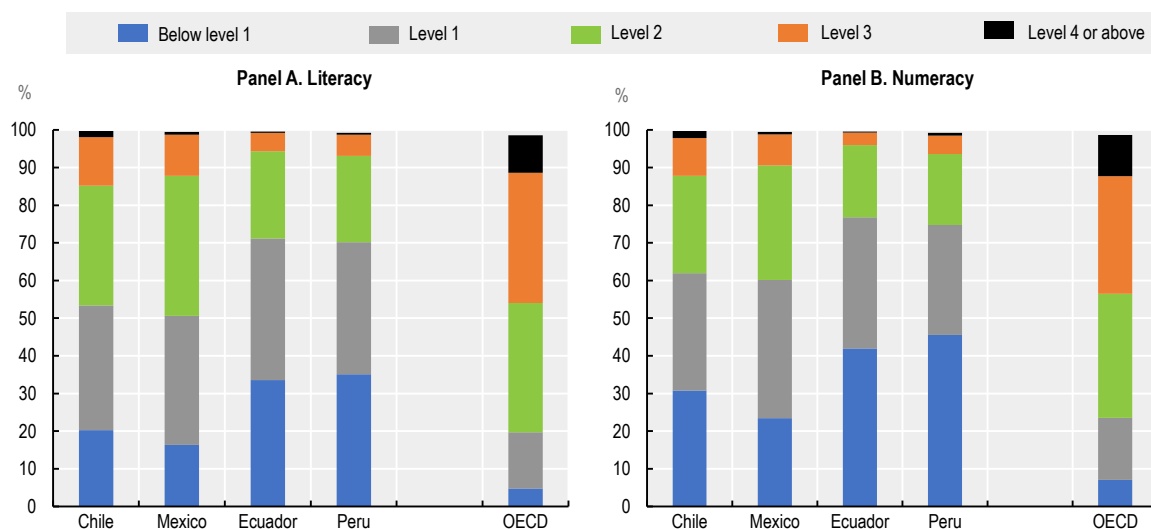
Increasing productivity levels requires more than implementing initiatives for the production sector and the promotion of innovation, research and technology. It also requires the development of individuals' capabilities in conjunction with social protection

and labour policies, while addressing the challenges arising from shifts in the labour landscape.

Labour force participation in LAC is strongly associated with national levels of education. The participation rates of the adult population vary from 68% for those who completed five years or less of education to more than 80% for those who studied for more than ten years. The COVID-19 crisis exacerbated pre-existing inequalities. An entire generation of students experienced up to two full academic years of discontinuity of their studies and/or patchy remote access. This has led to widening gaps in skills development, loss of learning opportunities and the risk of increased school dropout. It could also cause more acute productivity and employability gaps in future (OECD et al., 2021_[6]; ECLAC, 2022_[47]).

Workers in LAC present lower levels of literacy and numeracy proficiency than workers in OECD countries (OECD, 2019_[48]). In Mexico and Chile, 20% of the adult workforce has an exceptionally low level of literacy proficiency, compared to just 5% across OECD countries. In Ecuador and Peru, this share is above 30%. The situation is worse for proficiency in numeracy (Figure 3.16). More than one-third (35.2%) of Latin American adults have little or no computer experience; this negatively affects the level of economic development and ICT penetration in their countries (OECD, 2019_[48]; OECD et al., 2020_[8]).

Figure 3.16. Literacy and numeracy proficiency levels, selected LAC countries and OECD, 2019



Note: In each of the two domains assessed, proficiency is considered to be a continuum of ability involving the mastery of information-processing tasks of increasing complexity. The results are represented on a scale ranging from 0 to 500. Each proficiency scale is divided into “proficiency levels”, defined by score-point ranges, that have a descriptive purpose. They aim to aid in the interpretation and understanding of the reporting scales by describing the attributes of the tasks that adults with particular proficiency scores can successfully complete. It is emphasised that the proficiency levels have no normative element and should not be understood as “standards” or “benchmarks”.

Source: Estimates based on (OECD, 2019_[48]).

StatLink  <https://stat.link/wr2z9d>

LAC labour markets show an important mismatch between proficiency and the skills that are effectively used at work. This mismatch is correlated with low productivity, low innovation and non-functional labour markets, and is highly correlated with the level of informality. The greater the skills gap between what is learned in higher education and what is demanded by the market, the lower the probability of formal employment (Ropero Santiago and Cortés, 2022_[49]). Proficiency alone explains a small part of the variation of

skills used at work in LAC. It represents only 1% to 6% of skills used at work (OECD et al., 2020_[8]). In fact, skills utilisation – the extent to which skills are effectively applied in the workplace to maximise workplace and individual performance – depends on incentives, worker initiative and/or the demand by firms for skills required for a specific job.

There is much to be done in terms of identifying skills mismatches at a more granular level, including which profiles and competencies are needed by the production sector – and in particular those sectors prioritised under the production transformation policies of LAC countries and their territories. This identification should be based not only on information provided by the production sector (through surveys or through their participation in institutional mechanisms), but also through the use of digital technologies (such as artificial intelligence and digital labour platforms). Upon identification of skills mismatches, programmes and initiatives should be put in place to address them. This process should be supported by institutional arrangements that guarantee the participation of the public sector, the private sector and academia.

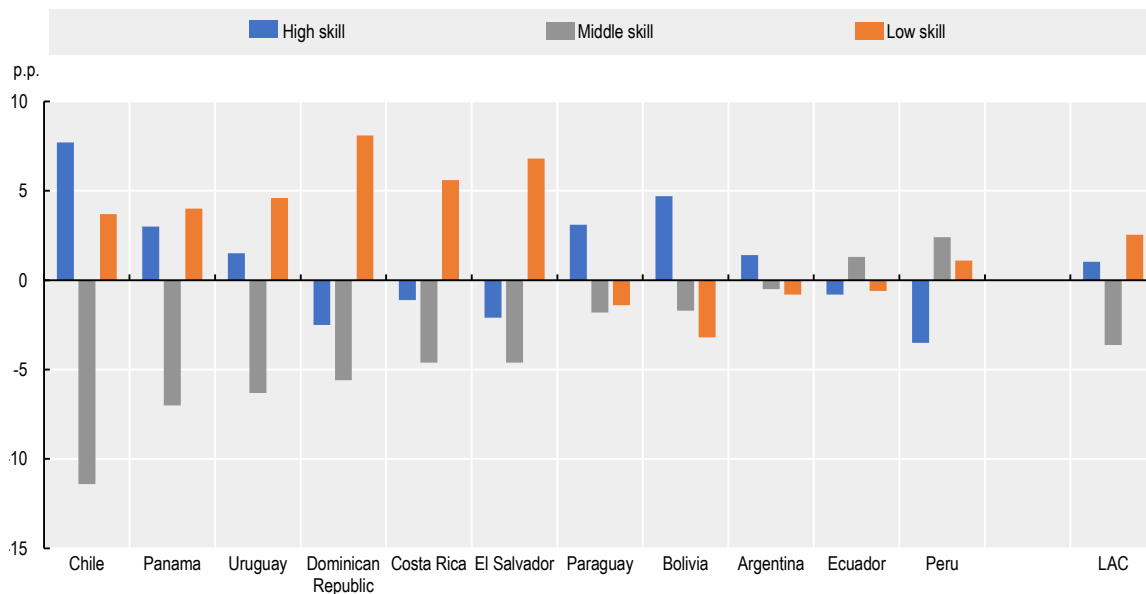
Another issue is potential job losses driven by technological change and globalisation, a matter that has caused widespread anxiety across OECD countries in recent years (OECD, 2019_[50]). In LAC, some 25% of jobs in Chile, Ecuador, Mexico and Peru are at high risk of automation, according to OECD task analysis estimates. An additional 35% of jobs in these countries may undergo substantial changes in the tasks performed and how they are carried out (OECD, 2019_[48]; OECD et al., 2020_[8]). Similar estimates on a larger set of LAC countries, using occupational analysis, suggest that 16% of jobs are at high risk of automation (Weller, Gontero and Campbell, 2019_[51]).

However, new tasks and new jobs are also emerging, which is driving shifts in skills requirements (Amaral et al., 2018_[52]). Recent LinkedIn hiring data for some LAC countries (e.g. Argentina, Brazil, Chile and Mexico) show fast-growing demand for advanced digital and tech-related skills. The shift in occupations also appears to be driving an increase in categories linked with the tech industry, such as marketing, advertising, graphic design and digital marketing. As such, the digital transformation presents a unique opportunity to boost production transformation in LAC (OECD et al., 2020_[8]).

The green agenda in LAC will also affect labour markets and workers' tasks and skills. As new green tasks appear and green sectors expand, job losses are expected in high carbon-emitting “brown” industries. However, the net effect of the green transition on employment could be positive. The final outcome will depend on adaptation mechanisms to create formal jobs resulting from the implementation of green policies (OECD et al., 2022_[7]).

As a result of labour market transformations, most LAC labour markets have experienced losses of middle-skilled occupations, such as clerical jobs (Figure 3.17). In the last two decades, the share of middle-skilled jobs in LAC has decreased relative to the share of workers in both high and low-skilled occupations (Autor, Katz and Kearney, 2006_[53]; Goos and Manning, 2007_[54]; OECD, 2017_[55]).³

Figure 3.17. Changes in urban employment by skills level, selected LAC countries, 2000-21
Percentage-point change in urban employment share, by skills level of occupations



Note: High-skilled occupations include jobs classified under the ISCO-88 major groups 1, 2 and 3: legislators, senior officials and managers (group 1); professionals (group 2); and technicians and associate professionals (group 3). Middle-skilled occupations include jobs classified under the ISCO-88 major groups 4, 6, 7 and 8; clerks (group 4); skilled agriculture workers (group 6), craft, and related trades workers (group 7); and plant and machine operators and assemblers (group 8). Low-skilled occupations include jobs classified under the ISCO-88 major groups 5 and 9: service workers and shop and market sales workers (group 5); and elementary occupations (group 9), including non-skilled agriculture workers. Data refer to employment in urban areas only.

Source: OECD estimates based on ECLAC data, <https://statistics.cepal.org/portal/cepalstat/dashboard.html?lang=en>.

StatLink  <https://stat.link/yd67bl>

Nine of the eleven LAC countries for which data are available have experienced a decline in the share of middle-skilled occupations. In Argentina, Bolivia, Chile, Panama, Paraguay and Uruguay, this process has been associated with an increase in high-skilled jobs; by contrast, in Costa Rica, the Dominican Republic, El Salvador, Ecuador and Peru, the share of high-skilled workers has also shrunk over the same period. In fact, both trends show the need for policies that support skills improvement for middle-skilled workers in line with future demands of the labour market, such as re-training or vocational education and training (VET) programmes (OECD, 2019_[56]). The impact of the COVID-19 pandemic on learning in general, and among more vulnerable segments in particular, threatens to widen long-term disparities in terms of employability and access to formal and/or well-paid jobs. Gaps in access to and quality of education are barriers to the accumulation of skills within the active population. As such skills gaps have consequences for productivity and social and labour market inclusion, they are also a major hindrance to development (ECLAC, 2022_[47]).

