



COUNTRY PRIVATE SECTOR DIAGNOSTIC

CREATING MARKETS IN PERU

Growth opportunities to reduce regional gaps

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ABBREVIATIONS AND ACRONYMS

AFP	private pension funds
AML/CFT	anti-money laundering/combating financing of terrorism
AMYGE	medium and large business aquaculture (<i>acuicultura de mediana y gran empresa</i>)
AMYPE	micro and small business aquaculture (<i>acuicultura de micro y pequeña empresa</i>)
ANA	National Water Authority
APL	Agrarian Promotion Law (Ley de Promoción Agraria)
AREL	limited resource aquaculture (<i>acuicultura de recursos limitados</i>)
ATTA	Adventure Travel Trade Association
CAGR	compound annual growth rate
CBAM	carbon border adjustment mechanisms
CCE	Electronic Clearing House
CCPP	populated center (<i>centro poblado</i>)
CPSD	Country Private Sector Diagnostic
CSA	climate-smart agriculture
CTS	compensation paid by employers to workers as preventive unemployment savings
DE	digital economy
DEIA	Statistics and Information Office (of MIDAGRI)
DFS	digital financial services
DIRCETUR	Regional Office of Foreign Trade and Tourism
DMO	destination management organization
DNI	national ID document (<i>documento nacional de identidad</i>)
DU	Emergency Decree (Decreto de Urgencia)
ENAHO	National Household Survey (Encuesta Nacional de Hogares)
EPP	effective productive potential (in GRADE framework)
ESSALUD	social health insurance
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment

fintech	financial technology
FTA	free trade agreement
GDP	gross domestic product
GOREs	Regional Governments
GPP	gross productive potential (in GRADE framework)
GRADE	Group for the Analysis of Development
ICT	information and communication technology
INDECI	National Institute for Civil Defense
INDECOPI	National Institute for the Defense of Competition and the Protection of Intellectual Property (Instituto Nacional de Defensa de la Competencia y de la Protección de la Propiedad Intelectual)
INEI	National Institute of Statistics and Informatics (Instituto Nacional de Estadística e Informática)
INTELFIN	Financial Advisory and Economic Consulting firm founded in 1996
insurtech	insurance technology
IPE	Peruvian Institute of Economy (Instituto Peruano de Economía)
IT	information technology
LCU	local currency unit
MEF	Ministry of Economy and Finance
MIDAGRI	Ministry of Agricultural Development and Irrigation
MINCETUR	Ministry of Foreign Trade and Tourism
MSME	micro, small, and medium enterprise
MT	metric tons
MTC	Ministry of Transportation and Communications
NGO	nongovernmental organization
NPA	National Protected Area
NT	nontraditional
OECD	Organisation for Economic Co-operation and Development
PA	productive alliance
PCM	Presidency of the Council of Ministers
PDA	Peru Alternative Development Program

PI	Incentive Program for the Improvement of Municipal Management (Programa de Incentivos para la Mejora de la Gestión Municipal)
PMR	product market regulation
PPD	public-private dialogue
PPP	public-private partnership
PPs	Budgetary Programs (Programas Presupuestales)
PRODUCE	Ministry of Production (Ministerio de la Producción)
PromPeru	The Commission for Promotion of Export and Tourism
PRONATEL	National Telecommunications Program
R&D	research and development
RBB	results-based budgeting (presupuesto por resultados)
RDNFO	Red Dorsal National Optical Fiber Backbone Network (Red Dorsal Nacional de Fibra Óptica)
RENAMU	National Registry of Municipalities (Registro Nacional de Municipalidades)
SaaS	software-as-a-service
SBS	Superintendency of Banking, Insurance and AFP (Superintendencia de Banca, Seguros y AFP)
SENASA	phytosanitary regulations and supervision system
SERNANP	National System of Natural Protected Areas
SME	small and medium enterprise
SMP	Strategic Multisectoral Plan
SMV	Stock Market Superintendency
STEM	science, technology, engineering, and mathematics
SUNAFIL	National Superintendence of Labor Inspection
SUNAT	tax administration
TFP	total factor productivity
UNWTO	World Tourism Organization
USAID	United States Agency for International Development
VC	venture capital
WTTC	World Travel and Tourism Council

EXECUTIVE SUMMARY

In the two decades before the COVID-19 pandemic, Peru was one of the most prominent economic performers in Latin America. The fast growth transformed Peru into an upper-middle-income economy, with aspirations to become a high-income economy in the next decade. Poverty levels fell dramatically and converged to the average for Latin America around 2019. The success of the growth strategy was heavily anchored on external and internal factors: first, Peru's comparative advantage in commodities coupled with a friendly international environment contributed to boost exports and incomes, and second, solid macroeconomic management coupled with well-targeted social programs fostered an economic growth with some measure of inclusiveness. Leveraging these factors, the private sector has been a key driver of growth and poverty reduction in Peru. Foreign direct investment (FDI) grew dramatically during the period of high economic growth. Net FDI inflows in 2019 amounted to almost US\$6.8 billion, or 2.8 percent of gross domestic product (GDP), equivalent to eight times the 2000 levels. In addition, although mining exports still dominate Peru's international trade, agricultural exports have also boomed. Exports of fruits multiplied by 61, and exports of vegetables multiplied by 6 over the period. Tourism exports have also experienced substantial growth over the past decades, representing about 4 percent of the country's total exports (70 percent of all services exports) in 2022. Peru also has a notable fisheries industry, being the third largest producer of wild-caught fish.¹

However, the COVID-19 crisis exposed a stark contrast between Peru's achievements and deep structural challenges that had remained unaddressed, reflected in the polarizing levels of regional and income disparities, and reaching the point of threatening the economic and social gains of the past two decades. Globally, richer areas of Peru have levels of GDP per capita closer to the average for Latin America and East Asia, but Peru's poorest regions have income levels closer to those of South Asia and Sub-Saharan Africa. Territorial differences in incomes and poverty levels correlate with gaps in access to basic services: only in the five regions with the highest per capita income do more than 50 percent of the population have access to clean water. Low-quality jobs are substantially more common in rural areas and small urban towns than in the Lima area. Even before the COVID-19 pandemic, the structural disparities had started to cause a slowdown in the pace of economic growth and poverty reduction. When the pandemic struck and Peru imposed one of the strictest lockdown measures in the world—with the associated impacts on job destruction and poverty—GDP fell by 11.1 percent, well above the average decline for Latin America (6.7 percent).² Poverty saw a record annual increase of 10 Percent, erasing more than 10 years of progress in poverty reduction.

In addition, these structural disparities could be further exacerbated by climate change and related disaster risks, which—if unaddressed—could jeopardize the growth of the key pillars of Peru's private sector. The number of natural and human-induced disasters recorded in Peru increased dramatically between 2003 and 2022, and they are expected to become more frequent in the future.³ The reliance of the economy on natural resources has been key for economic growth, but vulnerability to climate change highlights the importance of long-overdue economic reforms. Increased glacial melt and changes in precipitation will significantly affect the timing

and availability of water for agriculture, drinking, and energy production and change the frequency and severity of droughts and floods with significant economic consequences. Climate change can threaten agriculture, fishery, and tourism; increase damage to infrastructure exposed to flooding and landslides; reduce water availability; and reduce the availability of hydroelectricity, increasing the carbon footprint of the electricity matrix.⁴

The Country Private Sector Diagnostic's (CPSD) objective is to provide recommendations that promote private sector investment in Peru in a time horizon of three to five years, and in policy areas and sectors that contribute to reducing regional inequalities. In its first sections, this report identifies recommendations in three cross-cutting areas that are preventing the Peruvian private sector from reaching its full potential and contributing to a more inclusive and climate-smart growth model: (a) poor subnational governance, (b) inefficient land markets, and (c) disabling labor regulations.⁵ First, the poor capacity of local governments undermines the attraction and promotion of private sector investments and growth (for example, in agriculture, aquaculture, or tourism) as well as the delivery of key public goods and services for the vulnerable. As a result, local governments do not play their role as engines of local development and convergence with more prosperous areas. Second, land market failures stifle investment in both public goods and private firms. Informality in land tenure inhibits private sector investment in multiple sectors of the economy: it decreases investment and productivity in agriculture, increases illegal and artisanal fishing that threatens fish stocks, and leads to small-scale mining and logging that contribute to high rates of deforestation.⁶ Third, rigid labor regulations widen differences in job quality between the formal and informal sectors and stifle private sector growth and productivity, with Peru having among the lowest quality of jobs in Latin America as a result. In its last section, the report provides a more detailed assessment of four sectors whose growth can contribute to reducing regional inequalities: (a) agriculture, (b) aquaculture, (c) tourism, and (d) digital economy (with a focus on financial services).

CROSS-CUTTING CONSTRAINT #1: SUBNATIONAL GOVERNANCE

Since the early 2000s, Peru has been engaged in a sustained process of decentralization, which has fallen short of its goal of improving service delivery at the local level. Population and economic activity in Peru continue to be highly concentrated in Lima, which accounts for 32 percent of the population and close to 50 percent of GDP. Welfare gaps across districts account for 46 percent of the overall welfare inequality at the national level in Peru.⁷ Several features of the decentralization model contribute to these stubborn regional gaps.⁸ For example, there is no clear definition of responsibilities regarding both revenue collection and expenditures. The small population size of several municipalities prevents the adoption of larger-scale projects and their efficiency, while the mineral revenue-sharing scheme (*canon*) contributes to large disparities in fiscal revenues across municipalities. Even though the *canon* has represented a significant share of total public revenues for several districts, its impact on local economic development and regional convergence has been weak. To some extent, this low effectiveness is driven by the fact that such revenues can only be used to finance infrastructure projects, which can be difficult to implement given the poor technical capacity of several *canon*-dependent districts.

The poor technical capacity of regional and municipal governments has very significant adverse implications for both public and private investment. The high turnover of local government staff weakens the effectiveness of capacity-building programs.⁹ Poor technical capacity complicates investment management, execution, and supervision. Accordingly, municipalities lack not only specialized skills among their permanent staff (for example, engineers and architects) but also the capacity to assess the skill quality of specialized consultants. Local governments' capacities have concrete implications for the growth of key sectors in Peru. For example, the National Aquaculture Development Plan, supervised by the Ministry of Production (Ministerio de la Producción; PRODUCE), mandated the preparation of Regional Aquaculture Plans by Regional Governments to identify areas of support for the local aquaculture industry. However, regional plans were either not designed or not implemented. Similarly, lack of adequate territorial planning and development—largely driven by low capacity and by the disenfranchising disconnect between the bottom-up definition process of public investment priorities at the subnational government level and the top-down decision making on actual public expenditures through the national *Invierte.pe* (Invest) system—led to infrastructure investment gaps that limit the ability of small farmers to participate in export-oriented value chains. In the case of tourism, local governments lack the necessary skills to develop, promote, and manage the development of the sector. This deficiency includes the overall limited implementation of the Strategic Regional Tourism Plans and the enforcement of regulations that apply to the tourism sector. Poor subnational governance is also evident in business regulation enforcement, which varies substantially across regions and can have large negative impacts on private investments.

Finally, extreme natural events and human-induced environmental degradation have grown dramatically over the past years and several local governments do not have the capacity to cope with them.¹⁰ Some of the regions more exposed to these events do not have the technical capacity to cope with their impacts. Departments with higher poverty rates, such as Huancavelica, Cajamarca, and Apurímac, experienced more of these events in 2019, but many of their local governments do not have any instruments for disaster risk management in place. Natural and human-induced disasters are expected to become more frequent given the climate change trends, and their economic consequences may widen the existing territorial gaps if local governments do not adapt. For example, climate change models predict a reduction in water availability in most of Peru, particularly in the Costa and Selva regions, that is, the coastal and rain forest regions.¹¹

CROSS-CUTTING CONSTRAINT #2: LAND REGULATIONS

Poor efficiency, lack of transparency, and weak property rights continue to be prevalent in the market for land in Peru. The Peruvian land regime is the result of historical events that played out for many decades, resulting in more than 1,800 different regulations on property rights, granting overlapping functions to different administrative authorities, while many provisions are not applied in practice because of a lack of technical and financial resources.¹² The lack of a clearly stated and systematic policy response to the massive rural out-migration and to the reconfiguration of land ownership has led to a challenging institutional context with significant developmental impacts. This policy absence inhibits private sector investment in multiple sectors of the economy. The Peruvian housing market is an example of how these issues translate into poverty,

vulnerability, and informality. The housing shortage in Peru hovers around 1.3 million units.¹³ Most of the urban population in some areas of Peru (for example, Ucayali, Amazonas, and Huancavelica) live in informal settlements and neighborhoods without access to land property rights and basic services. Moreover, these types of settlements tend to be less resilient to natural disasters, because they occupy high-risk areas and houses are inadequately built, which is a concern given that at least 40 percent of the poor population in the Ucayali and Loreto regions face flood risks.¹⁴

In agrarian areas, despite several unsuccessful efforts to improve the land regime, land titling and the delineation of the plots remain a constraint on exporters of high-value crops on the coast and smallholders in the Sierra (mountain) and Selva regions. The growth of the modern export-oriented sector in the Costa region particularly depends on land extensions. The lack of clear property rights, including in collectively owned land by native communities in rural areas of the Andes and the Amazon, is a key deterrent to investing in more capital-intensive methods that could help boost productivity, and land challenges are limiting inclusion of smaller farmers aiming to participate in export-oriented value chains.

Finally, the absence of updated and complete property registries and cadastral records limits the ability of municipal governments to adequately design and execute investment in necessary public goods. Furthermore, ownership uncertainties create problems in expropriation processes because it is difficult to identify who should be compensated, as well as to determine property values. By 2017, only half of the 1,845 Peruvian districts had a cadastre, and only 20 percent updated it recently (with widespread variation across geographic areas).

Peru can harness its current performance-based finance instruments to incentivize subnational governments to simultaneously address the challenges of governance capacity and land markets. The governance of land management in Peru is complex: urban land titling is the responsibility of provincial municipalities, urban cadastres are the responsibility of district municipalities, and regional governments oversee rural land titling and rural cadastres. At the national level, multiple ministries exert responsibilities on territorial governance. Land market issues need to be addressed in a multisectoral solution that combines different policy and regulatory instruments. Performance-based financing programs that cover this scope of policies and instruments do exist in Peru, and they could be used to promote and establish targets for planning, cadastre development, and other related functions at the subnational level. However, these programs need to be substantially better coordinated and streamlined. Improvements do not require reforms: they consist of changes in the technical design and operational management of the programs. Using such improvements, the Ministry of Economy and Finance could include relevant land management targets in such programs and test the approach on a limited number of targeted urban and rural areas. Sectoral ministries and agencies could provide complementary advisory services to local governments on land management issues and other sectoral policies that translate into investments in public goods and services at the local level (for example, in agriculture, tourism, or aquaculture). The results from an initial experiment on a limited number of regions where economic impacts on sectors can be achieved (for example, tourism, agriculture, and aquaculture) could then be used to scale the programs more widely.