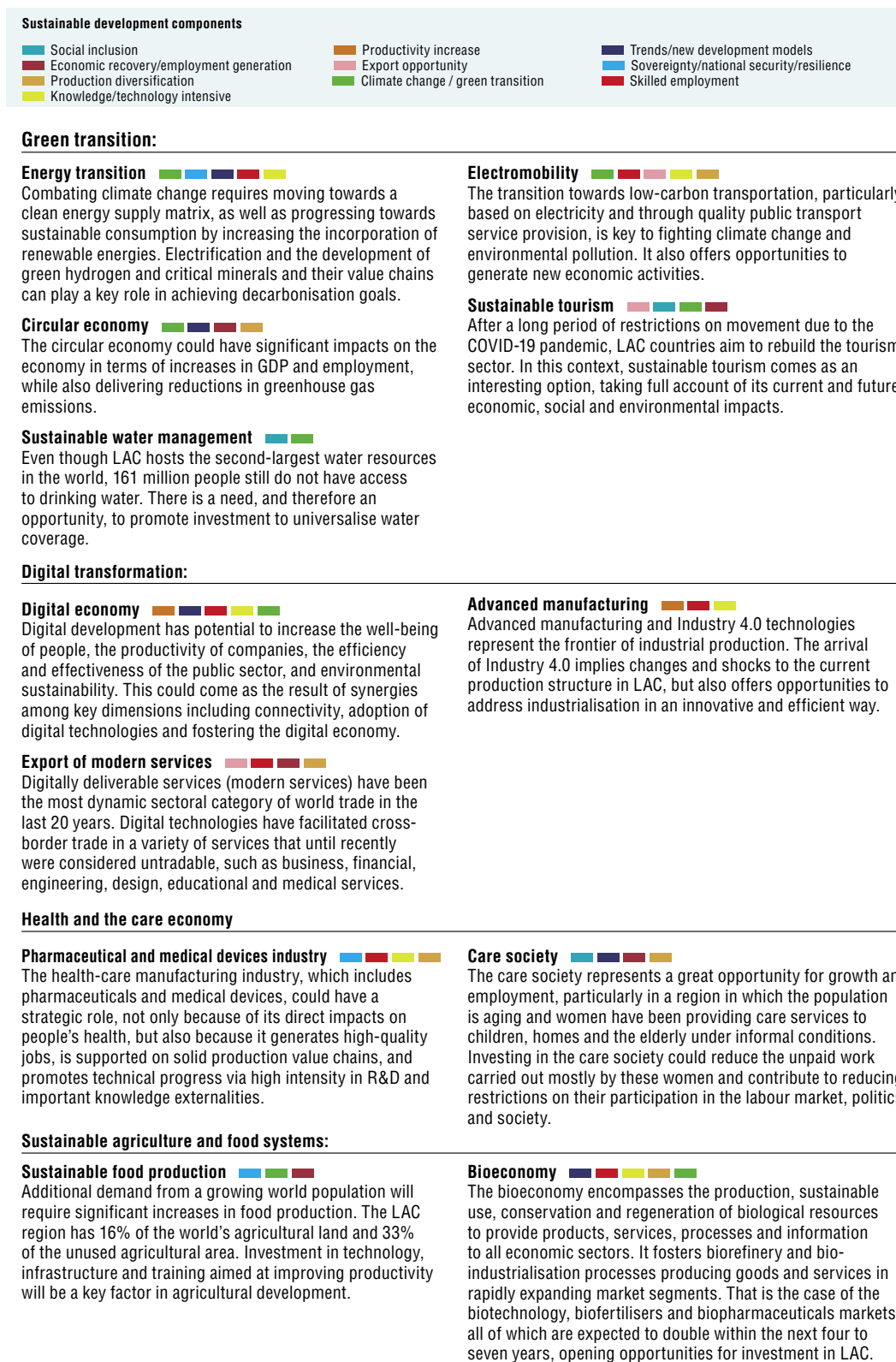
Investing in strategic sectors for sustainable development

Productive development efforts should prioritise areas or sectors with strong potential for long-term productivity growth (including knowledge-intensive activities) and in which investment could act as a catalyst. These efforts should promote higher productivity, better quality jobs, and the development of sustainable and inclusive value chains (OECD et al., 2022_[71]).

Considering the breadth of the sectoral and horizontal challenges faced by LAC countries, it will be fundamental to strengthen capacities related to the policy-making process (e.g. planning, execution and monitoring of public policies) and financing (e.g. mobilising financial resources to support structural reform, including, among others, the financing of productive development agendas). Better understanding of the links and common causalities among different sectoral policy issues and horizontal cross-cutting policy objectives will be critical to developing responses that address their complex interactions while identifying win-win policies that promote synergies and help manage trade-offs (Chapters 2 and 4) (CAF, 2018_[11]).

Figure 3.18 presents a set of strategic sectors that have potential to drive sustainable development in the LAC region. The figure uses coloured boxes to identify each sector's potential to contribute to areas of sustainable development, social inclusion and productivity (see colour key above the figure). Investments in these areas could both catalyse the production transformation of LAC countries and also help them to make progress towards the United Nations Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development (ECLAC, 2023_[15]; ECLAC, 2023_[57]; ECLAC, 2023_[58]).

Figure 3.18. Sectors with high potential to drive sustainable development



Source: Authors' elaboration based on (ECLAC, 2023^[15]; ECLAC, 2023^[57]; ECLAC, 2023^[58]; ECLAC, 2022^[1]; ECLAC, 2020^[5]).

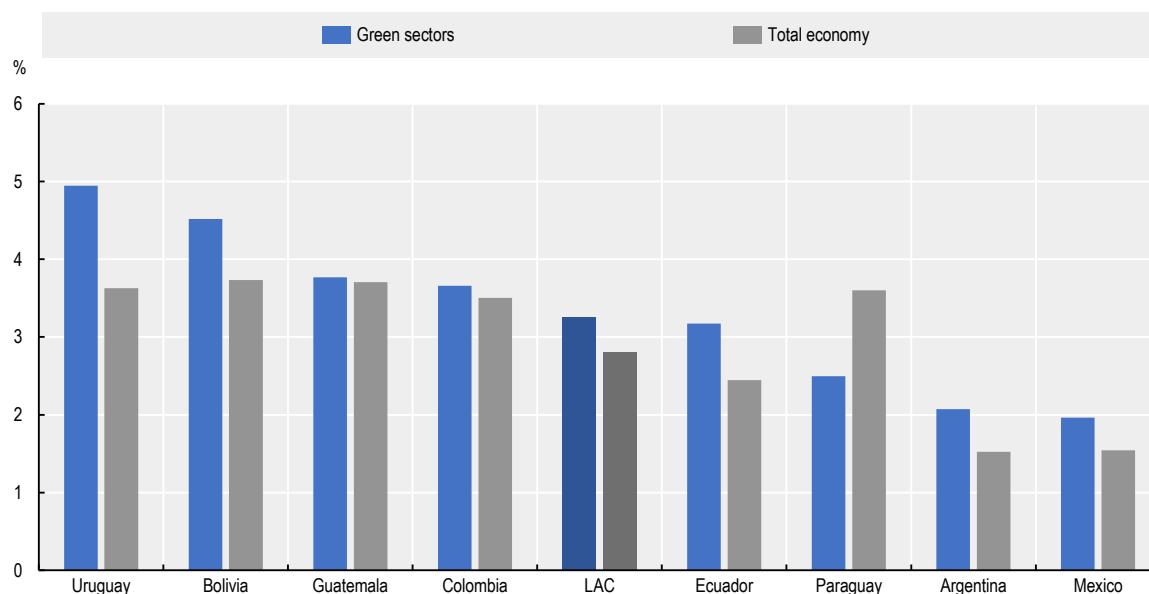
Each sector in Figure 3.18 represents opportunities for investment for both the public and private sectors. Although the list is not exhaustive and could evolve over time, these areas could provide significant opportunities for transforming LAC economies. Each country could focus its productive development policies on economic activities related to these areas, defined according to the country's characteristics, strengths and priorities (ECLAC, 2020^[5]).

These sectors can be grouped in four broad areas which are interlinked and where significant transformations are taking place, opening up new opportunities for investment and job creation. These four areas are: i) the green transition; ii) the digital transformation; iii) health and the care economy; and iv) sustainable agriculture and food systems. These areas not only have potential to stimulate production transformation in LAC countries, they can also contribute to the energy transition (green transition); address weaknesses and alleviate dependencies revealed during the COVID-19 crisis (health and the care economy); mitigate some of the consequences of Russia's war of aggression against Ukraine (sustainable agriculture and food systems); and help to build resilience and strengthen national sovereignty, taking advantage of technological progress as an enabler for improving productivity and competitiveness (digital transformation).

The green transition

The green transition offers an unprecedented opportunity for advancing production transformation and improving well-being in LAC (OECD et al., 2022^[7]). In recent decades, green sectors in the region have shown more dynamic growth than the rest of the economy. Since 2005, these green sectors have grown by 3.3% every year, compared to 2.8% for the total economy (Figure 3.19).⁴

Figure 3.19. Growth of value added in green sectors vs. the rest of the economy in LAC, 2005-21
Average yearly growth rates



Note: Green sectors are defined in each country by first identifying the number of green tasks that workers perform in their occupations and then by looking at the top ten industries in which those jobs are distributed. Value added is defined at chained-linked constant prices.

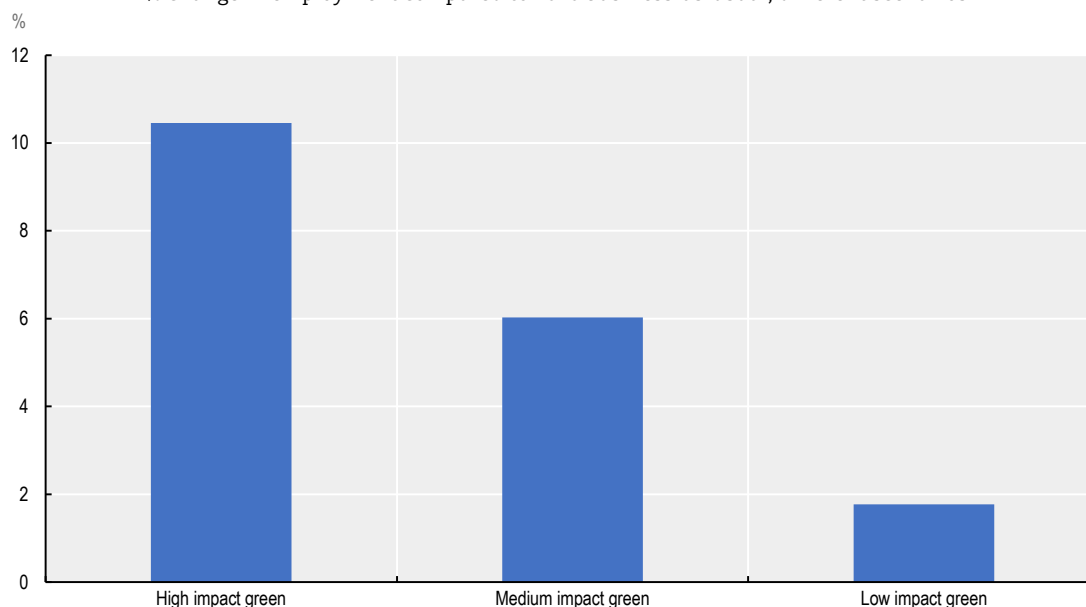
Source: Authors' calculations based on (OECD et al., 2022^[7]) and countries' national accounts.

StatLink  <https://stat.link/elq9md>


The effects of climate mitigation and adaptation policies on labour markets of LAC countries will involve creating new job opportunities, as well as loss of some jobs due to

decarbonisation policies in brown sectors. The net effect on jobs will depend on the industrial structure of each country and the effectiveness of investment packages in boosting green job creation while softening any negative impacts of climate mitigation policies on specific firms and the labour market more broadly (OECD et al., 2022^[7]; OECD, 2023^[59]). Thanks to a relatively high proportion of green sectors to brown sectors in LAC, the green transition's net effect on employment could be positive, as brown sectors in LAC represent 35% of total employment, compared to 55% for green sectors. The actual outcome will, however, depend on the investment agenda for implementing adaptation mechanisms to create formal jobs in green sectors. Even in a scenario in which investment grows by just one percentage point per year, the effects would be positive compared to the business-as-usual (BAU) scenario. If, for instance, green sectors created jobs according to a low-impact scenario (with investment increasing by one percentage point each year) while jobs in brown sectors were destroyed according to a high-impact scenario (with value-added in each brown sector decreasing by five percentage points per year), this would still translate into 1.8% more total employment in 2030. In the case of medium-impact (investment growing each year by two percentage points) and high-impact policies (annual growth of three percentage points) for green sectors, additional job creation in 2030 would be 6.0% (medium-impact) and 10.5% (high-impact) of total employment in the brown and green sectors (Figure 3.20).

Figure 3.20. Net employment change by 2030 through investment in green sectors in LAC
% change in employment compared to 2020 business-as-usual, different scenarios



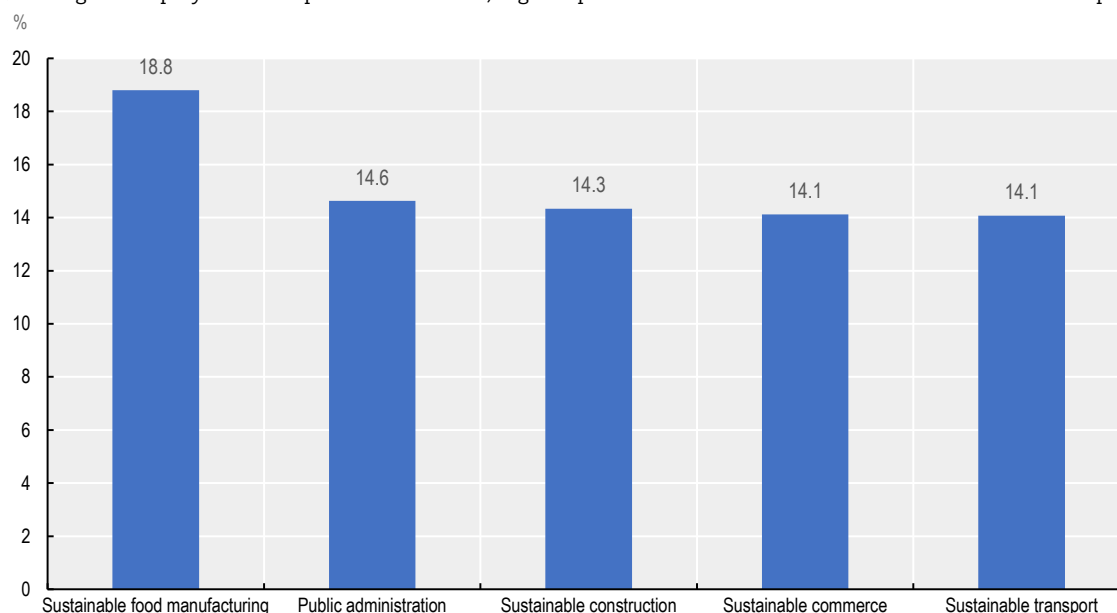
Note: LAC countries included are: Argentina, Bolivia, Brazil, Colombia, Ecuador, Guatemala, Mexico, Paraguay and Uruguay. The data refer to an unweighted average over the countries' forecasts. Green sectors are defined in each country by first identifying the number of green tasks that workers perform in their occupations and then by looking at the top ten industries in which those jobs are distributed. The BAU scenario assumes that, in each green sector, value added and employment will follow the same dynamic as in the past ten years. The counterfactual scenarios are defined according to the impact of green policies that aim to boost investment in fixed and human capital, with a positive impact on value-added growth in each green sector. The high-impact scenario assumes that the value added in each sector will increase by 3 percentage points per year, adjusting to the new equilibrium. The medium-impact scenario assumes that the value added will increase by 2 percentage points, while the low-impact scenario assumes that it will increase by 1 percentage point. Brown sectors are defined according to the CAIT definition (<https://datasets.wri.org/dataset/cait-country>). The BAU scenario assumes that, in each brown sector, GHG emissions, value added and employment will follow the same dynamic as in the past ten years. The counterfactual scenarios are defined according to the impact of green policies that aim to reduce total GHG net emissions by 50% in 2030 (compared to the 2020 levels) in each brown sector. Figure 3.20 assumes a high-impact scenario in which the value added in each brown sector will decrease by 5 percentage points per year, adjusting to the new equilibrium. In all forecasts, total factory productivity (TFP) will increase by 1 percentage point due to lower climate damages and new technology-induced change. Employment change is forecast using the estimated short-term elasticity to the value added (using a panel dynamic model), defined by each sector and country, in the last ten years. Source: (OECD et al., 2022^[7]).

StatLink  <https://stat.link/2hknxe>

The identification of green sectors depends on the distribution of green tasks across occupations, as well as on the industrial structure of each LAC country. Analysis of nine countries (Argentina, Bolivia, Brazil, Colombia, Ecuador, Guatemala, Mexico, Paraguay and Uruguay) in this regard reveals some important regional insights. In a high-impact scenario where investments in green sectors increase by 3 percentage points annually, several economic sectors are at the centre of green job creation in the region: sustainable food manufacturing (+18.8% green jobs by 2030) is related to more sustainable production models in agriculture, food and beverages, and sustainable intermediate products; public administration (+14.6%) includes activities related to the planning and implementation of sustainable policies (from general administration to sustainable local development or energy market policies). It also comprises supervision and administration of social and economic life such as public activities related to the care economy; construction (+14.3%) is mainly linked to new sustainable building constructions, installations and completions that should improve buildings' energy efficiency thanks to the use of new technologies. It also includes repair, additions and alterations to improve environmentally existing constructions; transport (+14.1%) reflects the need for more sustainable passenger and freight transportation systems, and to support sustainable transport activities, including the ones linked to digital transformation through telecommunications; finally, commerce (14.1%) represents the growing new business models of selling goods and services, and to repair goods that should contribute to developing the circular economy (Figure 3.21). Country-specific analyses are necessary to determine sectors that would benefit the most from the green transition.


Figure 3.21. Potential employment change in green sectors in LAC by 2030

% change in employment compared to 2020 BAU, high-impact scenario of investments in fixed and human capital



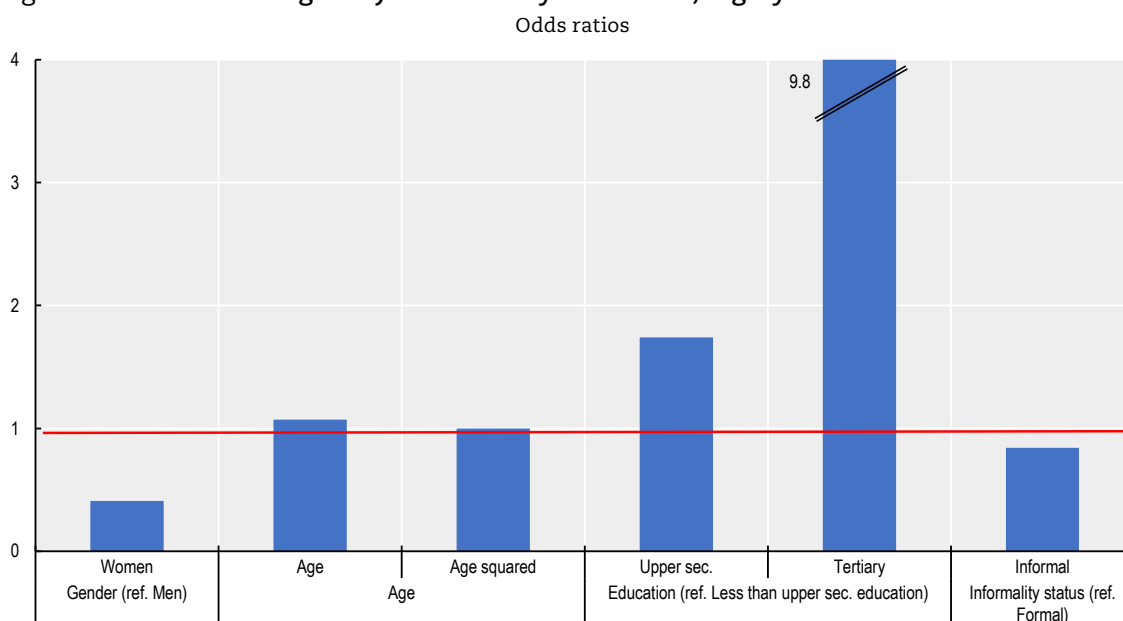
Note: LAC countries included are: Argentina, Bolivia, Brazil, Colombia, Ecuador, Guatemala, Mexico, Paraguay and Uruguay. The data refer to an unweighted average over the countries' forecasts. Green sectors are defined in each country by first identifying the number of green tasks that workers perform in their occupations and then by looking at the top ten industries in which those jobs are distributed. The BAU scenario assumes that, in each green sector, value added and employment will follow the same dynamic as in the past ten years. The counterfactual scenarios are defined according to the impact of green policies that aim to boost investment in fixed and human capital, with a positive impact on value-added growth in each green sector. The high-impact scenario assumes that the value added in each sector will increase by 3 percentage points each year, adjusting to the new equilibrium. In all forecasts, TFP will increase by 1 percentage point due to lower climate damages and new technology-induced change. Employment change is forecast using the estimated short-term elasticity to the value added (using a panel dynamic model), defined by each sector and country, in the last ten years.

Source: Authors' calculations based on (OECD et al., 2022_[7]).

StatLink  <https://stat.link/j20x6a>

The green transition also presents a unique opportunity to boost job quality in the LAC region. New green occupations are mostly related to advanced scientific knowledge and skills. Workers with a high intensity of green tasks performed on the job are more likely to be highly educated and formal than the general population of LAC workers (Figure 3.22). However, large gender differences persist in LAC in terms of student disposition towards science-related careers. Although similar shares of boys (34%) and girls (35%) report that they expect to work in a science-related occupation, they appear to select different fields. Girls choose health professions more than boys, while boys choose ICT, science or engineering professions more than girls (OECD et al., 2020^[8]). To achieve outcomes that are more balanced just in terms of job quality and formalisation, policies should aim to narrow the gender bias in career selection.

Figure 3.22. Workers in green jobs are likely to be male, highly educated and formal in LAC



Note: The figure shows the odds ratios of a logistic regression of holding a job with a high intensity of green tasks, with the regressors shown in the chart. The odds ratio is the ratio of the odds of an event occurring in one group to the odds of it occurring in another group. An odds ratio greater than 1 indicates that the condition or event is more likely to occur in the first group. An odds ratio less than 1 indicates that the condition or event is less likely to occur in the first group. For instance, in the chart the odds of holding a green job for women is 0.4 times the odds for men, meaning that women are less likely than men to be employed in a green occupation. The data refer to a pooled sample of workers in Argentina, Bolivia, Brazil, Colombia, Ecuador, Guatemala, Mexico, Paraguay and Uruguay in 2021. Green tasks are identified using the methodology of (Vona et al., 2018^[60]).

Source: Authors' calculations based on national labour-force surveys.