CROSS-CUTTING CONSTRAINT #3: LABOR REGULATIONS

Labor market regulations are cited by firms in Peru as a key factor hindering business expansion, at a higher rate than occurs for their counterparts in Latin America and the Caribbean and in other upper-middle-income economies. Strict labor market regulations tend to translate into high labor costs for formal firms, which can be particularly burdensome for small and micro enterprises. The labor market in Peru is characterized by a relatively rigid regulatory environment, contributing to a strong duality between well-protected formal sector jobs and unprotected informal sector jobs.¹⁵ The index of labor market rigidity in Peru is higher than in its neighboring countries, advanced economies, or other developing regions.¹⁶ This rigidity is mainly attributable to complex regulations for workers' dismissals. For instance, Peru's priority rules for reemployment and dismissal of workers under indefinite contracts require third-party approval and a "just cause." If this cause is not considered "just," then a judge can request the worker's reinstatement in the same job. Too-restrictive labor market regulations can have negative consequences on incentives for firms to expand and hire new workers, as well as discourage the formalization of firms. Countries with higher redundancy costs and cumbersome dismissal regulations exhibit levels of informality above what would be expected for their income and educational levels.¹⁷

In addition to stringent labor market regulations, nonwage labor costs are very high in Peru. The costs of salaried labor include wages and several nonwage components, such as mandated benefits (for example, bonuses and paid leave), social security contributions (for example, pension, health insurance, and training), and job security provisions (for example, firing notice and severance payments). In the case of Peru, nonwage costs are mainly driven by social insurance contributions and bonuses (*aguinaldo*). Peru has the third highest nonwage costs in the region, amounting to 68 percent of the salary of an average worker.¹⁸ The consequences of rigid labor regulations and high nonwage costs are not the same for everyone in the labor market. Socioeconomic groups with a weaker hold on the labor market could be more likely to be segregated into informal jobs when the bureaucratic costs of formalizing workers are substantial to employers. This includes women and youth, who have a more limited formal record of labor market performance. In fact, there are large gender gaps in job quality in Peru, which are largely driven by women being more likely than men to have informal jobs in the formal sector.

SECTOR ASSESSMENTS

By unleashing private sector investment in more inclusive and climate-smart economic activities, Peru could not only accelerate its economy's growth rate, but also leverage it to achieve regional convergence and climate-resilient economic growth. The CPSD provides recommendations that can foster and accelerate private investment in three to five years while helping address the country's structural challenge of polarizing regional inequalities. Agriculture, aquaculture, tourism, and digital finance are sectors that have a high potential of attracting foreign and domestic investment and creating more and better jobs while also maximizing socioeconomic spillovers, particularly in regional convergence.¹⁹ The following four sector assessments provide concrete illustrations of how short-term policy action could contribute to a faster, more inclusive, and more climate-smart growth in the long term.

Agriculture

In the past two decades, the agricultural sector in Peru has experienced an impressive boom in exports of high-value-added crops led by private sector investment and innovation. Between 2000 and 2022, the total value of agricultural exports increased 15-fold, and the variety of export crops was greatly diversified. The export value of nontraditional (NT) crops has been growing at an average annual rate of 15.7 percent since 1998, reaching an export value of US\$8.4 billion in 2022. Demand for fresh high-value crops is projected to grow much faster than for commodities over the next decades. Agricultural exports from Peru were among the most resilient parts of the economy during the pandemic, growing strongly during both years. Several public policies contributed to the apparent success of the sector, including trade liberalization, strengthened phytosanitary regulation and supervision, public investments in large-scale use and connectivity of irrigation, the introduction of an agriculture promotion law, and the easing of land ownership and other restrictions for investors. Private sector investment in innovation and technology were also key in achieving the scale and quality required for the exponential growth in exports.

However, firms championing this export boom have largely been concentrated on the coast in Peru, and the lack of similar growth in adjacent regions has had high costs in inclusiveness and sustainability. The export boom and its underpinning policies reflected and reinforced a dual economy with medium- to large-scale, highly competitive, vertically integrated firms mainly on the coast, and traditional, small-scale, subsistence farmers mainly in the Andes and Amazon. Several factors limit the inclusiveness and sustainability of the current model of export-oriented agriculture in Peru. The current production structure on the coast poses serious environmental concerns, particularly regarding water use, land use, and soil pollution. Competitive gains from its special labor regime have been threatened by social unrest because of labor concerns. Public investment gaps have limited the participation of small producers and organizations outside the coastal areas. For example, although big infrastructure was built, fewer investments were made in last-mile rural roads and irrigation. Similarly, the lack of adequate and sufficient extension services for smallholders precluded farmers outside the coast from seizing the same opportunities as large exporters on the coast.

Productive alliances (PAs)—which are contractual arrangements linking associations of smallholders to larger exporters—point to an alternative growth model that has been successful in promoting stronger inclusion of smallholders in export value chains. This growth model minimizes risks for both small producers and large firms and maximizes value addition and productivity for both. An analysis of such experiences in a sample of crops found that most successful PAs started with a private-led push by exporting firms to satisfy international demand, and without government intervention. The PAs provided benefits to the large firms in the form of diversification and longer peak harvest times that could safeguard against uncertainty, while simultaneously having positive effects on smallholder incomes, access to markets, technology, and finance. These experiences could be scaled. Although private firms are better endowed to identify such market opportunities, a public effort can mitigate information asymmetries among small and consolidated actors in the chain and help increase the number of smallholders that can integrate export value chains. Also, while PAs have

been relatively successful in providing access to markets, technology, and finance, there is a role for the public sector in partnership with the private sector, when feasible, in improving access to last-mile infrastructure, connectivity, land tenure, access to market intelligence, and bargaining power.

Private investment can play a critical role in the adaptation of value chains and the scaling of market-driven integration of smallholders. To exploit growing markets, exporting firms wishing to scale and diversify their sourcing will need to invest in strengthening their internal logistics activities (for example, cold-chain facilities or traceability technologies) and scaling their operational expenditures (which could include investing in their suppliers' capabilities, training, and working capital). If digital solutions are promoted (for example, using blockchains), private operators of digital platforms and e-commerce could help provide smallholders with more direct access to consumer markets. Peru's vertically integrated agribusiness firms—with advanced capabilities in logistic services—could also provide third-party logistics services to smallholders, with the possibility of exporting their services to many Latin American markets with similar needs. Peru will also have to improve and scale agrifinance and microfinance for growth-oriented smallholders who should be provided by private financial intermediaries with enhanced capabilities in this field. Outside the coast—particularly in the adjacent Sierra region—leveraging geospatial technologies will be key, as will integrated territorial planning to identify smallholders with strong potential to participate in export value chains. Smallholders must also be linked to exporters (or more directly to consumers) by leveraging public-private dialogues or PA mechanisms. Upgrading and scaling extension services to smallholders could accelerate access to technology, know-how, market intelligence, and climate-smart practices, while leveraging emergent technologies (like blockchains) to increase traceability and provide them with direct access to information on markets and consumers.

The adoption of policy actions and environmental practices that respond to global market trends can harness the momentum created by the “coastal boom,” increase inclusive and sustainable growth, and contribute to regional convergence. In the coastal region, it will be critical to promote water management policies and climate-smart agriculture (CSA) practices to improve the resilience of agriculture systems.²⁰ Private sector investments in the water sector will be key, including investments in water management, water technologies, and wastewater treatment and reuse. Exporters can reduce environmental impacts by sourcing from farmers in the Sierra and Selva when climatic and geographic conditions are more favorable for some NT crops. Adherence to environmental standards is an increasingly important criterion for international markets with carbon border adjustment taxes increasingly considered by developed countries as a tool to combat climate change. Accordingly, Peruvian agribusiness exporters need to strengthen their capacity to estimate environmental footprints and leverage technological innovation to reduce it. Upgrading and scaling extension services to smallholders could accelerate the use of green practices while increasing traceability. At the same time, improved worker representation and better enforcement of existing labor regulations could preserve the practice of seasonal hiring while improving working conditions and distributing the benefits of the export boom.

Tourism

The COVID-19 crisis hit the tourism sector disproportionately hard, but it also highlighted key underlying weaknesses that, if addressed, can accelerate and improve recovery. With 4.4 million visits in 2019, tourism in Peru reached the fifth position in international arrivals to the region. In 2019, tourism contributed 9.3 percent of Peruvian GDP and generated almost 1.3 million total jobs, which translated to 7.5 percent of the country's total employment. These figures changed significantly in 2020 with the advent of the COVID-19 crisis. International arrivals in 2020 and 2021 declined dramatically, contributing to large employment losses in the tourism sector, which were among the highest in the region. Between 2019 and 2020, employment in tourism fell by 84 percent, compared with less than 45 percent for the region.²¹ This report identifies four main policy areas that can help tourism recover faster and better in Peru.

Promoting investment in nature-based and adventure tourism in a post-COVID-19 context could prove strategic in accelerating and improving the recovery. For example, generating US\$10,000 in a local economy takes approximately 96 cruise-tourists or 9 package tourists, but only 4 nature travelers. Statistics on outbound tourists from the United States and Australia suggest that the global adventure tourism market represents about 30 percent of travel global expenditure. Those numbers place the global value of the segment at about US\$420 billion for 2019. Peru's institutions, especially the Ministry of Foreign Trade and Tourism (MINCETUR) and the tourism board (PROMPERU), could strengthen their collaboration for management and promotion of adventure and nature tourism in Peru's lagging yet very tourism-asset-rich regions. The goal should be to ensure proper tourism management plans for protected areas and to develop actionable market research, joint promotional efforts, and tourism products that consider both tourism revenue potential and conservation efforts. Public-private coordination and overall destination management should be reinforced through the creation or the revamping of destination management organizations (DMOs). Limited local context consideration, weak institutions, lack of capacity and coordination, limited clarity on objectives and responsibilities, and lack of financial sustainability have reduced the effectiveness of DMOs or caused their virtual disappearance. The enforcement of regulations applicable to the tourism sector, including adventure and nature based, should also be strengthened to meet the standards expected by tourists in these segments.

Investing in infrastructure and road and air connectivity, which remain key constraints for attracting tourists to most regions, could have a transformative impact in addition to positive externalities on citizen well-being and on other sectors. Issues related to access infrastructure and lack of interregional routes affect both road and air connectivity to, and within, Peruvian cities and regions. The central and regional governments could explore options to upgrade regional airports and various access roads through existing public-private partnership frameworks, especially when the upgrading contributes to the development of various sectors (including agriculture and aquaculture). An experts-led working group of relevant stakeholders (small operators, airlines, regulators, and so on) should be set up to understand barriers to interregional air travel to regional destinations with high tourism potential, using international best practice. Direct financing or budget support would be required for establishing health

systems and facilities, as well as for improving water and sanitation infrastructure, all of which represent key bottlenecks. The capacity of public sector actors, particularly local and regional governments, should be enhanced to better develop, promote, and manage territorial and tourism (destination) development, including in natural settings.

Existing products and activities should be strengthened, while new ones should be developed and targeted to attract the main identified segments. The adventure and nature-based tourists seek destinations and companies that can offer unique, high-quality experiences. To do so, the sector needs to improve the overall skills of operators, particularly for specialized tourism such as risky activities, nature observation, and interpretation of heritage and languages, as well as advisory services for the design of experiences in accommodations and travel agencies. In addition, the absence of certification for specialized tourism operators is a serious deterrent in their appeal to adventure and nature-based tourists. Capacity-building programs should improve the quality of small and medium enterprises (SMEs) and enable them to gain relevant certifications.

Finally, key sector-specific and economywide regulations should be reformed to enable investments and job creation in the sector. Inadequate land titling and management and district zoning hurt the attractiveness of greenfield investments in the tourism sector. The general labor regime of Peru does not accommodate seasonal employment and discourages the creation of formal jobs, and the National Superintendence of Labor Inspection (SUNAFIL) does not have standardized and predictable protocols for its interventions—parallels can clearly be drawn with the experience in agriculture. In addition, the 2016 Adventure Tourism Safety Regulations were modified in July 2021 to include a wider range of adventure tourism activities, but the overall provisions are still outdated. Updates should consider increasing the capacity of relevant government institutions, and licensing for tour operators should be simplified on a national and regional level as well. Finally, it will be necessary to build the capacity of financial institutions to manage tourism lending portfolios with a sound understanding of the specific characteristics of tourism businesses, beyond classic hospitality establishments.

Aquaculture

Peru has a growing aquaculture sector, both marine and fresh water, building on an established fishing industry. Peruvian marine aquaculture concentrates on scallops and shrimp cultivated in the Pacific Ocean or in saltwater ponds close to the ocean. Freshwater aquaculture primarily cultivates trout, using lagoons, rivers, and artificial ponds. Peru's aquaculture grew by 14 percent annually between 2015 and 2019, outpacing global growth significantly despite the impact of climate events and disease. The aquaculture sector directly employs 30,000 people and, together with other fishery activities, generates around 339,000 jobs (direct and indirect). However, most of the direct jobs in aquaculture are informal, and so the sector has significant potential to increase productivity and the quality of employment. The primary bottlenecks identified include a lack of a national aquaculture policy framework that includes spatial planning and ensures the availability of public services, including infrastructure, in the primary growing areas.

Weak governance due to high staff turnover in the institutions dedicated to the aquaculture sector, coupled with the lack of planning and monitoring, has limited the growth and potential of the sector. The Peruvian aquaculture sector could benefit from a clear roadmap with long-term objectives and from regulatory stability. Although the overall regulatory framework is relatively clearly defined, agencies have a high turnover of high-level officials. This institutional weakness is a key obstacle to an organized development of aquaculture because there is a lack of technical expertise and continuity in policy making. This problem is aggravated by the scarce allocation of financial resources and human capital by Peru's Regional Governments (GOREs), limiting policy execution and investment in infrastructure and other public services at a regional level. Lack of continuity of governance makes it difficult to design, deploy, and evaluate policy instruments. Aquaculture is also affected by the negative externalities of other economic activities, primarily by mining that contaminates water sources required for cultivation. This problem is a direct consequence mainly of gaps in spatial planning management and policies, coupled with the lack of both supervision throughout regions and mitigation of informal activities.

The aquaculture sector in Peru needs more innovation and new technological processes and tools that allow it to compete in the international market. Peruvian aquaculture yields have been highly volatile in recent years because of climate change-induced volatility in oceanic conditions and disease. The presence of pathogens exacerbates the already relatively high mortality of key species, like shrimp. The absence of modern technology and skills to adapt to a changing climate and control for factors, especially among individual, micro, and small producers, leads to significant economic losses. Additionally, the supply of seeds for scallops depends on natural conditions threatened by climate change while the country is dependent on imports from Ecuador for shrimp seeds, and improved practices present an opportunity to capture more value locally. Peru could benefit from the example of the global aquaculture industry, which is moving toward adopting circular waste management practices in the transformation stage, creating synergies with other sectors, such as agriculture. Research activities are insufficient in scope and currently not well tailored to the needs of aquaculture operations. Companies in the sector have not invested in research and centers for genetic improvement to increase and genetically improve local seed production. Public support for research into better practices and technology and their adoption to specific geographical and climate conditions could support the sustainable growth of the sector. Overly rigid regulatory practices hamper innovation, impose additional cost, and lead to duplicative processes. This situation is evident, for example, in the context of sanitary standards where the government does not accept international certifications that firms must obtain for accessing high-value export markets. This government position leads to a duplication of the cost of compliance and can cause delays because the length of local audits frequently limits the export of firms' fresh products.