StatLink  <https://stat.link/b80nez>

An effective green transition will need substantial public and private investments in physical capital, and proper policies to anticipate the skills demand for the new jobs that will be created. Education and training policies are therefore necessary to move towards a more inclusive and just development model and increase people's welfare. Effective employment services can help workers to move from brown to green sectors. Depending on the sector and region, it should be noted, that workers' displacement may be substantial (OECD et al., 2021^[6]; OECD et al., 2022^[7]).

The potential of the energy transition to advance the green production transformation in LAC countries is explored below. Other sectors described in Figure 3.18, like electromobility, the circular economy, sustainable tourism and sustainable water

management, also play a central role in making the green transition possible and promoting sustainable development the region.

Energy transition

Fighting climate change requires moving towards a low-carbon energy supply matrix and accelerating sustainable consumption habits. Renewables represented 33% of the primary energy supply in LAC in 2020, substantially above the global level of 13%, but fossil fuels still represented 67%. In sectoral terms, transport is the region's largest final consumer of energy (35%), which comes almost exclusively from fossil fuels, followed by industry (30%) and residential use (18%) (OECD et al., 2022_[7]).

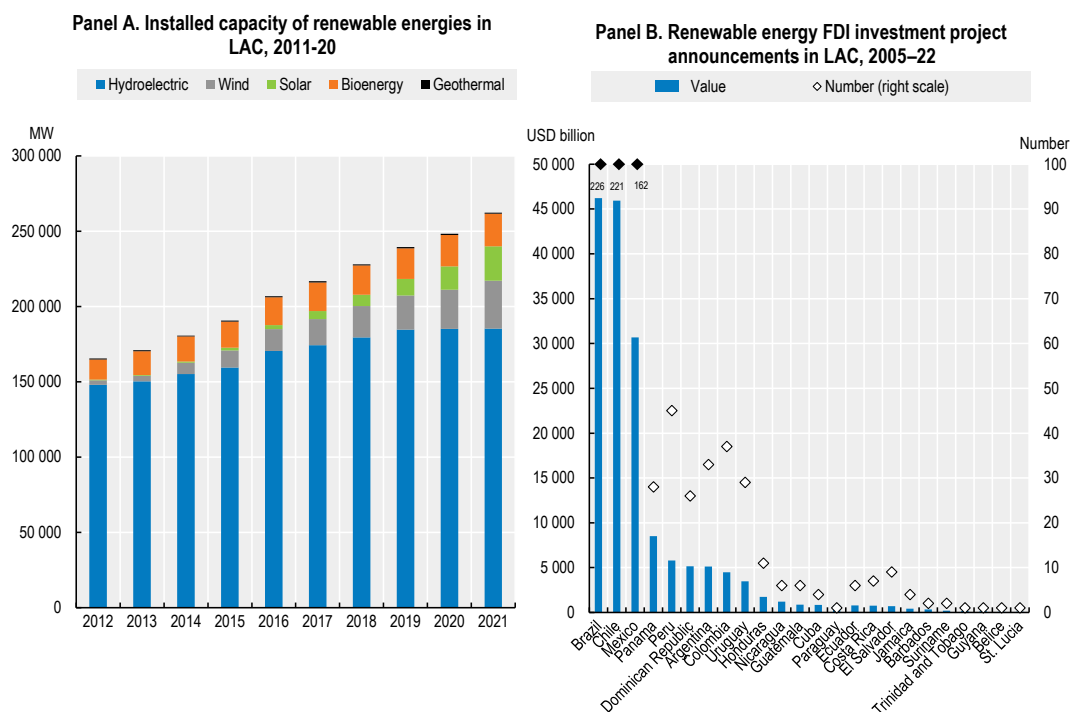
To meet potential demand for clean energy and electrification in LAC, investments in the electricity sector will have to double before the end of this decade and grow even more to three times current levels by 2050 (IRENA, 2021_[61]). To increase investments in renewable energy to the magnitude necessary for achieving the energy transition, LAC countries need to adopt comprehensive policies and adequate instruments to attract private investment (Chapters 2 and 4). Investment policies need to be designed within the broader context of energy transition and productive development policies. Such policies need to consider the drivers of investment, market forces and international technology development to calibrate the toolbox and steer investments towards priority technologies, sectors or stages of the value chain (ECLAC, 2023_[62]; OECD, 2023_[63]). Renewable energies and electrification, along with green hydrogen and critical minerals, will play key roles in making the energy transition possible in LAC.

Renewable energies and electrification

LAC countries have well-developed energy markets as well as great potential in terms of their endowment of renewable energy resources. Satisfying the region's growing electricity demand requires replacing fossil fuels with renewable energies, concentrating efforts on the management of national power grids, and promoting and strengthening regional electrical integration initiatives. Besides, to secure the resources needed to advance the energy transition, LAC countries will have to implement medium- and long-term strategies that mobilise domestic and international investment in renewable energy development. FDI can play a vital role in this process (ECLAC, 2023_[62]; OECD et al., 2022_[7]).

Renewable energy installed capacity in LAC increased by 5% between 2019 and 2020, with hydropower production capacity representing more than 70% of total renewables. Solar energy experienced the greatest increase (36%), followed by wind energy (18%), bioenergy (2%) and hydroelectric power (1%) (Figure 3.23, Panel A). Over the last two decades, FDI project announcements for renewables in LAC, both in value and number, have mainly involved Brazil, Chile and Mexico (Figure 3.23, Panel B).

Figure 3.23. Renewables in LAC: installed capacity and FDI project announcements, 2005-22



Source: Authors' elaboration based on (IRENA, 2021_[61]) and (ECLAC, 2023_[62]).

StatLink  <https://stat.link/flaz8p>

Achieving universal access to electricity remains a challenge in LAC. A total of 17 million people in the region still do not have access to electricity – especially in rural areas, where the electrification rate in some countries is around 76% (OECD et al., 2022_[7]). For all to have access, 1.3% of regional GDP should be invested annually for ten years, and renewables technologies (mostly solar and wind) should increase in line with the SDG 7 targets on access to affordable and clean energy. These changes could create 7 million new green jobs and reduce greenhouse gas emissions by more than 20% (OECD et al., 2022_[7]).

Green hydrogen

Green hydrogen is an energy carrier produced through a process that is powered by renewable energy; as such, it releases no pollution into the atmosphere. Given LAC's abundant and competitive renewable energy resources (hydroelectric, solar and wind power), green hydrogen could thus be a driver of the next phase of the region's clean energy transition, while also contributing to achieving energy security and resilience goals (RICYT, 2022_[34]). Hydrogen is also one of the leading options for storing renewable energy (IEA, 2019_[64]).

Although there is no commercial-scale production of green hydrogen in the region yet, several LAC countries have official strategies and roadmaps, as well as pilot projects, to develop production that could supply both local and international markets (OECD et al., 2022_[7]). Green hydrogen pilot-scale projects are currently being implemented in LAC in transportation (buses, long-distance trucks, shipping) and mining (especially as a replacement for truck diesel). For example, in 2022, Uruguay presented its Green Hydrogen roadmap with the goal of developing a domestic market and first pilot projects by 2025;

scaling up the domestic market and having the first export-scale project, by 2030; and consolidating the domestic market, aiming to produce 20 GW of electricity and 10 GW of electrolyzers, by 2040 (MIEM, 2022_[65]).

Policies should promote the green hydrogen industry as an engine for sustainable reindustrialisation, supported by industrial clusters distributed throughout the region, which could be strengthened through cluster initiatives under the productive development policies of LAC countries. A key challenge is the lack of appropriate technologies (specifically, electrolysis machines) in the region to produce green hydrogen, making it imperative to develop capacities and train experts to develop this industry (RICYT, 2022_[34]).

Critical minerals

LAC is in a strategic position to supply critical minerals (e.g. lithium and copper) that are essential inputs for scaling up renewable energy technologies. Such technologies (and, thus, the minerals) are needed for the green transition in areas such as wind turbines, solar photovoltaic panels, lithium-ion batteries for electromobility and transmission infrastructure. LAC has 61% of global lithium reserves, 39% of global copper and 32% of global reserves of both nickel and silver. At present, it is responsible for 37% of global production of both copper and lithium (OECD, 2022_[66]). Demand for critical minerals is expected to grow exponentially by 2040 (compared to 2020 levels): lithium by up to 42 times; graphite by 25 times; cobalt by 21 times; nickel by 19 times; and copper by 2.7 times (IEA, 2021_[67]). To meet the growth in global demand and avoid rigidities on the supply side, the extractive and processing capacity of critical minerals in the LAC region will have to be multiplied considering socio-environmental impacts.

Digital transformation

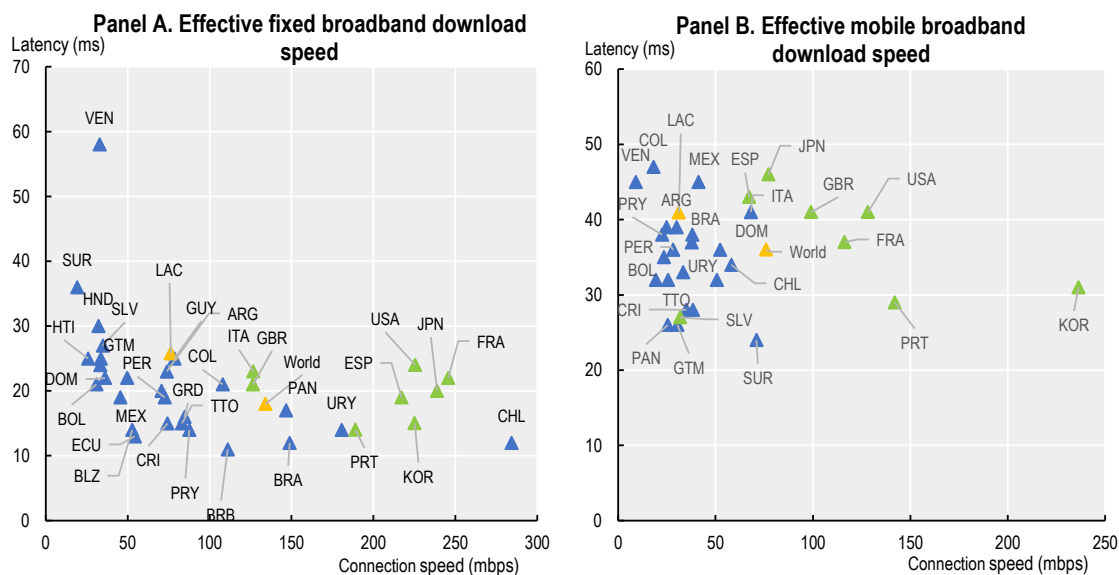
Digital transformation can potentially increase the well-being of people, the productivity of companies, the efficiency and effectiveness of the public sector, and the sustainability of environments. Progress towards digital transformation is advancing as a result of the synergies between key dimensions including connectivity, the adoption of digital technologies and fostering of digital economies (ECLAC, 2021_[68]). The ability of LAC countries to provide adequate digital infrastructure for operating digitally enabled international production networks could become a new key determinant in the location decisions of transnational firms.


At present, the availability and use of digital technologies varies widely across LAC. Despite advances in connectivity, significant gaps persist in access and use of digital technologies within and between LAC countries, especially when compared to most advanced economies. In 2021, penetration of household fixed broadband in LAC was 62%, well below North America (close to 100%) and Europe (90%). Gaps in LAC also reflect income inequalities: 66% of rural households and 43% of households in the two lowest income quintiles still need to be connected to the internet, while only 25% of urban households are not yet connected (ECLAC, 2022_[69]).