Value-chain structure. The growth of the sector has been constrained by high levels of informality, lack of public services, and a scarcity of human capital. These issues make it difficult to ensure tracing and certification, which are prerequisites for smaller producers to be integrated into global value chains. In addition to recommendations to improve public services, which were addressed in the earlier discussion on the bottleneck of governance and management, the sector needs targeted training programs and integration schemes to include smaller producers into local and global value chains.

Digital Economy

Digital services are an important enabling factor for national development strategies. Digitalization supports efficiency in other sectors—for example, health, education, agribusiness, commerce, and finance. Although digital services constitute a development pillar in many areas of the economy, the digital economy is not a monolithic block and consists of various interdependent components. Access to digital infrastructure throughout the country is a necessary condition for the digital economy to take off while the use of digital financial services has benefits both to foster financial inclusion and provide the basis for transactions with digital businesses. Promoting digital skills can help increase uptake of digital services and accelerate digital development. Among these, the most immediately pressing challenge is to solve issues around digital infrastructure and to consolidate the gains in the use of digital financial services (DFS) during the COVID-19 pandemic by introducing a comprehensive legal framework.

Poor infrastructure and limited internet connectivity are major impediments to fostering the digital economy in Peru. According to the Network Readiness Index of 2022, Peru ranks 78th out of 134 countries.²² More than half of rural *centros poblados* (populated centers; CCPPs) or localities (smaller than a district) do not have mobile internet coverage, while, in contrast, almost all urban CCPPs do. The primary priority for the equitable expansion of the digital economy needs to be the selection of a new operator of the national fiber-optic backbone infrastructure Red Dorsal Nacional de Fibra Óptica (RDNFO), combined with the implementation—and, where needed, restructuring—of the last-mile projects connecting rural communities to the internet. Other priorities include promoting mechanisms for infrastructure sharing, efficient spectrum use, and (increased) competition in the fixed internet market. An ongoing effort to streamline regulation is a positive development that is expected to contribute to improvements. In the context of universal access, it is also important to support digital literacy of individuals and micro, small, and medium enterprises (MSMEs), with a focus on demographics with below-average use, such as women and rural populations.

Promoting the use of DFS presents an opportunity to accelerate the closing of Peru's sizable gap in access to financial services. Before the COVID-19 pandemic, digital payments and online purchases were undeveloped, hampered by low levels of financial inclusion and knowledge in the population. The available DFS were primarily focusing on simple card-based point-of-sale transactions. The government of Peru has used its COVID-19 response to expand access to DFS in line with the National Policy of Financial Inclusion. Peru's public Banco de la Nación is rolling out digital accounts linked to the national ID document, Documento Nacional de Identidad (DNI), that citizens will have. The first stage of these DNI accounts aimed to enroll 2 million citizens and allowed them to access the social transfer payments. The program was expected to open accounts for 50 percent of citizens by December 2022; it will be critical to strengthen the security of accounts and minimize cases of fraud. To consolidate these gains, the government should implement a comprehensive legal framework and strengthen and streamline existing regulations regarding cybersecurity, anti-money laundering/combating financing of terrorism (AML/CFT), and privacy. The new regulation and supervision framework, based on best-practice examples from peers such as Mexico, Brazil, and Colombia, should aim to provide a sound basis for

the operation of financial technology (fintech) firms, crypto assets, open banking, and insurance technology (insurtech). The implementation of interoperability between electronic wallets is also critical to the development of DFS in Peru. The government of Peru should also create the basis for digital-only banking. While these issues are being resolved, a high priority should be ensuring coordination between the various agencies that are involved.

The government of Peru should build on progress made in e-government with the introduction of electronic payments and information platforms. The most important opportunities now are introducing a digital ID and instituting regulations that allow the interoperability of electronic payment systems. Digital ID is a foundational technology that would improve Peruvians' ability to easily access digital finance, e-government, and electronic businesses. These fintech innovations require resolving the questions of where information is housed and how access between government agencies and third parties is regulated. The government could learn from best-practice examples, such as in India. Recent successes in the development and improvement of e-government platforms need to be complemented by measures to promote adoption. These measures would include advisory services for the digital transformation of the Banco de la Nación, understanding the adoption process of digital payments, and filling the DFS knowledge gap. Platforms oriented toward SMEs and small agricultural producers could benefit from simplification.

To make full use of the opportunities of the digital economy, the government should support the uptake of technology in existing businesses and promote a start-up ecosystem with a focus on attracting venture capital. Although companies in Peru show some uptake of digital services to conduct business, progress is lagging its peers. In addition to promoting digital and financial literacy for individuals and SMEs, described earlier, the central and regional governments should support firms across sectors so the firms can benefit from digital solutions. Peru should consider providing support for accelerators, incubators, and tech hubs to generate more tech companies. Peru's start-up and venture capital sectors could benefit from partnering with regional technology hubs to attract more investment and foster regional expansion early in the life of start-ups. International experiences—for example, Colombia's development of the SofisTICa program (in Colombia Productiva)—could inform the design of programs that would allow companies in traditional sectors as well as information and communication technology to increase growth, productivity, and competitiveness.

Table ES. 1 outlines priority actions addressed in this CPSD.

TABLE ES.1: MATRIX OF PRIORITY ACTIONS

POLICY AREAS	SPECIFIC ACTIONS	TIMELINE
Cross-cutting or multisectoral		
Strengthen subnational government capacity.	<ul style="list-style-type: none"> Improve the Budgetary Programs (Programas Presupuestales; PPs) to be more effective at (a) aligning central and local government prioritizing of investments, and (b) achieving specific targets on cadastre development, land tenure regularization, connectivity, irrigation, and SME-enabling services. Promote market-oriented and cluster-specific public-private dialogues (PPDs) to inform the objectives and design of PPs and subsequent public investments in local enabling infrastructure and services. 	Short term
	<ul style="list-style-type: none"> Support accelerating and establishing PPPs in waste and wastewater management systems and related infrastructure in coordination with the National Water Authority (ANA). 	Short to medium term
	<ul style="list-style-type: none"> Introduce clear rules of responsibilities for expenditures and measures of fiscal capacity to allocate revenues across regional and local governments. Implement a stabilization fund for canon revenues to reduce their volatility. 	Medium to long term
Reform and improve the land market.	<ul style="list-style-type: none"> Improve the coordinating and streamlining of performance-based financing programs to incentivize and support local and regional governments in completing and updating the registry and cadastres. Promote property regularization in rural areas, especially for native and peasant communities. 	Short to medium term
Reform and improve the labor market.	<ul style="list-style-type: none"> Improve access to quality jobs while continuing to allow seasonal hiring (for example, in agriculture and tourism). Improve supervision tools and performance of SUNAFIL to ensure implementation of the law. 	Medium to long term
Sectoral		
Agriculture-specific investments in critical gaps in public services (in support of the integrated territorial approach and results-oriented programs earlier in this table)	<ul style="list-style-type: none"> Promote market-oriented and value-chain-specific PPD to identify constraints on fresh-food exports in lagging regions or facilitate productive alliances to link local smallholders in the Sierra to coastal exporters and off-takers. Leverage SENASA and other institutions in Peru to (a) enhance training and extension services for smallholders who aim to export or supply exporters; and (b) scale the adoption of CSA among smallholders. 	Short term
	<ul style="list-style-type: none"> Establish infrastructure and services (for example, testing facilities, collection points, and product tracing) to connect new agricultural regions to global supply chains. 	Medium term

Note: ANA = National Water Authority; CSA = climate-smart agriculture; PPs = Budgetary Programs (Programas Presupuestales); PPD = public-private dialogue; PPP = public-private partnership; SENASA = phytosanitary regulations and supervision system; SUNAFIL = National Superintendence of Labor Inspection.

POLICY AREAS	SPECIFIC ACTIONS	TIMELINE
Tourism-specific regulatory reforms and investments	<ul style="list-style-type: none"> • Streamline certification and formalization, and revise standards to meet ecotourism and specialized adventure needs. • Provide capacity to local and regional governments and destination management organizations, starting with pilot regions. • Develop integrated tourism destination development master plans, in consultation with the private sector; include analysis of constraints on air travel. 	Short term
	<ul style="list-style-type: none"> • Improve existing access roads to secondary destinations and key assets (for example, Route 34A between Arequipa and Patahuasi). 	Medium term
Aquaculture governance: Long-term roadmap Technology: Climate change adaptation	<ul style="list-style-type: none"> • Implement the National Aquaculture Policy/regulatory framework that includes spatial planning regulation and a business perspective. • Foster the provision of funds for research on climate change adaptation measures; support adaptation to geographic conditions. • Support the development of research centers, particularly for genetic seed optimization. 	Medium term
Digital economy improvements: Equitable access to digital infrastructure, establishment of a comprehensive DFS framework, and promotion of the digital start-up ecosystem	<ul style="list-style-type: none"> • Select a new operator for RDNFO, using a sound, financially sustainable business model that allows adjusting to new technology and market changes, and ensure implementation of last-mile connectivity projects with a focus on underserved rural areas. • Introduce a comprehensive legal, regulatory, and supervision framework for digital financial inclusion, using experience from successful peer countries. • Foster regional integration of digital start-ups and venture capital. 	Short to medium term

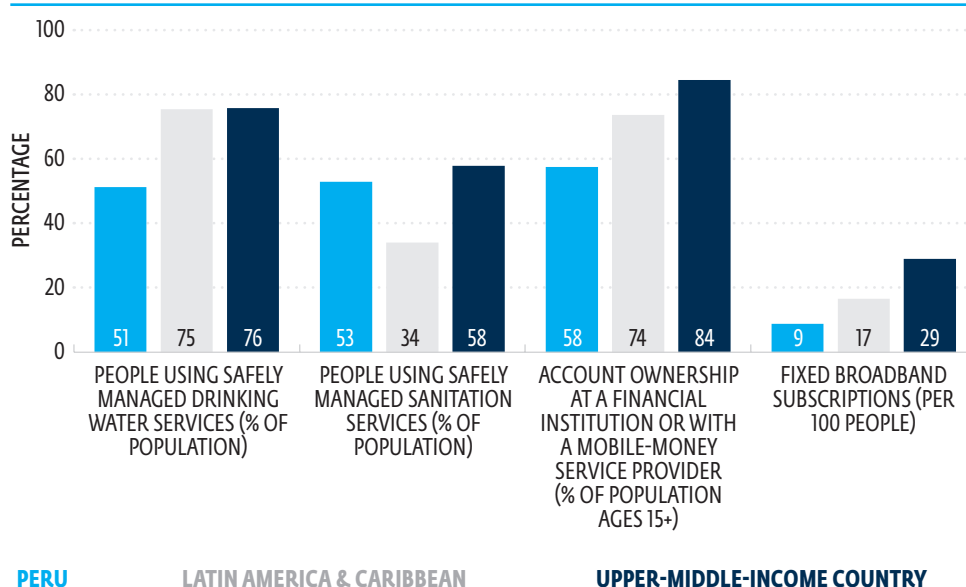
Note: DFS = digital financial services; RDNFO = national fiber-optic backbone infrastructure (Red Dorsal Nacional de Fibra Óptica).

1. A TALE OF TWO PERUS

The COVID-19 crisis has exposed the stark contrast between Peru's achievements in macroeconomic stability and the deep structural issues that have remained unaddressed, threatening the economic and social gains of the past two decades. Peru's sound macroeconomic policy framework is characterized by central bank credibility under inflation targeting, solid fiscal position before the pandemic with low levels of public debt (26.9 percent of gross domestic product [GDP] in 2019), and large buffers with international reserves at US\$75.9 billion in 2020 (which represents 39 percent of GDP). External favorable conditions, such as high commodity prices and strong external demand from China, also played a key role in strengthening this robust profile. Macroeconomic success, however, was not accompanied by commensurate improvements in the functioning of key factor markets: structural issues in land management, labor regulations, access to finance, provision of basic services such as water and sanitation, and an underdeveloped health system remain unresolved challenges. At the same time, Peru's exposure to catastrophic events and climate change—especially among vulnerable populations—makes it imperative to identify future sources of inclusive green growth.

Peru's upper-middle-income status belies a reality of remarkably low access to public services and infrastructure that stifles private sector investment and growth, especially outside of Lima. Even though poverty levels have converged to the average for Latin America and the Caribbean, Peru continues to lag in other key indicators of economic development. Only about 50 percent of the population in Peru has access to safely managed drinking water and sanitation services, compared with the average for upper-middle-income countries of 75 percent and 58 percent, respectively (figure 1.1). Fast internet connectivity and financial inclusion remain low, with broadband penetration and the share of adults having an account at a financial institution lagging the Latin America and the Caribbean region, as well as the average among upper-middle-income countries.

FIGURE 1.1 LEVEL OF ACCESS TO BASIC SERVICES IN PERU, AS OF 2020–21

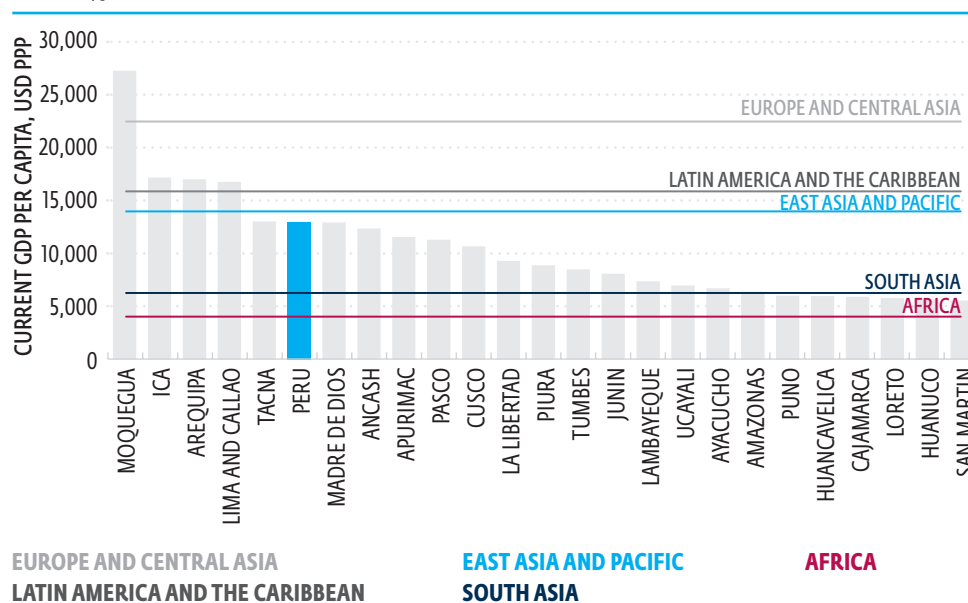


Source: World Bank staff elaborations based on data from World Development Indicators (WDI).

Note: The reference period for data on water and sanitation is 2020, while for account ownership and fixed broadband the reference period is 2021.

Poor access to basic services and infrastructure is both a result and a driver of the wide disparities between the Lima metropolitan area and the rest of the country. Although richer areas of Peru have levels of GDP per capita closer to the average for Latin America, as well as for East Asia, the poorest regions have income levels closer to those of South Asia and Sub-Saharan Africa (figure 1.2). Similar patterns are observed regarding poverty levels. Although poverty rates in Lima and Arequipa are closer to those observed in high-income economies than to those of upper-middle-income countries, Cajamarca and Huancavelica are rather close to the levels observed in lower-middle-income countries.²³ Territorial differences in incomes and poverty levels correlate with gaps in access to basic services.²⁴ The underdevelopment of most localities is tied to deeply rooted land management shortfalls, which lead to underinvestment. In turn, these issues are substantially driven by a governance model that bestows important prerogatives to subnational governments without providing the needed capacity and budgets to invest in long-term development.

FIGURE 1.2. TERRITORIAL INCOME IN PERU BY GDP PER CAPITA (PURCHASING POWER PARITY), 2018



Source: World Bank staff elaborations based on data from the National Household Survey (ENAHO), performed by the National Institute of Statistics and Informatics (INEI), and World Development Indicators database.

Note: The blue bars show the gross domestic product (GDP) per capita by departamento (reported originally in current local currency unit [LCU] and converted to purchasing power parity using data from World Development Indicators), and each line shows the GDP per capita by World Bank region, excluding high-income countries.

Peru's private sector is characterized by a small number of formal, mostly globally competitive, and innovative firms, coexisting with a large informal market that employs most of the population. Before the onset of COVID-19, nearly three-quarters of jobs were in the informal sector, which tend to be of very low quality—measured in benefits, wages, stability, and satisfaction. In fact, according to this metric, the quality of jobs in Peru is the lowest in South America.²⁵ The pandemic increased informality even more, because formal jobs were destroyed disproportionately and are recovering at a slower pace. The regional distribution of formal firms and employment mimics that of economic activity, with a disproportionate concentration in the Lima area.

The effects of the pandemic and climate change on the Peruvian economy and endowments, as well as political instability, underscore the urgency of leveraging the private sector to solve the most pressing development challenges of the country: narrowing the gaps across regions and reducing the segmentation between the formal modern sector and the informal economy. This Country Private Sector Diagnostic (CPSD) provides an in-depth analysis of the private sector economy, with added attention to some of the sectors with high potential in the short term to generate more and better jobs, inclusive green growth, and economic spillovers: agribusiness, tourism, aquaculture, and digital finance.

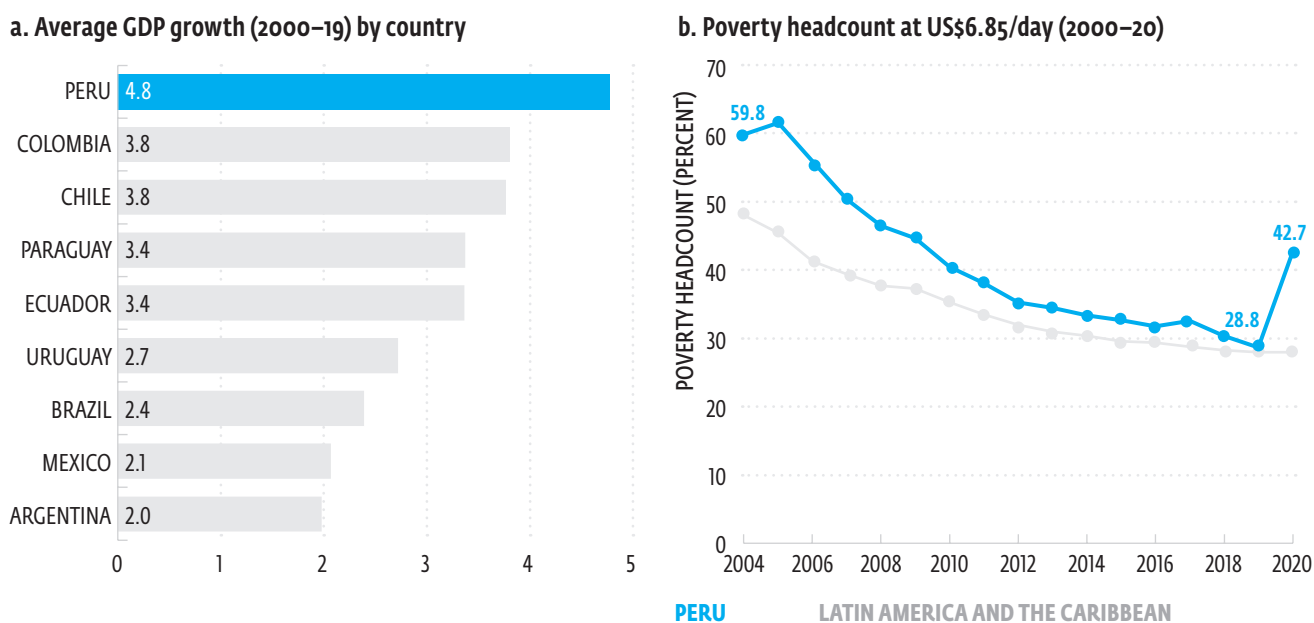


Photo by

2. COUNTRY CONTEXT

A strong macrofiscal policy environment, favorable terms of trade, and an adequate business environment helped Peru achieve high economic growth and poverty reduction in the two decades prior to the pandemic and become one of the most prominent economic performers in Latin America. Economic growth reached 4.8 percent on average between 2000 and 2019, and per capita income rose more than threefold in this period (from US\$1,956 to US\$6,939). Peru’s rapid economic growth ranked first among major Latin America and the Caribbean economies on the back of favorable terms of trade along with a solid macroeconomic policy framework (figure 2.1a). The fast growth transformed Peru into an upper-middle-income economy, with aspirations to become a high-income economy in the next decade. Poverty levels fell dramatically and converged to the average for Latin America around 2018 (figure 2.1b). The solid economic performance of Peru was heavily anchored on external and internal factors. Externally, international increases of mineral prices allowed Peru to reap its comparative advantage in commodities, specifically minerals such as copper. Internally, Peru undertook a set of reforms to open up the economy and stimulate private investment. A combination of trade liberalization, constitutional protection of foreign direct investment (FDI), and network regulation created a more favorable environment for foreign investment.

FIGURE 2.1 ECONOMIC GROWTH AND POVERTY REDUCTION

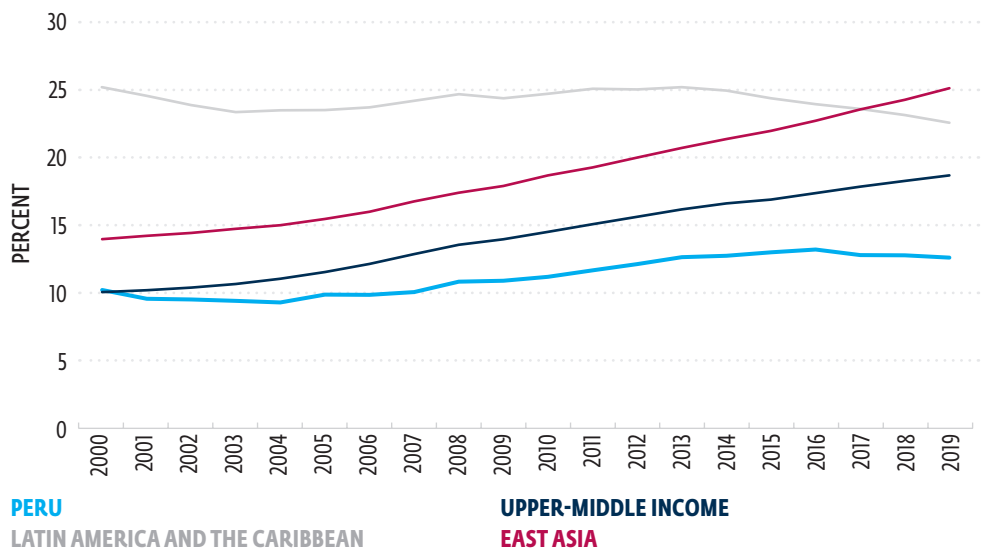


Source: Panel a: IFC-Electronic Clearing House calculations based on World Bank World Development Indicators (WDI) database; panel b: World Bank staff estimates based on National Household Survey (ENAHO) and WDI database.

Note: The series for Latin America and the Caribbean has a break in 2015, which we bridge using the older series endpoint in 2015 as the baseline, which we assume to then evolve at the same rate as the new series. The series for Latin America and the Caribbean ends in 2020. GDP = gross domestic product.

However, the pace of economic growth and poverty reduction significantly slowed in recent years, even before the COVID-19 pandemic. Between 2014 and 2019, GDP growth averaged 3 percent, half the average rate achieved from 2002 to 2012. Accordingly, while moderate poverty fell on average 3.3 Percent every year between 2005 and 2013, that figure was only 0.8 Percent after 2014 (figure 2.1b). This slowdown largely reflected a less benign external environment, characterized by lower commodity prices and higher volatility in global financial markets, which brought several of the underlying structural failures to light. Labor productivity growth before 2013 was strong, narrowing the gap with the Latin America and the Caribbean average and high-income economies (figure 2.2). However, this convergence process has been relatively weaker when compared with other upper-middle-income economies (largely driven by East Asian countries), which had similar productivity levels in 2000 and now enjoy significantly higher productivity levels. Moreover, the productivity convergence between Peru and developed countries has weakened since 2013.

FIGURE 2.2 COMPARISON OF LABOR PRODUCTIVITY (AS A SHARE OF HIGH-INCOME COUNTRIES' LABOR PRODUCTIVITY)



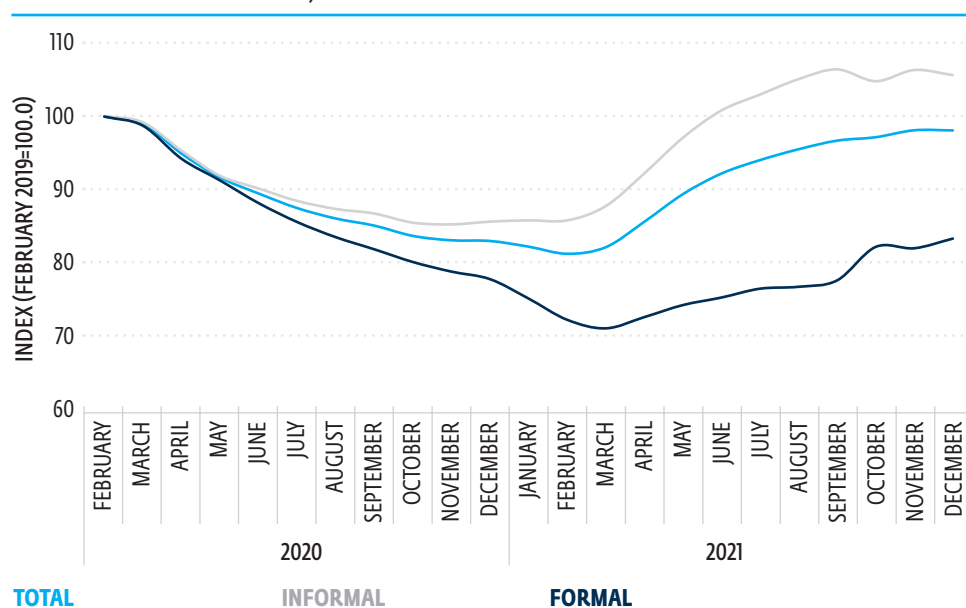
Source: World Bank staff elaborations based on data from the International Labor Organization.
 Note: Labor productivity is measured as output per worker in constant 2010 US dollars.

The negative effects of COVID-19 and associated lockdowns have been among the largest in the world. GDP contracted by 11 percent in 2020, and poverty experienced a record annual increase of 10 Percent, erasing more than 10 years of progress in poverty reduction.²⁶ Fiscal policy was geared toward mitigating the impact of the COVID-19 pandemic, and the government implemented a countercyclical response equal to 19 percent of GDP that consisted of providing liquidity to enterprises through guaranteed loans, fiscal transfers to vulnerable population groups and firms, more expenditures on goods and services, and relaxation of access to unemployment and private retirement accounts.²⁷ Revenues in 2021 sharply declined because of a steep contraction of economic activity. Although attaining the fiscal target of 1 percent of GDP deficit by 2025 may require additional measures on the revenue side, Peru's public sector debt is assessed to be sustainable and resilient to a range of different shocks. GDP recovery was strong in 2021 (at about 13 percent), but a long-lasting impact of the pandemic is expected. After the rebound in 2021, economic growth is expected to return to its pre-pandemic pace of about 3 percent per year—a relatively low value when compared with Peru's recent history—despite the favorable context set by the expected high price of minerals.²⁸ In the short to medium term, political uncertainty and its effects on investment decisions raise concerns about the opportunities for the private sector to lead the economic recovery.

The large negative impacts of the COVID-19 pandemic were driven not only by the magnitude of the shock but also by preexisting conditions. The stubbornly high informality of Peru was key in shaping the incidence of the shock. In particular, countries with a large informal sector before the pandemic experienced larger job losses in 2020, which may help explain why the levels of employment destruction in Peru were among the highest in the region.²⁹

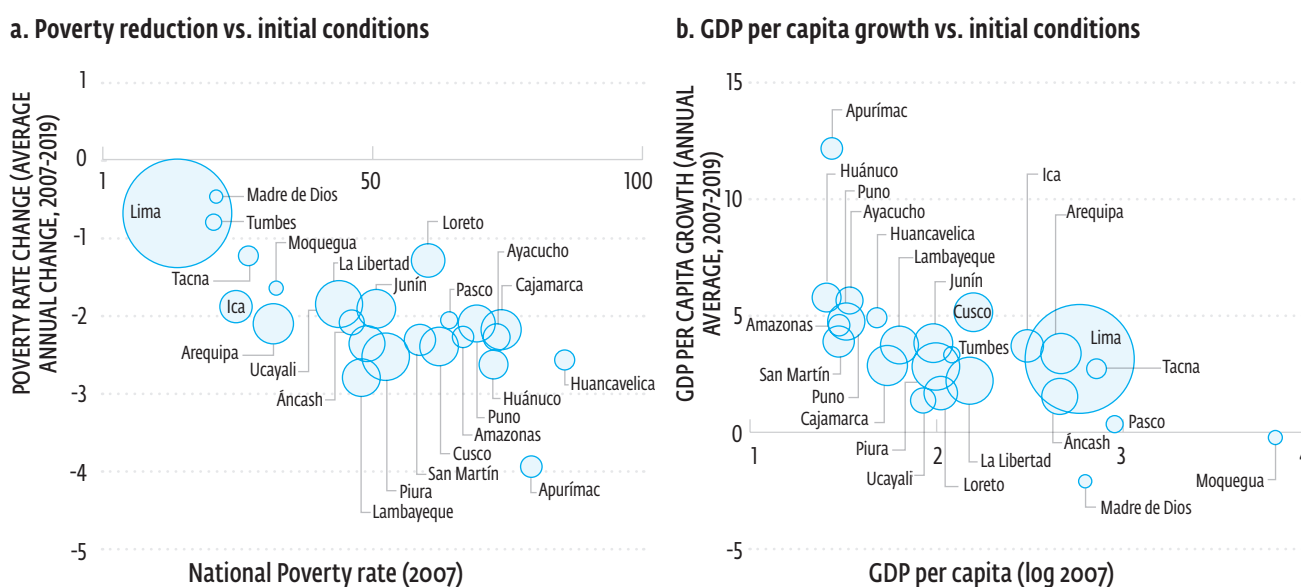
The central role of informality—or the labor market in general—as a driver of poverty and inequality was clear before COVID-19 as well. The labor market status of household heads (in self-employment/salaried work, sector, firm size, and formality) accounted for 42 percent of income dispersion in 2019.³⁰ Accordingly, though employment levels have almost returned to the precrisis levels, this increase was largely driven by low-quality jobs in the informal sector. In fact, formal employment in urban areas in the last trimester of 2021 was still more than 5 percent below its level in the same period in 2019, and at the pace of growth in 2021, it is not clear when formal employment will fully recover (figure 2.3).³¹

FIGURE 2.3 JOB DESTRUCTION AND RECOVERY IN THE FORMAL SECTOR (EMPLOYMENT INDEX, TOTAL AND BY FORMAL STATUS)



Source: World Bank staff elaborations based on data from the National Institute of Statistics and Informatics (INEI).
 Note: Each line shows the total number of jobs in urban areas, by formality status.