The quality of fixed broadband connections varies among LAC countries (OECD et al., 2020_[8]). Brazil, Chile, Colombia, Panama and Uruguay stand out for having high average download speeds (more than 100 megabits per second, or Mbps) and low latency (less than 20 milliseconds). This is above the world average and comparable to the quality of connections in advanced economies such as Japan, the Republic of Korea and the United States. Argentina, Costa Rica, Mexico, Paraguay and Peru are in an intermediate situation, with speeds of more than 50 Mbps (equalling the LAC average), while Bolivia, El Salvador, Guatemala, Haiti and Honduras lag behind (Figure 3.24, Panel A). Mobile

broadband connections are the main access modality in the region. Their quality is more homogeneous (than fixed broadband), with speeds of close to 30 Mbps and latency of 35 milliseconds in general, although this lags further behind the quality in more advanced countries (Figure 3.24, Panel B).

Figure 3.24. Fixed and mobile download speeds in LAC, 2022



Source: ECLAC, Regional Digital Development Observatory, on the basis of Speedtest Global Index (www.speedtest.net/global-index).
StatLink  <https://stat.link/6u72fq>

Digital infrastructure is necessary for optimal operation of digitally enabled international production networks. If LAC countries can provide adequate digital infrastructure, it could attract transnational firms to the region.

Adoption of advanced technologies is accelerating in the production sectors

While LAC companies have a high level of connectivity, they lag far behind companies in more developed countries in the use of digital technologies in supply, manufacturing and distribution processes. However, LAC companies have dramatically accelerated the adoption of advanced digital technologies since the COVID-19 pandemic (this is particularly true of large companies with more than 200 employees). Cloud computing was the technology most used by companies in Argentina, Brazil, Chile, Colombia and Mexico in 2020 (55%), and also the technology with the highest growth during the pandemic (26%), followed by big data and digital platforms (19% in both cases), the Internet of Things (18%) and artificial intelligence (16%) (Basco and Lavena, 2021^[70]). Yet more than 70% of companies in LAC have only a passive presence on the internet through their websites, illustrating the large adoption gaps with regards to both emerging and mature digital technologies. As such, much can be done to help companies, especially MSMEs, to adopt existing digital technologies (Vilgis, Jordán and Patiño, 2023^[71]).

FDI in the digital economy is increasing in LAC

New FDI project announcements in the digital economy are increasing in LAC, along with mergers and acquisitions in sector. However, the region received only 7% of global FDI projects in 2021 (compared to 33% in Western Europe, 18% in Asia and the Pacific, and 12% in North America). The number of announced investment projects increased from 118 in 2005 to 396 in 2021, while mergers and acquisitions of companies related to

the digital economy increased from 8% of the total number of operations in 2005 to 17% in 2021. The investment amount of announced projects peaked at USD 33 billion in 2021.

Telecommunications project announcements have concentrated the largest FDI investment in the region, with around 70% of the total between 2005 and 2021. In terms of the number of projects, 60% were announced in software and computer services, and 30% in telecommunications.

In recent years, some important venture capital players have turned their attention to sectors related to the digital transition in LAC. In 2022, venture capital investments in the region reached USD 7.8 billion, the highest value on record (LAVCA, 2023_[72]).

Health and the care economy

The pharmaceutical industry has a strategic role that goes beyond health. It can also create high-quality jobs. Thanks to the intensity of R&D in the sector, it can also promote technical progress and relevant positive spill-overs on knowledge.

The supply-chain disruption caused by the COVID-19 pandemic revealed weaknesses of this industry in the LAC region. To be better able to cope with future health emergencies, it is urgent to reduce LAC's high degree of dependence on transnational companies. This requires developing more resilient and self-sufficient local industries by strengthening the region's scientific, technological and production capacities. The region took a step in this direction in 2021 by approving a Plan for Self-Sufficiency in Health Matters (ECLAC, 2021_[73]).⁵

National and regional investments must play a central role in generating the conditions for the development and strengthening of capacities in those LAC countries that have a health-related manufacturing industry. Foreign investment will also be essential to facilitate technology transfer and the integration of LAC companies into global value chains. However, the region received only 0.55% of global investment in the sector between 2005 and 2021 (ECLAC, 2022_[16]).

The pharmaceutical sector presents opportunities for LAC

Many countries in LAC have developed pharmaceutical production capacities, although transnational companies still dominate the market for brand-name medicines. In Argentina, Brazil and Mexico, national laboratories play a fundamental role in the production of medicines, biosimilars and generics. Of 15 sales laboratories, 8 are in Argentina and Brazil, 6 in Mexico and 1 in Colombia (ECLAC, 2021_[73]).

However, the region's participation in international trade in pharmaceutical and biopharmaceutical products represented only 0.7% of world exports in 2020. The value of LAC's pharmaceutical exports decreased by 32% between 2012 and 2020, falling to USD 4.9 billion, and the region has a persistent trade deficit in the sector. In 2020, it imported six times more pharmaceutical products than it exported (ECLAC, 2021_[73]).

The pharmaceutical sector presents important opportunities for LAC countries. First, the number of micromolecular medicines and brand-name medicines with patents that are expiring will double by 2028. This market segment offers new possibilities for producers in LAC that have already developed capacities in the production of generics. The biosimilars market also represents a safe and low-cost alternative to biological medicines for which patents will expire in the short term.

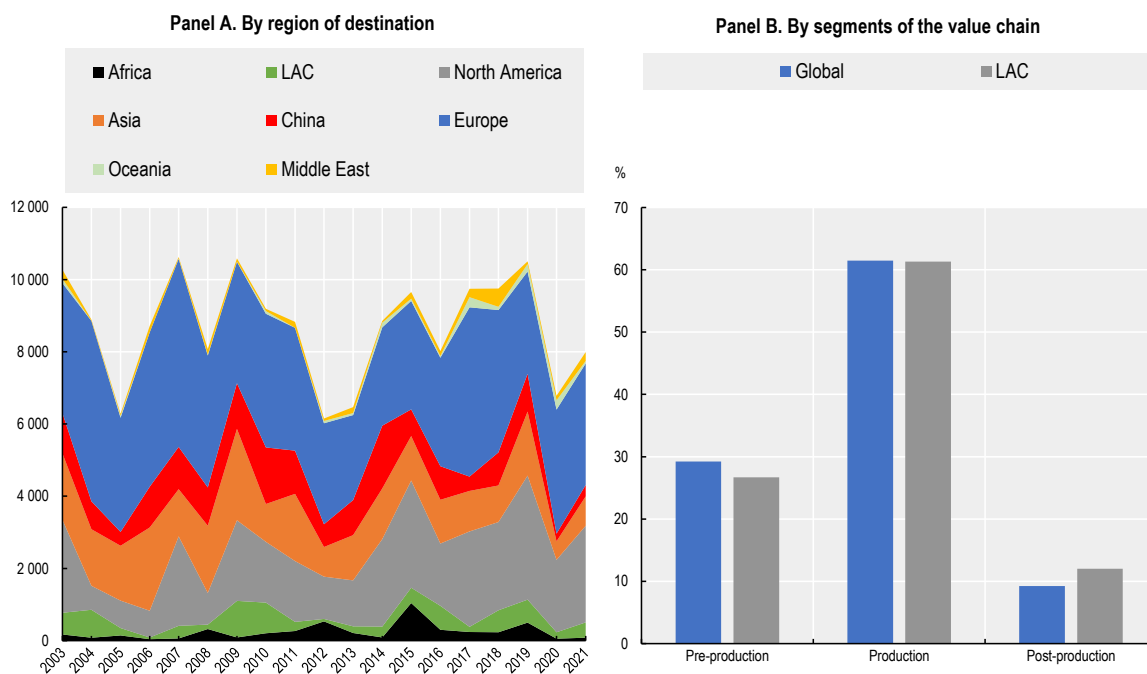
Clinical trials are the main stage of the sector's R&D process and one of the most promising markets for LAC. Although the region has increased its participation and

capacities for developing clinical trials, most clinical studies are submitted by international laboratories or institutions.

Large multinational pharmaceutical companies have a weak presence in LAC

LAC has not been a prominent destination for greenfield projects in the pharmaceutical sector. The region received only 5% of the global total of projects announced between 2005 and 2021. Ten companies (six European, three American and one Canadian) accounted for 50% of the announced investment amount projects in LAC. Brazil received 33.9% of total announcements and Mexico 17.4% (ECLAC, 2023^[57]). Moreover, pharmaceutical project announcements in LAC have targeted mainly production-stage activities. There was less emphasis on pre-production investments than the global average, especially R&D activities, and a greater volume of post-production investments, especially in logistics and retail services (Figure 3.25).

Figure 3.25. FDI projects announced in the pharmaceutical industry in LAC and globally, 2003-21



Source: Authors' calculations based on Financial Times, fDi Markets.

StatLink  <https://stat.link/q6cah9>

LAC has the potential to strengthen its pharmaceutical industry and move towards a greater supply of medicines within the regional market. Technological and structural changes in the pharmaceutical industry require an investment effort to improve innovation and production capacities and capabilities and to turn pharmaceuticals into a development engine for the region. To attract FDI, it is necessary to fulfil the basic prerequisites of the sector: skilled labour; basic infrastructure; access to inputs; adequate institutional frameworks; proper health and intellectual property regulation; increasing investment in R&D; and consolidating regional integration in production and distribution chains. This action agenda requires partnerships and collaboration on at least two levels. It implies working on regional initiatives, such as the implementation of the Plan for Self-Sufficiency in Health Matters while also strengthening productive development policies at the national and subnational levels (ECLAC, 2021^[73]).

LAC countries are lagging behind in the global market of medical devices

The medical devices market can be a strategic sector for LAC countries. In 2018, the medical device industry was estimated at USD 430 billion and global production is largely located in the United States, Europe and Japan (ECLAC, 2023^[57]). In the last twenty years, the relocation of some manufacturing stages of this sector has started, opening potential opportunities for LAC countries to position themselves in the global value chains of these products. Currently, most LAC countries are net importers of medical devices from high-income countries. Just a small fraction of local demand is satisfied with products made by small domestic enterprises with a low or medium level of technological sophistication. Brazil is an exception, as 50% of its demand for medical devices is satisfied with domestic products (Drucaroff, 2021^[74]). Costa Rica, the Dominican Republic and Mexico have started hosting multinational companies that export medical devices to the North American market. For example, Mexico's medical devices sector has capitalised on nearshoring practices and geographical proximity in fostering strategic coupling with the US economy. From 2003 to 2020 Mexico's exports of medical devices grew by 8.6% annually, on average, and almost 97% of them were exported to the United States.

Building a care society is key for a new and more just sustainable development model

The care society is a strategic opportunity to build sustainable and equitable growth in LAC. Policies should aim at merging economic and environmental dimensions, as well as at reversing social and gender inequality, to place the care of people and the planet at the heart of a sustainable development model. In 2022, the Buenos Aires Commitment has been adopted. LAC countries agreed to “design, implement and evaluate macroeconomic policies, particularly fiscal policies (income, spending and investment), from a gender equality and human rights perspective to guarantee universal access to affordable and quality care services” (ECLAC, 2023^[75]). To achieve this, the right to care needs to be recognised, guaranteeing the right of each person in three basic dimensions – providing care, being cared for and caring for oneself. This is particularly true in the context of ageing LAC societies. Population ageing, higher life expectancies and the COVID-19 crisis have increased the burden of care work, with important changes to the demand for care. In the region, more than 8 million people aged 60 years or older (corresponding to more than 1% of the region's population) need help in carrying out basic life activities (ECLAC, 2022^[47]). Care work can be approximately measured by unpaid work in the home. In LAC unpaid work ranges between 15.9% of GDP (Argentina) and 27.6% of GDP (Mexico). On average, women perform 74% of it (ECLAC, 2023^[57]).

Large investments are required to move forward the care society agenda, in LAC, but the returns would be sizable, both in terms of new jobs and additional tax revenues. Some studies conducted in Uruguay and Mexico suggest that boosting universal and free childcare systems would require an annual investment of 2.8% of GDP in Uruguay and of 1.2% of GDP in Mexico (De Henau et al., 2019^[76]; UN-Women, 2020^[77]). If that were the case, women's employment rates would increase by 4.2 percentage points in Uruguay while total employment levels would increase by 3.9% in Mexico. The jobs created would generate additional tax revenues reducing the net financing gap to 1.4% of GDP in Uruguay, while in Mexico, additional revenues could be close to 0.3% of GDP.

Sustainable agriculture and food systems

World food consumption will increase by 1.4% per year in the next decade, mainly due to population growth (OECD/FAO, 2022^[78]). Agriculture and agribusiness are key sectors for LAC economies. With 16% of the world's agricultural land and 33% of its unused agricultural area, the region has the world's largest reserve of land with agricultural

potential (ECLAC, 2019^[79]). The sector is key to ensuring food security in the region, as well as being a source of food for the rest of the world, while also having potential to generate productivity growth and employment. However, the region needs to increase productivity in agribusiness, decarbonise food production and improve access to food for the most vulnerable population.

Productivity challenges are heterogeneous in LAC's agricultural sector

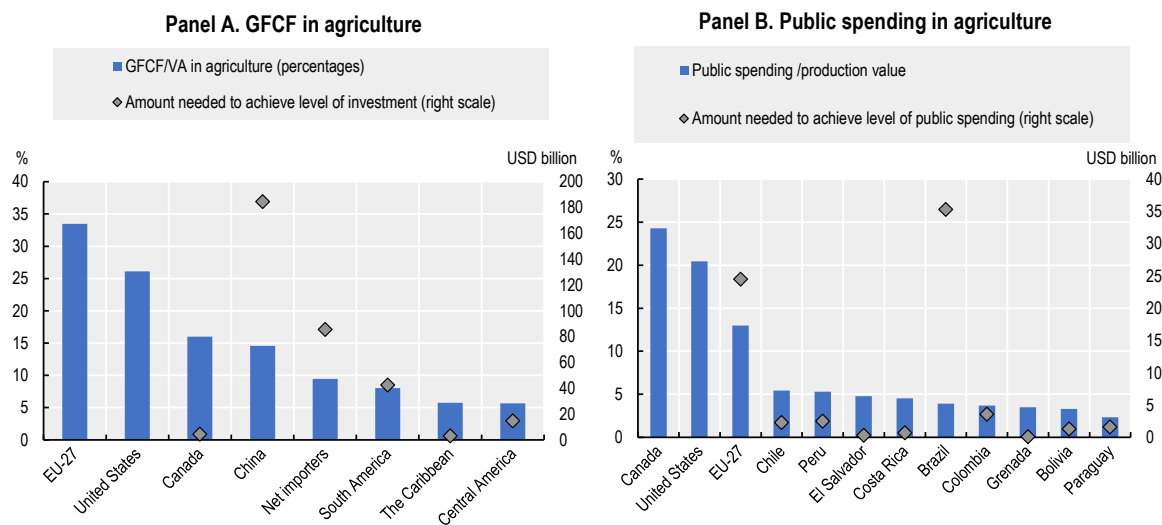
Due to restrictions on the expansion of exploitable lands, most of the increase in agricultural production in LAC should come from productivity increases. Greater investment in technology, infrastructure and training aimed at improving productivity will be a key factor in agricultural development. For example, the yield in cereal production in the United States is double the LAC average (and the world average) and triple the average achieved in the Caribbean and in the LAC group of net food importing countries. In the case of soybeans, the yield in South American countries (especially in Brazil) is practically equal to that of the United States. For livestock, a relevant productivity indicator is the weight per animal. In the United States, this indicator for cattle is 70% higher than the world average and around 2.5 times higher than the average for the Caribbean and net food importing countries. In the case of poultry, the United States and South America (especially Brazil) have similar yields, 30% higher than the world average (ECLAC, 2023^[57]).

Private and public investment is required to increase agriculture productivity

LAC should invest around USD 60 billion per year to reach the relative level of investment in agriculture in advanced economies. Agricultural productivity is directly related to the intensity of investment in the sector.⁶ The intensity of agricultural investment in the European Union is four times that of South America and about six times that of Central America and the Caribbean. In the United States, agricultural investment is three times more intense than in South America and about five times that of Central America and the Caribbean (ECLAC, 2023^[57]).

The agri-food sector is marked by uncertainty and volatility. Two central functions of public investment (beyond generating public goods) are helping to eliminate investment risks through reliable information and analysis, and developing skills and competencies in the institutions and actors that participate in the sector. Although public spending is important to make private investment in agriculture viable, LAC countries tend to allocate relatively few public resources to the sector. As a percentage of the value of agricultural production, the United States allocates between 4 and 13 times more public resources to the sector than do selected countries in the LAC region. To reach the relative level of the United States, the LAC countries shown in Figure 3.26 would have to allocate an additional USD 48 billion annually.

Figure 3.26. Gross capital formation and public expenditure in agriculture, 2020



Note: Data in Panel A refer to gross fixed capital formation (GFCF) as a percentage of value added (VA) in agriculture. In Panel B, they refer to public spending on agriculture as a percentage of the production value in agriculture.

Source: ECLAC, based on the FAOSTAT online database (www.fao.org/faostat/en/#home).

StatLink  <https://stat.link/13lw4p>

Transnational companies are present in LAC's agri-food industry

Transnational companies have a strong presence in the LAC region's main agri-food export chains. Companies from the United States, the European Union and China, as well as Latin American transnationals, are strong players in the production and marketing of soybeans, sugar, coffee, beef, corn, bananas, chicken meat and cereals. European companies have led the announcements of investment projects in the food and beverage industry in the region, with close to USD 9 billion or 38% of the total announced between 2017 and 2021. In addition, accounting for 6% of the value of projects in the period, agri-food ranks seventh among the ten main sectors for investment within the announcements of European firms (ECLAC, 2023_[57]).

Key policy messages

Successful public policies to advance production transformation in LAC need to address both horizontal and vertical bottlenecks that hinder the upgrading and diversification of the region's economies. In particular, this includes closing technological and production gaps with more developed economies, and productivity gaps among sectors, firms and territories.

Production development policies should adopt comprehensive, holistic and systemic approaches with a comprehensive set of tools, which are still lacking in LAC countries, both at national and local levels (Chapter 4). Moreover, they should address the different interconnected dimensions of production transformation including: human talent development; formalisation of informal enterprises; technology adoption and innovation; supply chain development; and diversification of production and export capabilities. To achieve a more sustainable and just development model, it is essential to align the prioritisation of strategic sectors – those showing greater technological intensity and greater potential for learning, innovation and market expansion – with the key societal challenges and cross-cutting issues faced by LAC societies.

Important differences remain across LAC countries. A set of key policy messages can nonetheless contribute to guiding each country to implement its own policy mix to advance a production transformation process that catalyses investments, creates formal jobs and increases people's well-being (Box 3.2).

Box 3.2. Key policy messages

Towards improved productivity and job creation

- Include sectoral production development policies that align with horizontal cross-cutting policies as an integral part of development strategies.
- Strengthen and diversify national and local production, technological and innovation capacities for investment to have positive impacts on productivity and quality job creation.
- Develop strategies to achieve higher investments in green sectors, in both fixed and human capital, to produce net positive effects in terms of job creation.

Towards production and territorial economic convergence

- Implement cluster-based policies to strengthen territorial production development. Help to finance and promote innovation among cluster participants and complement or strengthen missing or weaker links in local value chains.
- Provide support and access to finance for start-up companies with high growth potential to allow them to harness their dynamism and consolidate.
- Promote the performance, formalisation and better integration of MSMEs in local and national value chains.

Towards improving investments in R&D and innovation

- Increase public investment in STI. Structure business support to cover all stages of the innovation chain, co-ordinating policy instruments and public institutions for this purpose.
- Enable the institutional conditions and create a business environment to increase private investment in R&D.
- Articulate innovation policies with production development policies in close co-ordination with the private sector.

Towards boosting quality labour and upskilling for all

- Complement production transformation policies by labour market and social policies to better integrate informal workers into the formal economy and to protect the members of households whose income comes entirely or partially from informal work.
- Invest in human capital, talents and new skills to better match the present and future demand for skills and the supply of education and training. Co-ordinate public and private efforts at the national and local levels.
- Introduce policies to enhance STEM careers for women and most vulnerable groups to increase their access to green jobs given that workers holding green jobs are more likely to be highly educated and formal than most workers and that large gender differences persist in green sectors.

Box 3.2. Key policy messages (cont.)

Towards investment in strategic sectors for sustainable development

- Adopt a strategic sectorial approach, aligned with horizontal cross-cutting policies, to boost production transformation in LAC. This approach will benefit from greater technological and market dynamism and innovation.
- Promote investments in key activities, including the green transition, digital transformation, health and the care economy, and sustainable agriculture and food systems, to stimulate structural change, boost productivity and positively impact social inclusion and sustainability.

Notes

1. This is an underestimation, given that data on business investment includes investments made by state-owned enterprises.
2. Standard models assume that technological change is exogenous in the short and medium term. Technological progress is considered as external and not dependent on current investment in human or physical capital. However, if innovation is assumed to be endogenous, depending on wages as well as capital costs and the investment decisions of firms, employment may well decline, even if productivity and wages grow at the same rate (Hellwig and Irmen, 2001_[80]).
3. OECD countries have experienced a similar mega-trend. In almost all OECD countries for which data are available, this process has resulted in a shift of employment towards high-skilled occupations.
4. This is true for all LAC countries for which data are available except Paraguay.
5. In September 2021, at a request from the Community of Latin American and Caribbean States (CELAC), the United Nations Economic Commission for Latin America presented a Plan for Self-Sufficiency in Health Matters. The plan, which was unanimously approved by the country members, is comprised of seven lines of action and defines a clear regional roadmap to enhance productive capacities and resilience. In June 2022, with this plan as a reference and within the framework of the EU Global Gateway strategy, a new initiative was launched: the European Union – Latin America and the Caribbean partnership on local manufacturing of vaccines, medicines and other health technologies, and strengthening health systems resilience. The partnership aims to increase Latin America’s manufacturing capacity, foster equitable access to health products, strengthen health resilience and improve capacities to address non-communicable diseases.
6. Gross fixed capital formation in agriculture as a percentage of value added in the sector is used as a proxy for investment intensity.