The territorial dimensions of poverty and inequality also became more apparent and showed the urgency of generating a more balanced pattern of inclusive growth across the country. Although lagging regions had significant improvements in economic outcomes over the past 20 years, the process of economic convergence has been rather weak. Given the magnitude of the gaps in economic development across areas in Peru, the rates of economic growth and poverty reduction would have to be dramatically higher to narrow the gap between lagging areas and Lima. Most lagging regions have experienced higher rates of GDP per capita growth than Lima since 2007 (figure 2.4b), but in most cases those rates are too low to reduce territorial disparities in the medium to long term. It would take at least 20 years for most regions to reach Lima’s income levels today (that is, in the extreme scenario that Lima does not grow in the future) if they continue growing at the same rates. For instance, while Cajamarca and Puno have very similar income levels, the latter has been growing at higher rates than the former (2 percent and 3 percent annually, respectively). As a result, it would take 23 years for Puno to achieve Lima’s current income levels, and it would take 38 years for Cajamarca.³² To catch up with a growing Lima, it would take even longer. Similar patterns can be drawn for poverty levels (figure 2.4a). Income and poverty territorial disparities are also mirrored in infrastructure and skills gaps.³³

FIGURE 2.4 POVERTY AND INCOME CONVERGENCE ACROSS REGIONS, 2007–19

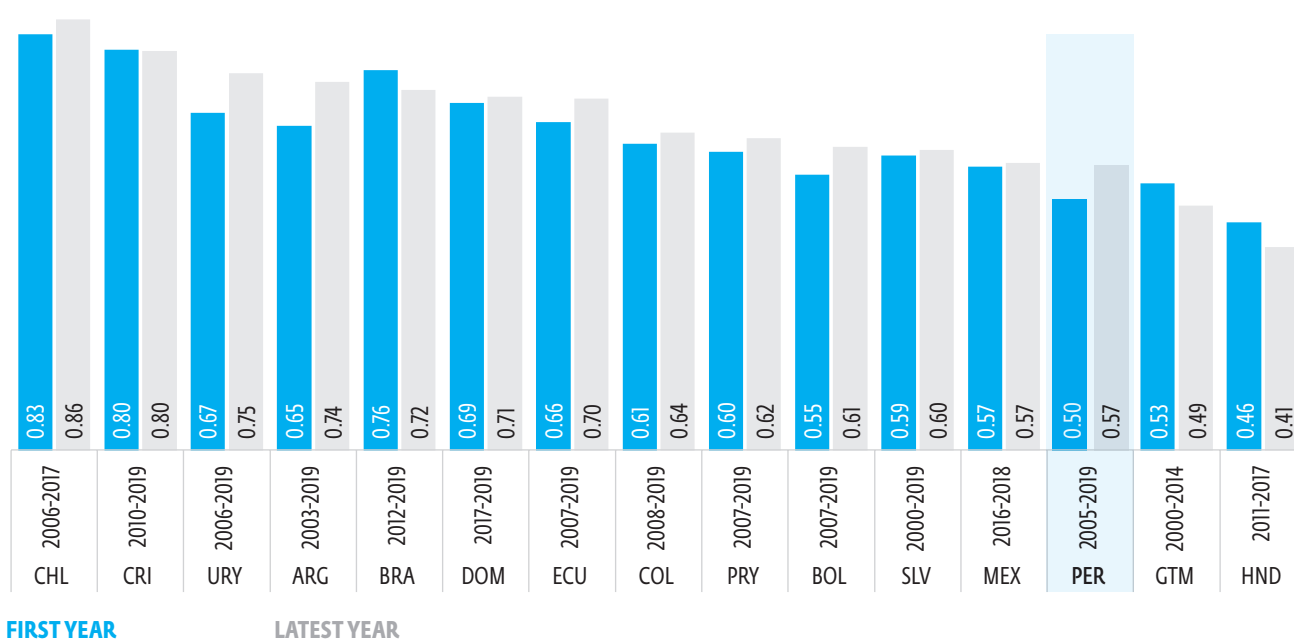
Source: World Bank staff estimates based on data from the National Institute of Statistics and Informatics (INEI).

Note: (a) The horizontal axis measures the national poverty rate in 2007 (2017 CENSUS), and the vertical axis measures the annual average change in this indicator between 2007 and 2019 (Percent) using ENAHO (National Household Survey). The size of the bubbles represents the size of the population in each region according to ENAHO 2019; (b) the horizontal axis measures the logarithm of the GDP per capita in constant prices in 2007, and the vertical axis measures the annual average growth rate in this indicator between 2007 and 2019 (Percent).

The underlying weaknesses in Peru also reflect a large disparity in providing public services. The fact that none of the regions have achieved Lima's structural transformation is partly due to lack of access to public goods and services. Gaps exist in basic services, such as access to running water, mainly in the rural areas. Although 91.8 percent of individuals have access to a water supply in their houses in Lima Metropolitana, only 80 percent have access in the rural Andes (Sierra rural), 69.3 percent have access in the rural coast (Costa rural), and 62.5 percent have access to water supply in their houses in the rural Amazon (Selva rural).³⁴ Gaps in public goods required for economic progress also exist, especially between the coastal region and the Amazon and Andes. Highways in the coastal region have a higher percentage of paved roads: 85 percent for national highways and 24 percent for regional highways (red Departamental). Highways in the Andes (Sierra) and Amazon (Selva) lag in paved roads, especially in the regional highway system: between 82 percent (Andes) and 84 percent (Amazon) in the national highways, and 11 percent (Andes) and 5 percent (Amazon) in the regional highways.³⁵

After more than a decade of strong economic growth and fast poverty reduction, Peru’s growth model has reached a ceiling. The productivity slowdown is due to structural issues in the economy. First, the poor capacity of local governments limits their role as engines of local development and convergence with more prosperous areas as well as preventing them from providing key public goods and services that, simultaneously, attract private sector investments (for example, in agriculture or tourism) and help the vulnerable. Second, informality in land tenure and small-scale production contribute to environmental degradation outside of cities and unsustainable urban growth. Several local governments lack cadastres or do not update them frequently, which, along with informal occupation of land, leads to weaker property rights and poor urban planning and creates obstacles for public and private investments. Third, rigid labor regulations widen the segmentation in job quality in the formal and informal sectors. Given the size of the informal economy, this wider segmentation implies that the quality of jobs in Peru is among the lowest in Latin America (figure 2.5). Moreover, the prevalence of low-quality jobs is quite heterogeneous across socioeconomic groups. For example, female and rural workers are more likely to have lower-quality jobs than their male and urban counterparts.

FIGURE 2.5 THE QUALITY OF JOBS IN PERU VS. LATIN AMERICA AND THE CARIBBEAN (JOB QUALITY INDEX, RANGING FROM 0 TO 1)



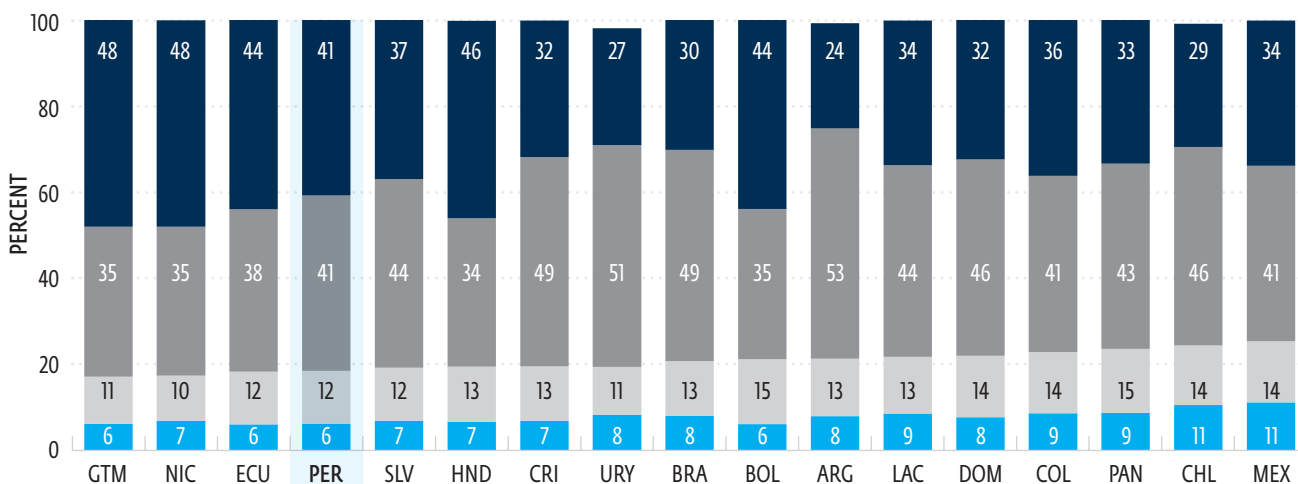
Source: LAC Equity Lab tabulations of SEDLAC (CEDLAS and the World Bank, 2019).

Note: The Job Quality Index considers four dimensions: level of earnings, security, benefits, and satisfaction. It ranges from 0 (if none of the conditions are met—that is, earnings are below the poverty line, job is unstable and informal, and worker has two jobs) to 1 (if all conditions are met—that is, earnings are above the poverty line, job is stable and formal, and worker has only one job). ARG = Argentina; BOL = Bolivia; BRA = Brazil; CHL = Chile; COL = Colombia; CRI = Costa Rica; DOM = Dominican Republic; ECU = Ecuador; GTM = Guatemala; HND = Honduras; MEX = Mexico; PER = Peru; PRY = Paraguay; SLV = El Salvador; URY = Uruguay.

In addition to these long-standing structural issues, events related to climate change will challenge one of the key pillars of Peru's growth strategy. The number of natural events and human-induced disasters recorded in Peru increased dramatically between 2003 and 2019, and they could become more frequent in the future.³⁶ The reliance of the economy on natural resources has been key for economic growth, but vulnerability to climate change highlights the importance of long-overdue economic reforms. Increased glacial melt and changes in precipitation will significantly affect the timing and availability of water for agriculture, drinking, and energy production and will change the frequency and severity of droughts and floods with significant economic consequences. Climate change will threaten the agriculture and fishery sectors, increase damage to infrastructure exposed to flooding and landslides, reduce water availability in urban centers, and reduce the availability of hydroelectricity, increasing the carbon footprint of the electricity matrix.³⁷

Peru's environmental challenges have critical implications for key sectors such as agriculture and fishery, energy, and land use and forestry. Although Peru contributes little to global greenhouse gas emissions, its emissions are growing fast, and its agricultural exports are vulnerable to climate mitigation policies abroad. Peru's main sources of emissions are land use change and forestry (48 percent), energy (29 percent), and agriculture (11 percent). Agriculture, logging, mining, and infrastructure development are key drivers of deforestation in Peru.³⁸ Given the high concentration of employment in primary sector activities, a large share of jobs in Peru are in occupations or sectors that are nongreen (82 percent). Among a group of 16 countries in Latin America and the Caribbean, only three countries rank lower than Peru in the share of green jobs. In Peru, 82 percent of jobs are nongreen, with 41 percent of workers in nongreen sectors (sectors whose emissions are above the country's average) and another 41 percent in nongreen occupations (occupations vulnerable to layoffs in the case of expansion of the green economy) (figure 2.6).

FIGURE 2.6 GREEN JOBS AND GREEN SECTORS, 2019 OR LATEST DATA AVAILABLE



GREEN JOBS IN GREEN SECTORS

GREEN JOBS IN NON-GREEN SECTORS

NON-GREEN JOBS IN GREEN SECTORS

NON-GREEN JOBS IN NON-GREEN SECTORS

Source: Montoya, K., Sanchez, D., O., Olivieri, S., Vazquez, E., and Winkler, H. "Green Jobs, Dirty Sector and Economic Development: Evidence across Countries" (World Bank, forthcoming).

Note: Each bar shows the structure of employment according to whether the job is "green" (that is, because it embeds tasks required to implement green technologies, because the tasks embedded would require upskilling, or because they will be in higher demand as a result of green growth) and whether it is in a green sector (that is, if global greenhouse gases emissions per worker are below the median sector). ARG = Argentina; BOL = Bolivia; BRA = Brazil; CHL = Chile; COL = Colombia; CRI = Costa Rica; DOM = Dominican Republic; ECU = Ecuador; GTM = Guatemala; HND = Honduras; LAC = Latin America and the Caribbean; MEX = Mexico; NIC = Nicaragua; PAN = Panama; PER = Peru; SLV = El Salvador; URY = Uruguay.

During the past 20 years, Peru has made substantial progress in achieving strong economic growth and rapid poverty reduction, but key structural issues have remained unresolved. In fact, the successful economic growth model based on strong macroeconomic fundamentals and commodity-based production began showing fatigue symptoms even before the COVID-19 pandemic. Attracting private investments will require addressing several issues, including the ones highlighted in this report: wide and persistent territorial disparities as well as barriers to the formalization of labor and land.

3. STATE OF THE PRIVATE SECTOR

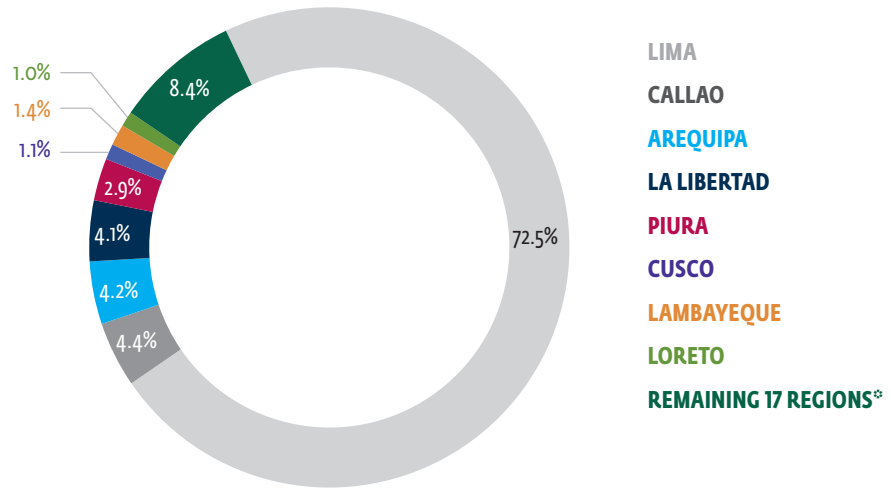
Reflecting the larger polarization of the economy, the private sector in Peru is characterized by a few large firms and many small firms. Large companies are a small group made up of often innovative companies (for example, in high-value-added agricultural crops and high-end cultural tourism) and small companies are a large group made up of low-productivity companies operating mainly in the informal sector.