References

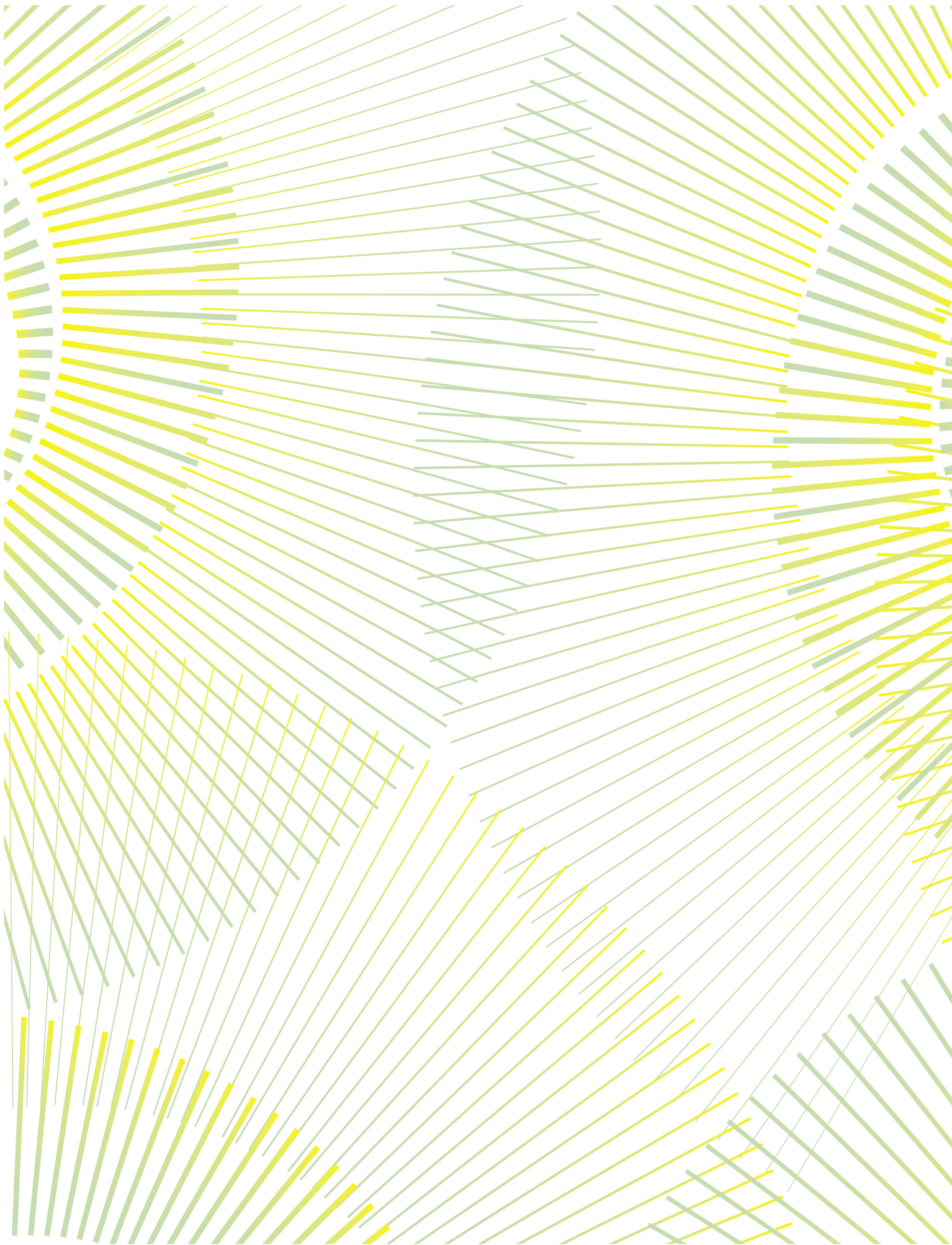
- (UN-Women), U. (ed.) (2019), “Investing in free universal childcare in South Africa, Turkey and Uruguay: A comparative analysis of costs, short-term employment effects and fiscal revenue”, *Discussion Paper*, No. 28, <https://www.unwomen.org/sites/default/files/Headquarters/Attachments/Sections/Library/Publications/2019/Discussion-paper-Investing-in-free-universal-childcare-in-South-Africa-Turkey-and-Uruguay-en.pdf>. [76]
- Amaral, N. et al. (2018), “How far can your skills take you: Understanding skill demand changes due to occupational shifts and the transferability of workers across occupations”, *Technical Note*, No. IDB-TN-01501, Labour Markets and Social Security Division, Inter-American Development Bank, Washington, DC, <https://doi.org/10.18235/0001291>. [52]
- Audretsch, D. et al. (2020), “Innovative start-ups and policy initiatives”, *Research Policy*, Vol. 49/10, <https://doi.org/10.1016/j.respol.2020.104027>. [21]
- Autor, D., L. Katz and M. Kearney (2006), “The Polarization of the U.S. Labor Market”, *American Economic Review*, Vol. 96/2, pp. 189-194, <https://doi.org/10.1257/00028280677212620>. [53]

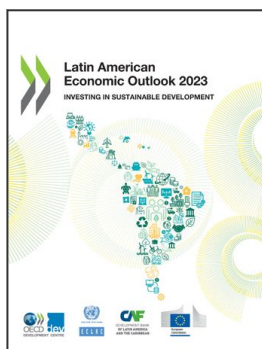
- Basco, A. and C. Lavena (2021), *América Latina en movimiento: competencias y habilidades para la cuarta revolución industrial en el contexto de pandemia*, Inter-American Development Bank, Washington, DC, <https://publications.iadb.org/es/america-latina-en-movimiento-competencias-y-habilidades-para-la-cuarta-revolucion-industrial-en-el>. [70]
- Bloom, N. et al. (2013), “Does Management Matter? Evidence From India”, *The Quarterly Journal of Economics*, pp. 1-51, <https://doi.org/10.1093/qje/qjs044>. [18]
- CAF (2018), RED 2018. *Instituciones para la productividad: hacia un mejor entorno empresarial*, Development Bank of Latin America (CAF), Bogota, <http://scioteca.caf.com/handle/123456789/1343>. [11]
- CAF (2014), *What is production transformation?*, Development Bank of Latin America (CAF), Caracas, <https://www.caf.com/en/currently/news/2014/05/what-is-productive-transformation/#:~:text=Productive%20transformation%20is%20about%20creating,firms%20and%20individuals%20working%20together> (accessed on 18 September 2023). [4]
- CAF (2013), RED 2013: *Emprendimientos en América Latina. Desde la subsistencia hacia la transformación*, Development Bank of Latin America (CAF), Caracas, https://scioteca.caf.com/bitstream/handle/123456789/168/red_2013.pdf?sequence=1&isAllowed=y. [42]
- CBInsights (2022), “Research Briefs”, <https://www.cbinsights.com/research/unicorn-startup-market-map/> (accessed on 18 September 2023). [26]
- Dini, M. and G. Stumpo (2020), “Mipymes en América Latina: un frágil desempeño y nuevos desafíos para las políticas de fomento”, *Documentos de Proyectos*, No. LC/TS.2018/75/Rev.1, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://repositorio.cepal.org/server/api/core/bitstreams/2c7fec3c-c404-496b-a0da-e6a14b1cee48/content>. [17]
- Drucaroff, S. (2021), *Análisis de las fortalezas y debilidades de la industria de equipos e insumos médicos en América Latina y el Caribe*, unpublished, United Nations Economic Commission for Latin America and the Caribbean, Santiago. [74]
- ECLAC (2023), *Buenos Aires Commitment*, United Nations Economic Commission for Latin America and the Caribbean, <https://conferenciamujer.cepal.org/15/en/documents/buenos-aires-commitment>. [75]
- ECLAC (2023), *Foreign Direct Investment in Latin America and the Caribbean 2023*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://www.cepal.org/en/publications/48979-foreign-direct-investment-latin-america-and-caribbean-2023>. [62]
- ECLAC (2023), *Halfway to 2030 in Latin America and the Caribbean: Progress and recommendations for acceleration*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://repositorio.cepal.org/server/api/core/bitstreams/9481d2a0-70cf-4a5a-a128-5a95123c1ec7/content>. [15]
- ECLAC (2023), *Iberoamérica: espacio de oportunidades para el crecimiento, la colaboración y el desarrollo sostenible*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://www.cepal.org/es/publicaciones/48769-iberoamerica-espacio-oportunidades-crecimiento-la-colaboracion-desarrollo>. [58]
- ECLAC (2023), *Investment and cooperation opportunities for Latin America and the Caribbean and the European Union*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://www.cepal.org/en/publications/48992-investment-and-cooperation-opportunities-latin-america-and-caribbean-and-european>. [57]
- ECLAC (2022), *A digital path for sustainable development in Latin America and the Caribbean*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, https://repositorio.cepal.org/bitstream/handle/11362/48461/4/S2200897_en.pdf. [69]
- ECLAC (2022), *Foreign Direct Investment in Latin America and the Caribbean 2022*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://www.cepal.org/en/publications/48521-foreign-direct-investment-latin-america-and-caribbean-2022>. [16]
- ECLAC (2022), *Social Panorama of Latin America and the Caribbean 2022: Transforming education as a basis for sustainable development*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://www.cepal.org/en/publications/48519-social-panorama-latin-america-and-caribbean-2022-transforming-education-basis>. [47]
- ECLAC (2022), *Towards transformation of the development model in Latin America and the Caribbean: production, inclusion and sustainability*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://www.cepal.org/en/publications/48309-towards-transformation-development-model-latin-america-and-caribbean-production>. [1]
- ECLAC (2021), *Digital technologies for a new future*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, https://www.cepal.org/sites/default/files/publication/files/46817/S2000960_en.pdf. [68]
- ECLAC (2021), *Estudio Económico de América Latina y el Caribe*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://repositorio.cepal.org/bitstreams/dae0d47c-e8bc-4bf6-b6a4-fd9ab98ba8d6/download>. [37]

- ECLAC (2021), *Plan for self-sufficiency in health matters in Latin America and the Caribbean: lines of action and proposals*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://repositorio.cepal.org/handle/11362/47253>. [73]
- ECLAC (2020), *Building a New Future: Transformative Recovery with Equality and Sustainability. Summary*, United Nations Economic Commission for Latin America and the Caribbean, Santiago. [5]
- ECLAC (2019), *Foreign Direct Investment in Latin America and the Caribbean 2019*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://repositorio.cepal.org/server/api/core/bitstreams/715e2868-75ac-4e6c-867f-5a6dddbf0200/content>. [79]
- ECLAC (2008), *Structural change and productivity growth, 20 years later: old problems, new opportunities*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://repositorio.cepal.org/handle/11362/2890>. [14]
- ECLAC (1996), *Changing production patterns with social equity: the prime task of Latin American and Caribbean development in the 1990s*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://repositorio.cepal.org/handle/11362/37869>. [3]
- ECLAC and ILO (2022), “Dinámica de la productividad laboral en América Latina”, *Coyuntura Laboral en América Latina y el Caribe*, No. 27 (LC/TS.2022/213), United Nations Economic Commission for Latin America and the Caribbean, International Labour Organization, https://www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/---sro-santiago/documents/publication/wcms_863688.pdf. [12]
- Fajnzylber, F. (1983), *La industrialización trunca de América Latina*, Editorial Nueva Imagen, S. A., México D.F., <https://repositorio.cepal.org/handle/11362/43130>. [13]
- Federico, J. and S. Ibarra Garcia (2014), “Los obstáculos al desarrollo de las empresas jóvenes: Un análisis comparado”, in *¿Emprendimientos dinámicos en América del Sur?: la clave es el (eco) sistema*, Red Mercosur de Investigaciones Económicas, Buenos Aires, <https://www.redsudamericana.org/sites/default/files/doc/Emprendimientos.pdf>. [22]
- Fernández, C. et al. (2017), *Reconciling opposing views towards labour informality. The case of Colombia and South Africa*, Fedesarrollo, Bogota, <https://repositorio.fedesarrollo.org.co/handle/11445/3621?locale-attribute=en> (accessed on 27 September 2021). [40]
- Fernández, C. and R. Villar (2016), “The Impact of Lowering the Payroll Tax on Informality in Colombia”, *Documentos de Trabajo*, No. 72, Fedesarrollo, Bogota, <https://www.repositorio.fedesarrollo.org.co/handle/11445/3300>. [39]
- Freeman, C. (1995), “The “National System of Innovation” in historical perspective”, *Cambridge Journal of Economics*, Vol. 19, pp. 5-24, <https://doi.org/10.1093/oxfordjournals.cje.a035309>. [33]
- Goos, M. and A. Manning (2007), “Lousy and lovely jobs: The rising polarization of work in Britain”, *The Review of Economics and Statistics*, Vol. 89/1, pp. 118-133, <https://www.jstor.org/stable/40043079>. [54]
- Hellwig, M. and A. Irmen (2001), *Wage Growth, Productivity Growth, and the Evolution of Employment*, <https://cepr.org/publications/dp2927>. [80]
- IDB (2020), *Informe anual del Índice de Desarrollo de la Banda Ancha. Brecha digital en América Latina y el Caribe*, Inter-American Development Bank, Washington, DC, <https://publications.iadb.org/publications/spanish/document/Informe-anual-del-Indice-de-Desarrollo-de-la-Banda-Ancha-IDBA-2020-Brecha-digital-en-America-Latina-y-el-Caribe.pdf>. [45]
- IEA (2021), *The Role of Critical Minerals in Clean Energy Transitions*, IEA, Paris, License: CC BY 4.0, <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>. [67]
- IEA (2019), *The Future of Hydrogen*, IEA, Paris, License: CC BY 4.0, <https://www.iea.org/reports/the-future-of-hydrogen>. [64]
- ILO (2022), *E-formalización en América Latina: acelerando en una región llena de brechas*, International Labour Office, Geneva, https://www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/documents/publication/wcms_854208.pdf. [46]
- IRENA (2021), “International Renewable Energy Agency (IRENA)”, *Renewable energy statistics 2021*, <https://www.irena.org/publications/2021/Aug/Renewable-energy-statistics-2021> (accessed on 18 September 2023). [61]
- Kantis, H., V. Caicedo and S. Ibarra Garcia (2023), *Unicornios y ecosistemas en América Latina: ¿del boom al final de fiesta?*, PRODES, https://prodem.ungs.edu.ar/publicaciones_prodem/unicornios-y-ecosistemas-en-america-latina-del-boom-al-final-de-fiesta/. [27]
- La Porta, R. and A. Shleifer (2014), “Informality and Development”, *American Economic Association*, Vol. 28/3, pp. 109-126, <https://doi.org/10.3386/w20205>. [41]
- LA-KLEMS (2021), *Crecimiento Económico y Productividad en América Latina - Julio 2021*, <http://www.laklems.net/> (accessed on 18 September 2023). [10]
- LAVCA (2023), *LAVCA Trends in Tech 2023*, LAVCA, New York, <https://lavca.org/industry-data/2023-lavca-trends-in-tech/>. [72]

- Levy, S. (2018), *Under-rewarded efforts: The elusive quest for prosperity in Mexico*, Inter-American Development Bank, Washington, DC, <https://doi.org/10.18235/0001189>. [44]
- Lundvall, B. (2010), *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning*, Anthem Press, London, <http://www.jstor.org/stable/j.ctt1gxp7cs>. [32]
- Mageste, S. et al. (forthcoming), *Startups en América Latina y el Caribe*, United Nations Economic Commission for Latin America and the Caribbean, Santiago. [23]
- Maloney (2004), "Informality Revisited", *World Development*, Vol. 32/7, pp. 1159-1178, <https://doi.org/10.1016/j.worlddev.2004.01.008>. [38]
- McKenzie, D. (2020), "Small Business Training to Improve Management Practices in Developing Countries: Reassessing the Evidence for "Training Doesn't Work"", *Policy Research Working Paper*, No. 9408, World Bank Group, Washington, DC, <https://documents1.worldbank.org/curated/en/593081600709463800/pdf/Small-Business-Training-to-Improve-Management-Practices-in-Developing-Countries-Reassessing-the-Evidence-for-Training-Doesn-t-Work.pdf>. [19]
- Medina, A. et al. (forthcoming), *Promoting access to financial markets to SMEs and growth companies in LAC*, OECD Publishing, Paris. [24]
- MIEM (2022), *Hoja de Ruta de Hidrógeno Verde en Uruguay*. [65]
- OECD (2023), "OECD Initiative on Global Value Chains (GVCs), Production Transformation and Development", OECD, Paris, <https://www.oecd.org/dev/Global-value-chaines-Initiative-Production-Transformation-Development-Update-April-2023.pdf>. [63]
- OECD (2023), *Transición verde y formalización laboral en Colombia*, Making Development Happen, OECD Publishing, Paris, <https://www.oecd.org/dev/Transicion-verde-empleo-en-Colombia.pdf>. [59]
- OECD (2022), *Global Outlook on Financing for Sustainable Development 2023*, OECD Publishing, Paris, <https://doi.org/10.1787/fcbe6ce9-en>. [66]
- OECD (2019), *OECD Employment Outlook 2019: The Future of Work*, OECD Publishing, Paris, <https://doi.org/10.1787/9ee00155-en>. [50]
- OECD (2019), *OECD Skills Strategy 2019: Skills to Shape a Better Future*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264313835-en>. [56]
- OECD (2019), *Skills Matter: Additional Results from the Survey of Adult Skills*, OECD Skills Studies, OECD Publishing, Paris, <https://doi.org/10.1787/1f029d8f-en>. [48]
- OECD (2017), *OECD Employment Outlook 2017*, OECD Publishing, Paris, https://doi.org/10.1787/empl_outlook-2017-en. [55]
- OECD (2016), "Production Transformation Policy Reviews (PTPRs): A Policy Assessment and Guidance Tool to Improve the Effectiveness of Production Transformation Strategies", DEV/GB(2016)2, OECD Development Centre, Paris, https://www.oecd.org/dev/Session2_PTPR.pdf. [2]
- OECD (2023), *Regional Attractiveness in the New Global Environment: Argentina, Chile and Colombia. Synthesis report*, Making Development Happen, OECD Development Centre, Paris <https://www.oecd.org/dev/mdh.htm>. [31]
- OECD et al. (2022), *Latin American Economic Outlook 2022: Towards a Green and Just Transition*, OECD Publishing, Paris, <https://doi.org/10.1787/3d5554fc-en>. [7]
- OECD et al. (2021), *Latin American Economic Outlook 2021: Working Together for a Better Recovery*, OECD Publishing, Paris, <https://doi.org/10.1787/5fedabe5-en>. [6]
- OECD et al. (2020), *Latin American Economic Outlook 2020: Digital Transformation for Building Back Better*, OECD Publishing, Paris, <https://doi.org/10.1787/e6e864fb-en>. [8]
- OECD et al. (2019), *Latin American Economic Outlook 2019: Development in Transition*, OECD Publishing, Paris, <https://doi.org/10.1787/g2g9ff18-en>. [28]
- OECD.Stat (2020), "Region and Cities", *Regional demography*, https://stats.oecd.org/Index.aspx?DataSetCode=REGION_DEMOGR (accessed on 18 September 2023). [29]
- OECD/FAO (2022), *OECD-FAO Agricultural Outlook 2022-2031*, OECD Publishing, Paris, <https://doi.org/10.1787/f1b0b29c-en>. [78]
- OECD/UN (2018), *Production Transformation Policy Review of Chile: Reaping the Benefits of New Frontiers*, OECD Development Pathways, OECD Publishing, Paris, <https://doi.org/10.1787/9789264288379-en>. [25]
- OECD/UN/UNIDO (2019), *Production Transformation Policy Review of Colombia: Unleashing Productivity*, OECD Development Pathways, OECD Publishing, Paris, <https://doi.org/10.1787/9789264312289-en>. [30]
- Pagés, C. (2010), *La era de la productividad : cómo transformar las economías desde sus cimientos*, Inter-American Development Bank, Washington, DC, <https://publications.iadb.org/publications/spanish/viewer/La-era-de-la-productividad-C%C3%B3mo-transformar-las-econom%C3%ADas-desde-sus-cimientos.pdf>. [43]

- RICYT (2022), *El estado de la ciencia: principales indicadores de ciencia y tecnología iberoamericanos / interamericanos 2022*, Altuna Impresores S.R.L., Buenos Aires, <https://oei.int/oficinas/argentina/publicaciones/el-estado-de-la-ciencia-principales-indicadores-de-ciencia-y-iberoamericanos-interamericanos-2022>. [34]
- RICYT (2020), *Network for Science and Technology Indicators –Ibero-American and Inter-American– (RICYT)*, <http://www.ricyt.org/en/> (accessed on 18 September 2023). [35]
- Ropero Santiago, S. and D. Cortés (2022), *Encontrar trabajo formal en Colombia. ¿Cuestión de habilidades?*, Universidad del Rosario, Bogota, <https://dev.focoeconomico.org/2022/09/14/encontrar-trabajo-formal-en-colombia-cuestion-de-habilidades/>. [49]
- Shapira, P. et al. (2015), *Institutions for Technology Diffusion*, Inter-American Development Bank, Washington, DC, <https://publications.iadb.org/en/institutions-technology-diffusion>. [20]
- The Conference Board (2023), *Total Economy Database*, <https://www.conference-board.org/data/economydatabase> (accessed on 18 September 2023). [9]
- UN-Women (2020), “Costs, returns, and effects of a universal, free, and quality child care system in Mexico”, https://mexico.unwomen.org/sites/default/files/Field%20Office%20Mexico/Documentos/Publicaciones/2021/twopager_pobinfantilENG.pdf. [77]
- Vilgis, V., V. Jordán and A. Patiño (2023), *Medición de la economía de Internet en América Latina: los casos del Brasil, Chile, Colombia y México*, United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://www.cepal.org/es/publicaciones/48908-medicion-la-economia-internet-america-latina-casos-brasil-chile-colombia-mexico>. [71]
- Vona, F. et al. (2018), “Environmental Regulation and Green Skills: An Empirical Exploration”, *Journal of the Association of Environmental and Resource Economists*, Vol. 5/4, https://www.journals.uchicago.edu/doi/suppl/10.1086/698859/suppl_file/2015197Appendix.pdf. [60]
- Weller, J., S. Gontero and S. Campbell (2019), “Cambio tecnológico y empleo: Una perspectiva latinoamericana. Riesgos de la sustitución tecnológica del trabajo humano y desafíos de la generación de nuevos puestos de trabajo”, *Macroeconomía del Desarrollo*, No. 201 (LC/TS.2019/37), United Nations Economic Commission for Latin America and the Caribbean, Santiago, <https://hdl.handle.net/11362/44637>. [51]
- WIPO (2022), *World Intellectual Property Organization (WIPO)*, <https://www.wipo.int/portal/en/> (accessed on 18 September 2023). [36]





From:
Latin American Economic Outlook 2023
Investing in Sustainable Development

Access the complete publication at:

<https://doi.org/10.1787/8c93ff6e-en>

Please cite this chapter as:

OECD, *et al.* (2023), "Towards a new structure of production and employment: The role of investment", in *Latin American Economic Outlook 2023: Investing in Sustainable Development*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/fab623b5-en>

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. Extracts from publications may be subject to additional disclaimers, which are set out in the complete version of the publication, available at the link provided.

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at <http://www.oecd.org/termsandconditions>.