FDI patterns reflect the private sector disparities outlined earlier, with a concentration in sectors with high productivity and low informality levels. FDI grew significantly during the period of high economic growth but has slowed since 2014. Total FDI inflows in 2022 amounted to almost US\$11 billion, equivalent to 13 times the 2000 levels. However, most of that growth took place between 2003 and 2013, while during the 2014–20 period a slowdown in flows was observed in line with the lower prices of raw materials. FDI is highly concentrated in large companies operating in the mining sector (20 percent), with a negligible portion of inflows targeting other key sectors such as agriculture (0.3 percent), aquaculture and fisheries (0.5 percent), and tourism (0.3 percent).

Although Peruvian exports remain concentrated in commodities (mainly exported by large companies), food and tourism have played a key role in economic diversification. Peru is a commodity producer with mining, oil, and gas exports still accounting for about two-thirds of total exports and 22 percent of GDP and mining accounting for most of the export growth during the past 20 years. However, agricultural exports have expanded dramatically, reaching an estimated US\$6 billion or 2.7 percent of GDP in 2019 from 0.4 percent in 2001. The share of nontraditional products in total agricultural exports went from 48 percent in 1998 to 90 percent in 2021. Exports of fruits—such as avocados, grapes, and blueberries—multiplied by 61, and exports of vegetables—such as asparagus—multiplied by 6 over the period. The economic complexity of Peru’s export basket fell when compared with other countries, although this comparison hides the fact that certain agricultural products such as “nontraditional” fresh fruits and vegetables require a complex value chain of services for distribution. Tourism exports have also experienced substantial growth over the past decades, representing about 9 percent of the country’s total exports in 2019. With 4.4 million visits in 2019, it reached fifth position in international arrivals to the region.

The duality of the private sector in Peru has several dimensions—which are highly interrelated—and the first one is territorial. The most productive firms (that is, large firms) are disproportionately concentrated in Lima and other coastal regions. Lima is the most populated region in the country, with more than 10 million people, making up about one-third of the total population. However, the proportion of large firms (with more than 100 workers) is even more concentrated than the population. Lima concentrates 73 percent of all big formal firms in the country, while Arequipa, Callao, and La Libertad each have about 4 percent of all large firms. Piura, Cusco, Lambayeque, and Loreto each have less than 4 percent of big firms, and the 17 remaining regions each have less than 1 percent of large firms (figure 3.1).

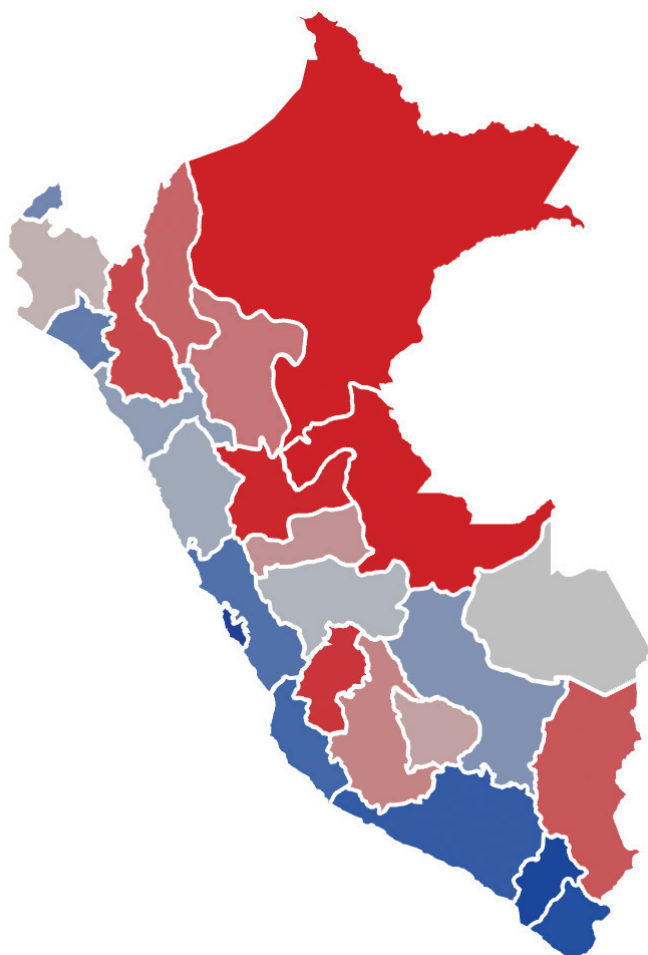
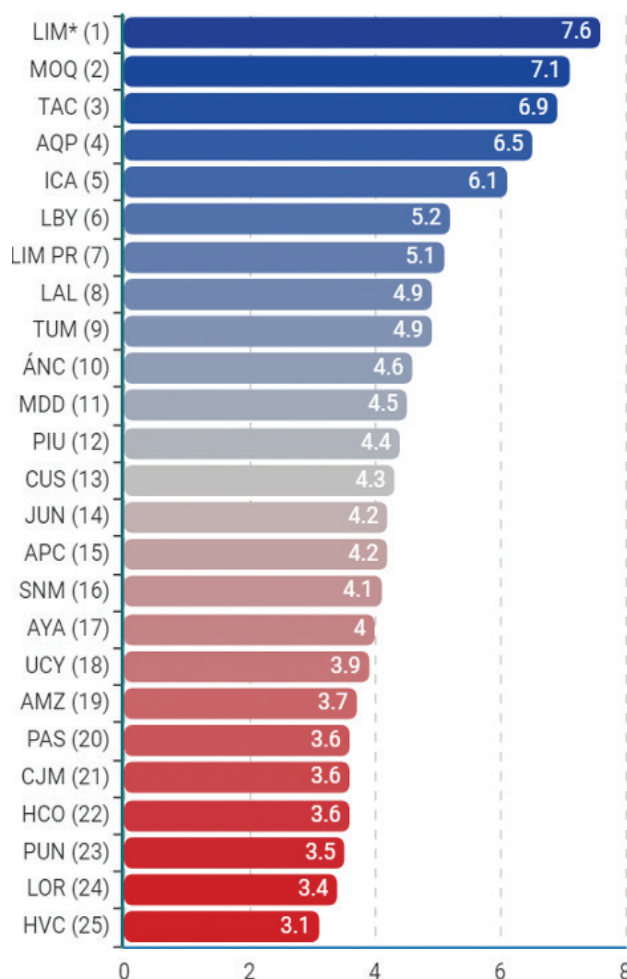
FIGURE 3.1 DISTRIBUTION OF LARGE FIRMS (100+ WORKERS), BY REGION



Source: World Bank staff elaborations based on MTPE (Ministry of Labor and Employment Promotion), "Planilla Electronica/T-Registro y Plame, Anuario Estadístico Sectorial 2020. Cuadro 8," <https://www2.trabajo.gob.pe/estadisticas/anuarios-estadisticos/>.

*The remaining 17 regions each had less than 1 percent of all big firms in the country and together account for 9 percent.

These regional disparities reflect differences not only across firms but also across the competitive environment. According to the regional index of competitiveness (INCORE), the coastal region has the highest values of competitiveness, followed by the Andean region and the Amazon region (figures 3.2 and 3.3). The index includes measures of economic environment, infrastructure, health, education, labor, and institutions to quantify the relative position of the 25 regions.³⁹ Some of the most striking differences are in access to proper transport and health infrastructure. It takes twice as long to reach a health care facility in rural areas as in urban ones, and travel times are strongly correlated with the percentage of the population with at least one unsatisfied basic need.⁴⁰ In Loreto, the second-to-last region in the competitiveness ranking, only 60 percent of the population has access to safely managed water and only 40 percent have basic sanitation services.⁴¹ The lack of connectivity infrastructure is also a significant bottleneck to the growth of key sectors such as nature-based tourism in secondary destinations. For example, in Amazonas, the connection between the Chachapoyas airport and the city, the airport itself, and the road between Jaen and Chachapoyas present a clear roadblock to demand. In Playas del Norte, internal ground connectivity also constrains the demand for this destination.

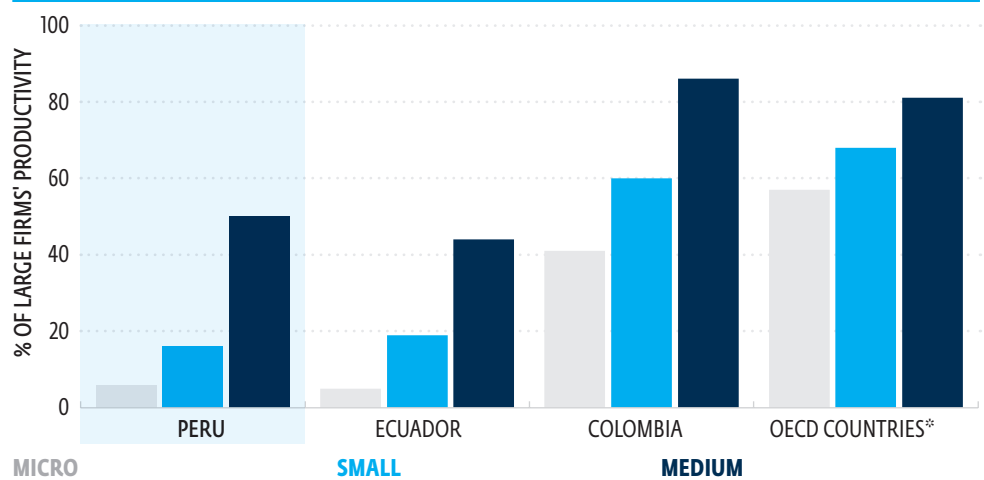
FIGURE 3.2 MAP OF COMPETITIVENESS INDEX, 2021**FIGURE 3.3 COMPETITIVENESS INDEX BY DEPARTAMENTO, 2021**

Source: Peruvian Institute of Economy (Instituto Peruano de Economía, IPE), Index of Regional Competitiveness (Índice de Competitividad Regional, INCORE), 2021, <https://incoreperu.pe/portal/index.php/ranking-regional>.

Note: AMZ = Amazonas; ANC = Ancash; APC = Apurímac; AQP = Arequipa; AYA = Ayacucho; CJM = Cajamarca; CUS = Cusco; HCO = Huánuco; HVC = Huancavelica; ICA = Ica; JUN = Junín; LBY = Lambayeque; LAL = La Libertad; LIM = Lima; LIM PR = Lima Province; LOR = Loreto; MDD = Madre de Dios; MOQ = Moquegua; PIU = Piura; PAS = Pasco; PUN = Puno; SNM = San Martín; TAC = Tacna; TUM = Tumbes; UCY = Ucayali.

A second dimension of private sector duality is productivity, which varies substantially according to the size of the companies and is linked with informality. Micro, small, and medium enterprises (MSMEs) have a large negative productivity differential relative to large firms (figure 3.4). Indeed, estimates indicate that the productivity of micro, small, and medium firms is 6 percent, 16 percent, and 50 percent that of large firms in Peru, respectively.⁴² These differentials are greater than those observed in other countries in Latin America and the Caribbean and in Organisation for Economic Co-operation and Development (OECD) member countries. Moreover, these differentials are probably a lower bound since informal firms are not included, tend to be smaller and less productive, but employ more people in total.

FIGURE 3.4 RELATIVE PRODUCTIVITY OF SMALLER FIRMS COMPARED WITH LARGER FIRMS



Source: Marta Ruiz-Arranz and Cecilia Deza, "Creciendo con Productividad: Una Agenda para la Región Andina" (Inter-American Development Bank, Washington, DC, 2018).

Note: For this comparison, Organization for Economic Co-operation and Development (OECD) countries are France, Germany, Italy, and Spain.

Employment is concentrated in the least productive (informal) sectors and firms.

While the mining sector occupies the top of the productivity pyramid, agriculture and commerce are the sectors with the lowest productivity per worker and account for the largest shares of employment. In contrast, the most productive sectors, composed of mining, energy, and manufacturing, represent between 1 percent and 9 percent of total employment (figures 3.5 and 3.6).⁴³ The low productivity of the agricultural sector hides substantial heterogeneity across type of producers. In particular, productivity is significantly higher in larger and commercial farms than among subsistence-oriented farms.⁴⁴

FIGURE 3.5 VALUE ADDED VS. EMPLOYMENT BY SECTOR, 2019 (%)

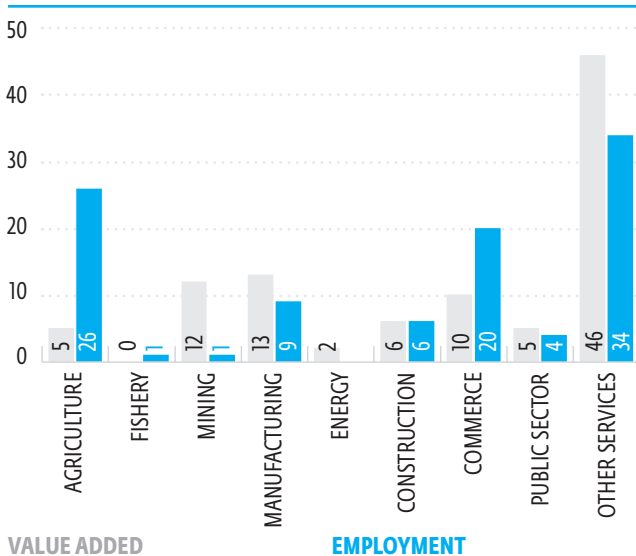
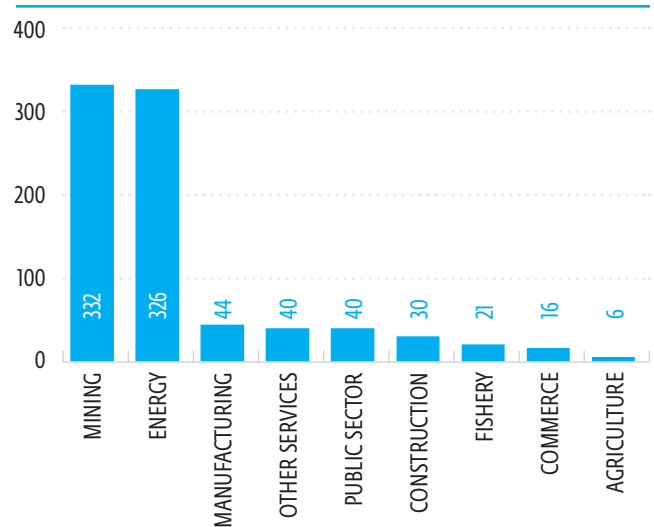


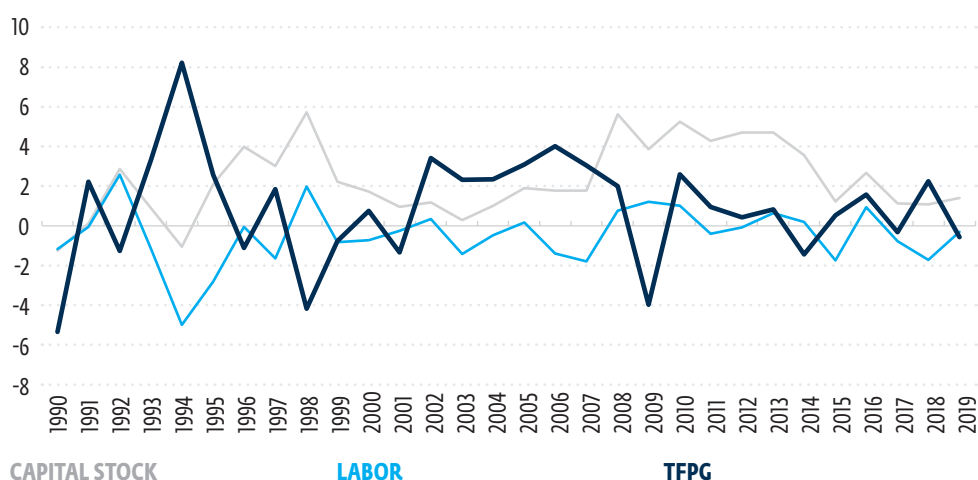
FIGURE 3.6 VALUE ADDED PER WORKER BY SECTOR, 2019 (CONSTANT PRICES OF 2007, IN THOUSANDS OF PERUVIAN SOLES)



Source: INEI (National Institute of Statistics and Informatics)—Household Survey (ENAH0) 2019 and National Accounts 2019.

Lags in productivity by firm size, region, and sector drag down the productivity of the entire economy. Peru's average total factor productivity (TFP) growth has been close to zero for the past decade (0.3 on average from 2009 until 2019), and it is trending down, especially after the COVID-19 crisis. The Conference Board think tank and business membership organization estimates an average TFP growth for 2020 and 2021 of -2.3 . Figure 3.7 shows the upward/downward trend that characterizes Peru's productivity, where TFP growth is centered near zero. Compared with other countries, Peru lags (figure 3.8).

FIGURE 3.7 GROWTH ACCOUNTING; PERU PRODUCTIVITY (%)

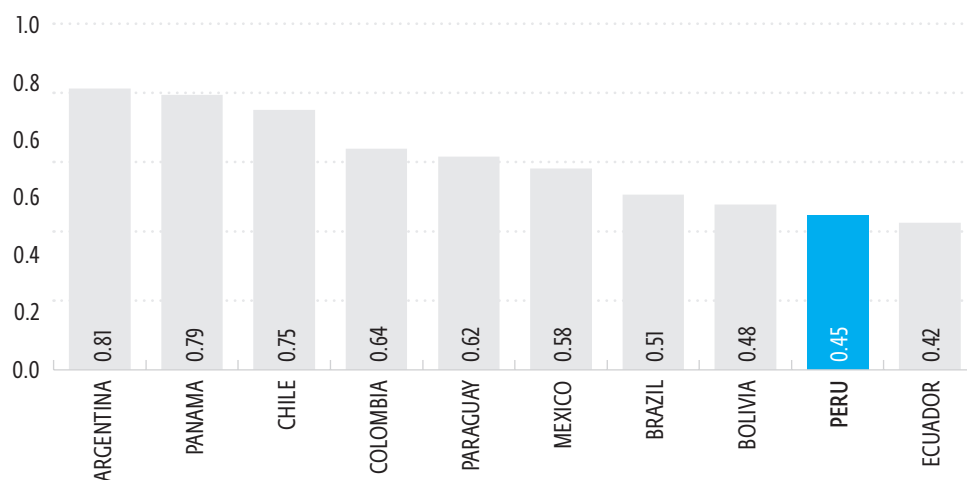


Source: World Bank staff elaborations based on the Conference Board Total Economy Database 2021.

Note: TFPG refers to total factor productivity growth and is estimated as the residual; capital stock is estimated as the share of total capital in gross domestic product (GDP) multiplied by the growth of per capita capital; labor is estimated as the share of total labor compensations in GDP multiplied by the growth of human capital.

FIGURE 3.8 TOTAL FACTOR PRODUCTIVITY AT CURRENT PURCHASING POWER PARITY, 2019

(United States = 1.00)

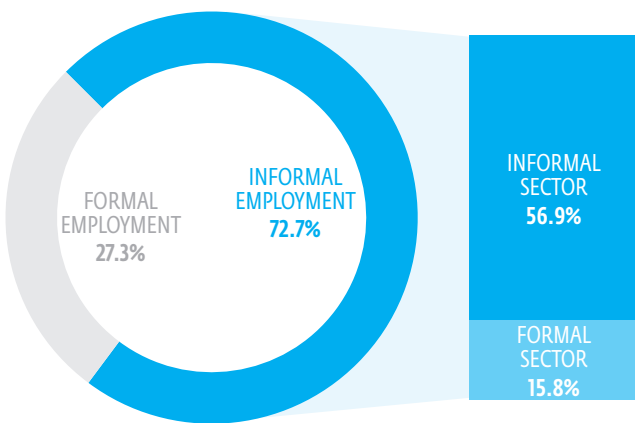


Source: Penn World Tables version 10.0, a database with information on relative levels of income, output, input, and productivity, covering 183 countries between 1950 and 2019.

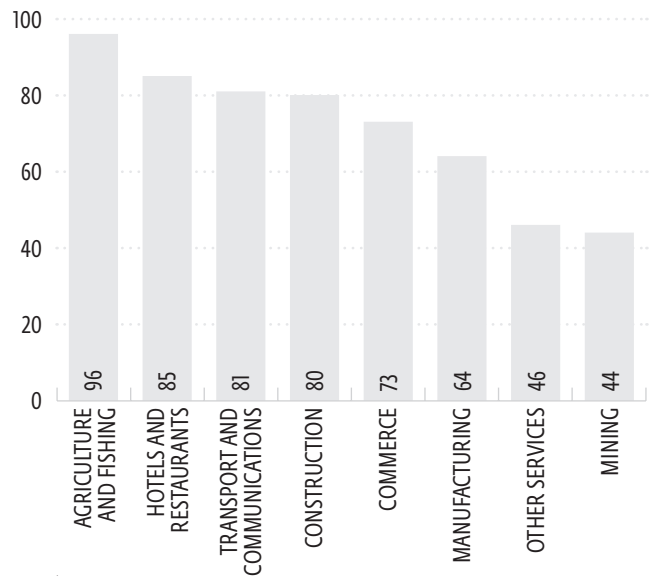
The third dimension of duality is informality. The size of the informal economy in Peru is among the largest in Latin America and the Caribbean. In 2019, before the pandemic hit, there were 12.5 million informal workers in Peru, which represented about 72.7 percent of the workforce. The share of informal employment has decreased over time, showing a modest decline of 7 Percent since 2007. However, informality has remained roughly constant at around 72 percent since 2014.⁴⁵ Most informal workers are employed by informal firms, whereas the rest work in the formal sector (56.9 percent versus 15.8 percent) (figure 3.9a).⁴⁶ Labor informality is more prevalent among small firms and in rural areas, where informal employment represented 96 percent compared with 66 percent in urban areas. Interestingly, this gap is mostly driven by women having informal jobs in the formal sector.⁴⁷ In other words, although the fraction of female workers having a job in informal firms is relatively similar to that of men (56.4 versus 57.5 percent), women are 4 Percent more likely than men to be hired informally by formal firms (13.9 versus 18.2 percent). Informality is typically linked to low-productive activities with weak or no links to the modern economy. In fact, the average hourly earnings of informal workers represent about half the value of their formal counterparts' average hourly earnings. Some of the sectors with higher labor informality are strongly linked to agribusiness (for example, agriculture, transport, and manufacturing of consumption goods) and the tourism industry (restaurants and hotels) (figure 3.9b).

FIGURE 3.9 INFORMAL SECTOR IN PERU, 2019

a. Informal firms vs. informal workers in Peru, 2019



b. Labor informality by sector, 2019 (%)



Source: INEI (National Institute of Statistics and Informatics)—Household Survey (ENAH0) 2019.

The pandemic has worsened the divide, with the growth of informal jobs especially in the Andean and Amazon regions. It is estimated that in 2020, as a response to COVID-19 and lockdowns, 2.4 million jobs were lost. Formal jobs were lost at a higher rate than informal jobs, while during the recovery period, informal jobs have been growing at a faster rate. As a result, informality has increased. Published data from the second trimester of 2021 show that informality increased 5.7 Percent at the national level compared with the second trimester of 2020. The coastal region has suffered the least, with an increase of 4.7 Percent, while informality in the Andean and Amazon regions grew by 7.3 Percent and 7.1 Percent, respectively.⁴⁸ Women suffered disproportionately, because they experienced a higher rate of total and formal job destruction than men.

Looking ahead, the dualities of the Peruvian private sector will not only withhold growth but also will have significant implications for resilience to climate change. First, the existence of large segments of the population and firms operating outside formal registration systems challenges the capacity of the government to provide support in the event of a disaster. Informal workers are more vulnerable than their formal counterparts in the event of climate-driven job loss or health hazards. Accordingly, both informal workers and firms tend to lack access to the financial system as a tool to smooth consumption or temporary losses. The development of a transactional account associated with each citizen's identification document (Cuenta DNI, a program led by the state-owned bank Banco de la Nación) is a tool that can partially address this gap. Second, the lower productivity of the informal sector means that a climate-driven shock may hit harder the firms and people already more vulnerable in liquidity and incomes, thus widening a gap that already exists. Third, the geographic distribution of catastrophic events and the heterogeneous preparedness of local governments to prevent and cope with them implies that some territorial disparities may widen even further. The resulting inadequate housing and infrastructure in the Andes and Amazon and the informal areas of the cities make this construction more fragile against earthquakes and climate disasters, while the disproportionate concentration of economic activity in the Lima area continues to attract more internal migration, which poses a challenge to the capacity of providing public services and efficient urban management.



Photo by

4. CROSS-CUTTING CONSTRAINTS

This section describes some of the most binding constraints that prevent the private sector from being part of the solution to the key development challenge identified in the previous section on Peru's debilitating polarization. It focuses on three constraints that deserve particular attention in that regard: poor subnational governance, inefficient land markets, and disabling labor market regulations. These issues need to be addressed, though gradually, to improve the business environment over the next three to five years and to promote private investment in sectors that help reduce regional inequalities and enhance resilient growth.

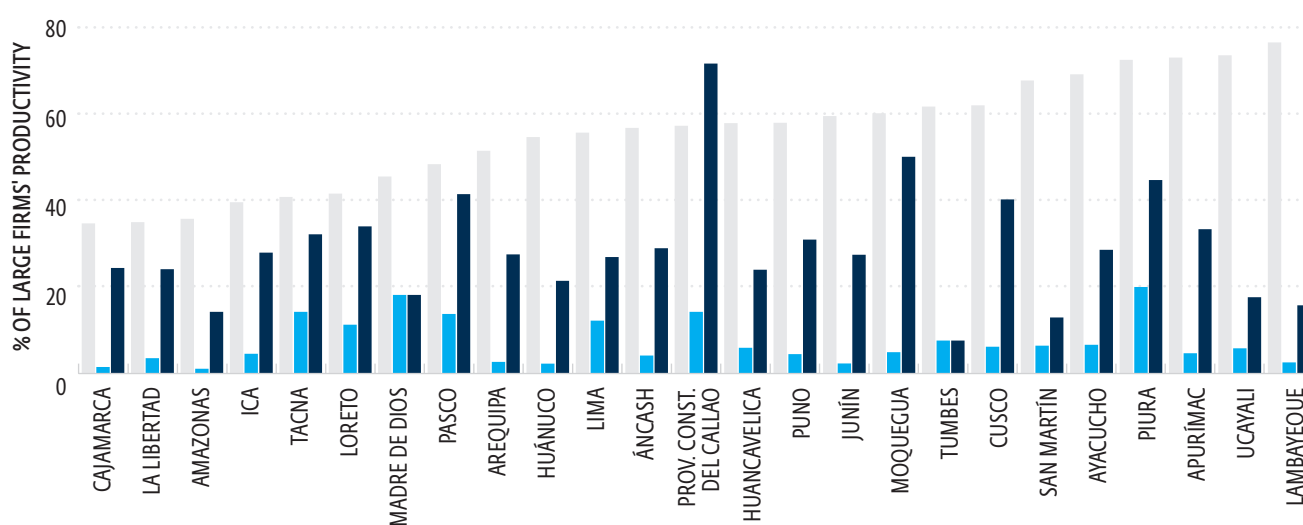
4.1 POOR SUBNATIONAL GOVERNANCE

Since the early 2000s, Peru has experienced a sustained process of decentralization, which fell short of its goal of improving service delivery at the local level. According to INEI, population and economic activity in Peru continue to be highly concentrated in Lima, which accounts for 32 percent of the population and close to 50 percent of GDP. Welfare gaps across districts account for 46 percent of overall welfare inequality at the national level in Peru.⁴⁹ These patterns have been more acute in recent years, with Lima's contribution to GDP increasing from 46.5 percent to 48.4 percent between 2007 and 2019. Economic disparities are also pronounced when one looks at other economic outcomes. For example, 8 percent of districts still have at least 20 percent of the population without one or two basic needs satisfied. At the same time, the COVID-19 pandemic brought to light the heterogeneity in public service delivery across areas: while Lima had four intensive care unit beds per 100,000 people, the Lambayeque region—heavily affected by the pandemic—had fewer than one. Weak local governance also contributes to important deficits in land property rights and the local business environment, as well as in water and sanitation supply and transport infrastructure.

Several challenges affect the proper functioning of subnational governments in Peru, hindering their effectiveness in all three roles of government: as administrator, as regulator, and as a provider of services.⁵⁰ These challenges can be classified in three areas: (a) low capacity of human resources, (b) ineffective organization and processes within the institutions, and (c) lack of clarity and effectiveness of the mandates given to the institutions. There are fundamental issues with the regulatory framework that cannot be addressed in the short term, such as the lack of a clear definition of mandates and responsibilities, including revenue collection and expenditures. The outcome of the 2005 referendum had also prevented the creation of *macro-regiones* and the *coparticipación* of income and sales taxes, in effect also preventing the proper transfer of spending responsibilities to regional governments.⁵¹ Although these reforms are critical, they are unlikely to be addressed in a three-to-five-year horizon. However, the challenges related to the first two categories (human resources and organization/processes) are easier to address—not necessarily requiring legislative action—and can have substantial impact on the efficiency and effectiveness of local governments in facilitating investment and growth.

Critically, the poor technical capacity of regional and municipal governments has adverse implications for both public and private investments. Local government performance in Peru is negatively affected by human resource–related factors. First, instead of a functional civil service, several different types of staff contracts coexist, each of them subject to different rules and regulations. Second, and relatedly, turnover of local government staff is high and weakens the effectiveness of capacity-building programs. Third, the lack of adequate capacity further complicates the management, execution, and supervision of investment projects. Local governments often lack specific skills, such as engineering, hydrology, urban design, or architecture, that are required to prepare the documents needed for infrastructure project design. Therefore, they hire short-term consultants to perform these tasks. However, local governments usually do not have the capacity to assess the quality of the consultants’ work and spend additional resources to hire external supervisors.⁵² In fact, more than two-thirds of the local governments lack access to key and modern information technology (IT) systems to manage their staff, even though the number of local government workers increased by 60 percent between 2011 and 2019 (figure 4.1).

The deficiencies of administration at the subnational level imply a pernicious legal vacuum. In terms of administrative processes, and as further discussed in the land markets section, local governments and potential private investors—facing the absence of updated property registries and cadastres and the proliferation of informal settlements where occupants often lack updated land ownership titles—can find it extremely difficult to determine land ownership rights, uses, and legal boundaries. This lack of information limits the ability of municipal governments to adequately design and execute investment projects. Furthermore, ownership uncertainties as well as incomplete and outdated registry and cadastral records create problems in the expropriation processes because it is difficult to identify who should be compensated, as well as to determine property values. By 2017, only half of the 1,845 Peruvian districts had a cadastre, and only 20 percent updated it recently.⁵³ There is also widespread variation across areas, with roughly one-third of districts in the Cajamarca, La Libertad, and Amazonas regions having a cadastre system (figure 4.1). This situation is a major bottleneck to promoting local development, because the cadastre is a key tool for property tax collection (usually the main tax collected by local governments), territorial planning and management, and investment decisions.⁵⁴

FIGURE 4.1 THE CAPACITY OF LOCAL GOVERNMENT ACROSS AREAS IN PERU

HAS CADASTRE, 2017

HAS CADASTRE MANAGEMENT IT SYSTEM, 2019

HAS STAFF MANAGEMENT IT SYSTEM, 2019

Source: World Bank staff elaborations based on data from the Registro Nacional de Municipalidades (RENAMU) – National Institute of Statistics and Informatics (INEI).

Note: Each bar shows the fraction of districts in the departamento that has a cadastre, a cadastre IT system, and a staff IT system. IT = information technology.

Poor implementation and enforcement of regulations also affect businesses, because they vary substantially across geographies and they can have large negative impacts on private investments.⁵⁵ A recent study gathering evidence on the elimination of subnational regulatory barriers across 1,800 Peruvian municipalities concluded that firms located in municipalities that eliminated regulatory barriers to entry experienced a significant increase in revenue without higher markups, suggesting productivity improvements.⁵⁶ An assessment of bureaucratic barriers identified by the National Institute for the Defense of Competition and the Protection of Intellectual Property (Instituto Nacional de Defensa de la Competencia y de la Protección de la Propiedad Intelectual; INDECOPI) confirmed that bureaucratic and administrative barriers to entry or expansion systematically affect competition in markets such as transport, telecommunications, and retail, particularly at the subnational level (box 4.1).⁵⁷ For example, two local governments granted a monopoly for bus transport services to the Inca Citadel of Machu Picchu, without proper guarantees to safeguard competition “for the market.” These actions by the local governments created barriers in the market that provides tourism-related services in Peru’s main tourist attraction.⁵⁸ In telecommunications, municipalities have significantly restricted the development of infrastructure in the installation of antennas. Only in 2020 did INDECOPI eliminate at least eight municipal barriers that contravened national laws to facilitate infrastructure deployment in Lima and Lambayeque.⁵⁹ A preliminary joint analysis by INDECOPI and IFC to identify subnational regulatory restrictions and bureaucratic barriers in the region of Piura found delays in the granting of fishing permits by the regional offices of the fishing regulator, and that zoning laws, as well as the lack of cadastre and urban development plans, prevent or delay the granting of operating licenses across several strategic sectors that are relevant for economic recovery, such as aquaculture, agro-industry and commerce. Finally, cumbersome procedures for the registration of new companies or renewal of licenses increases operational costs.⁶⁰

BOX 4.1 COMPETITION IN PERU

The perception of the Peruvian markets' level of competition has improved compared with regional peers but remains below the Organization for Economic Co-operation and Development (OECD) average. Peru's 2020 scores in the Bertelsmann Stiftung Index show that the fundamentals of market-based competition and the effectiveness of antimonopoly policy seem less developed than in aspirational peers in the OECD.

Peru compares well with regional peers, but restrictive product market regulations (PMRs) seem to affect private sector development. PMR Indicators assess the extent to which public policies promote or inhibit market forces in several areas of product markets. Forthcoming PMR data for Peru jointly produced by the World Bank Group and the OECD in 2020 outline a moderate reform path since 2013. PMR values confirm that the Peruvian regulatory environment remains more restrictive than the OECD average, although the existence of two factors—barriers in services and network industries and limited tools for simplifying and evaluating regulations—remain the main drivers of that restrictiveness.

Limitations on effective competition law enforcement seem to be hindering the efforts of INDECOI (National Institute for the Defense of Competition and the Protection of Intellectual Property) to open markets. INDECOPI's successful trajectory fighting cartels generated US\$300 million in savings in 2017 alone by dismantling cartels on essential household products such as medicines, toilet paper, fuel, and transport. However, the recent criminalization of

anticompetitive practices, added to the lack of coordination with the Andean community, could significantly undermine INDECOPI's ability to detect and deter cartels using the leniency program, one of the drivers of the success of its anticartel policy. The leniency program gives companies that renounce participating in a cartel the possibility of going to the authorities and providing their full collaboration in exchange of reducing or exonerating their fines. Advocacy activities to align regulations with competition principles and promote competitive neutrality have also been limited.

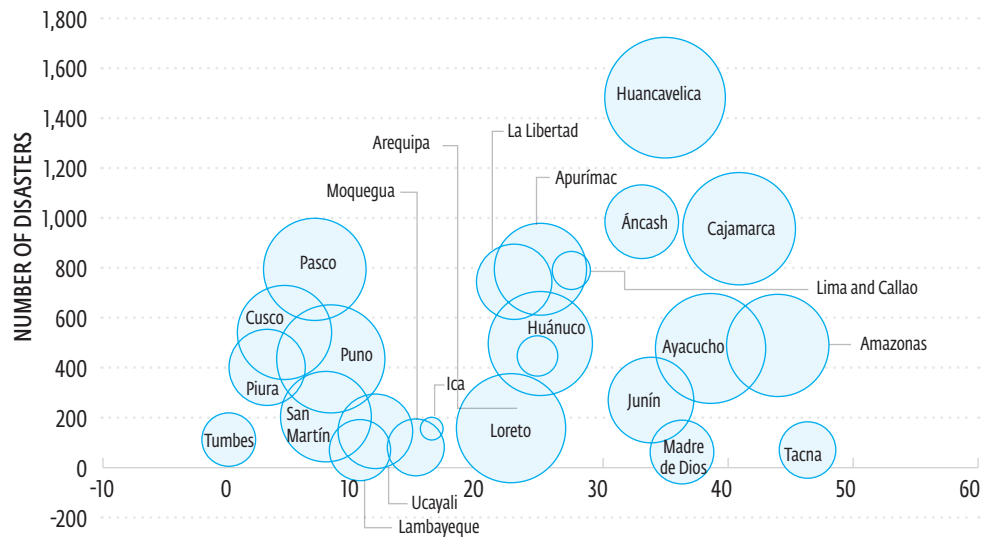
The Peruvian government has announced the development of a National Competition Policy, which could help address the challenges of the COVID-19 recovery if it embraces a comprehensive competition policy framework. This framework includes several policy instruments to protect and promote competition, organized under three pillars: (a) the promotion of procompetition regulations to open key markets, (b) the protection of the level playing field according to the competitive neutrality principle, and (c) effective enforcement of the competition law to prevent anticompetitive practices and mergers. However, in Peru the promotion of competition has been focused almost exclusively on the anticartel program and the elimination of illegal bureaucratic barriers to competition. The prosecution of abusive conduct has been rare, merger control was limited to the electricity sector until early in 2022, and advocacy tools such as market studies remained underused to promote procompetition regulation, both at the central and local government levels.

Source: National Institute for the Defense of Competition and the Protection of Intellectual Property (INDECOPI), 2022.

Weak alignment between the different levels of governance (local, regional, and central) and weak coordination between private and public sectors also limit the effectiveness of subnational governance. For example, public-private partnerships (PPPs) and other arrangements that aim to overcome resource scarcity and improve the strategic impact of public interventions frequently fail to come to fruition, or they have prohibitive transaction costs. According to the Private Council for Competitiveness, in 2019 there were seven PPP projects, but five of them had significant delays, amounting to 80 percent of the total investment. To date, there are 33 projects ready to be called for *obras por impuestos* (Works for Taxes mechanism), which is a tax program in which private companies pay in advance to directly finance public goods and then receive certificates they can use as tax payments. None of them, however, had started the call process.⁶¹ The government's tools like *obras por impuestos* can harness the support of the private sector through PPPs and projects, but there are serious delays in the process of convening and in approval of infrastructure projects.

Finally, extreme natural and human-induced disasters have grown dramatically over the past years, and several local governments do not have the capacity to cope with them. The number of natural and human-induced disasters recorded in Peru increased dramatically (by more than 200 percent) between 2003 and 2019.⁶² The increase in natural catastrophic events was mostly driven by heavy rains, floods, mudslides, and extreme temperatures, while the growth of human-induced disasters was driven by wildfires. Some of the regions more exposed to these events do not have the technical capacity to cope with their impacts. As seen in figure 4.2, regions such as Huancavelica, Cajamarca, and Apurimac experienced a larger number of these events in 2019, but a significant fraction of their local governments do not have any disaster risk management system in place. Moreover, the incidence of these events increased disproportionately in these areas, where poverty levels are already above the national average. Natural disasters are expected to become more frequent given climate change trends, and their economic consequences may widen existing territorial gaps if local governments do not adapt.

FIGURE 4.2 DISASTERS, NATURAL AND HUMAN-INDUCED, AND GOVERNMENTS WITHOUT DISASTER RISK MANAGEMENT SYSTEMS, 2019



Municipalities without DRM systems, 2019 (share of total municipalities in Departamento %)

Source: World Bank staff elaborations based on data from the National Institute of Statistics and Informatics (INEI).

Note: The vertical axis measures the number of natural and human-induced disasters in 2019. Natural events include heavy rain, extreme temperature, strong wind, floods, earthquakes, volcanic activity, storms, drought, and others. Human-induced disasters include wildfires, fires in urban areas, spills, and others. The horizontal axis measures the share of municipalities in the *departamento* without any disaster management systems. The size of each bubble is proportional to the poverty rate in the *departamento* (US\$5,50 poverty line) in 2019. DRM = disaster risk management.

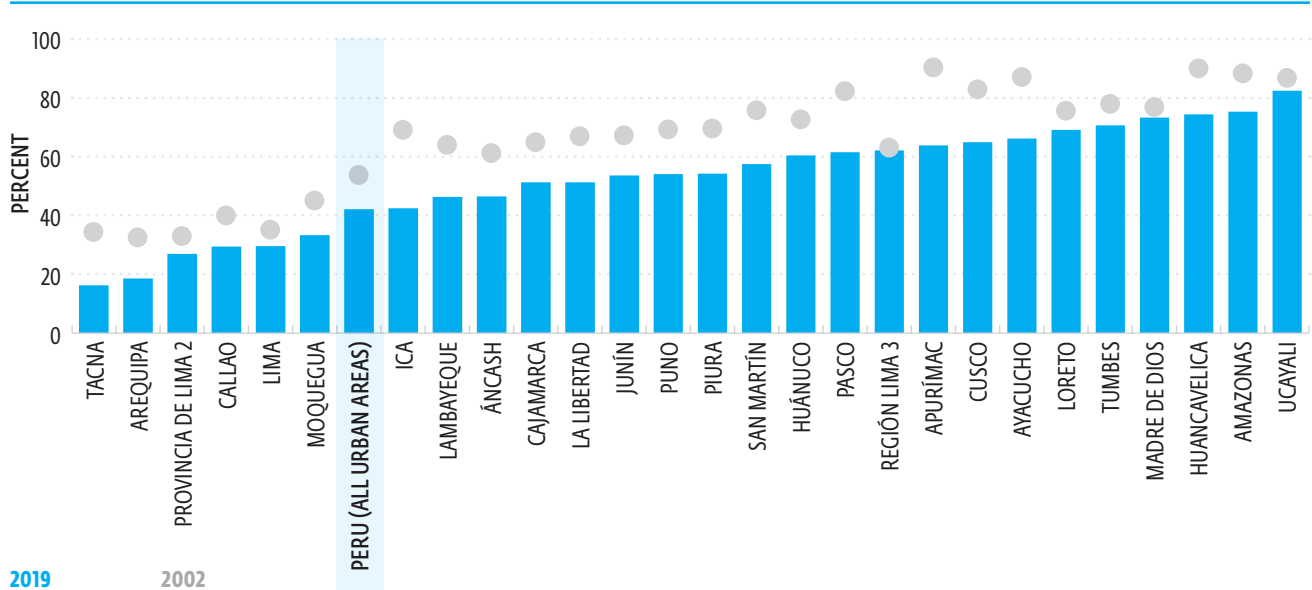
Improving subnational governance in Peru requires a host of different interventions, some of which are only achievable in the medium to long term.⁶³ It is important to redesign the system of public revenues of local governments to reduce their discretion and increase their impacts on efficiency and equity. For example, Peru can use measures of fiscal capacity and fiscal gaps to allocate revenues across regional and local governments and implement a stabilization fund for the mineral revenue-sharing scheme (*canon*) revenues to reduce their volatility. This system involves the transfer of tax revenues contributed by extractive industries (mainly mining) to subnational governments (regions, provinces, and districts) where those industries are located. These resources are distributed very unequally, because the amounts of some of the transfers can be large and are not based on either fiscal efficiency or equity grounds. They can also be used only for infrastructure projects, which are not always where investments are the most needed and which are often difficult to pursue because several *canon*-rich municipalities lack the technical skills or the incentives to implement them. Even though the *canon* has represented a significant share of total public revenues for several districts, its impact on local economic development and regional convergence has been weak. New empirical evidence shows that the *canon* had only mild or zero long-term impacts (from 1993 to 2017) on poverty and on households’ access to basic services (water, sewage, and electricity) at the local level. In addition, it did not contribute to increasing investments in local government capacity (automatized management systems), but it did raise the number of municipal workers and heavy machinery.⁶⁴

However, some of the most critical and effective measures are well within the grasp of shorter-term policy action, with the possibility of incremental reforms with time. For example, a key reform would be improving incentives to increase tax collection at the municipal level, including by providing support to the creation, updating, and management of cadastral systems. Modernizing the management of human resources in municipalities will be similarly valuable and achievable. That effort should help with adequately identifying needs in qualified staff, training, and abilities. Although it might require a full reform of the public administration civil service to overcome some of the most critical elements of the current situation (leading to the diversity of coexisting contractual arrangements), ample margin exists to strengthen staffing and employee capacities with adequate support and financing from the central government. Relatedly, substantive capacity-building systems or programs for different areas of municipal management are needed and achievable. Finally, if political consensus allows it, Peru should consider addressing the current prohibition of reelecting local and regional authorities as a possible way to substantially reduce staff turnover. Peru can harness its current performance-based finance instruments to incentivize subnational governments to improve the alignment between central and local governments' agendas and to address the challenges of governance capacity highlighted earlier as well as of land markets. Land markets are further elaborated on in the next section.

4.2 INEFFICIENT LAND MARKETS

Poor efficiency, lack of transparency, and weak property rights continue to be prevalent in the market for land in Peru. The Peruvian land regime is the result of historical events that played out for many decades, resulting in more than 1,800 different regulations on property rights granting overlapping functions to different administrative authorities, while many provisions are not applied in practice because of a lack of technical and financial resources.⁶⁵ At least three national-level bodies, as well as regional and local governments, have overlapping mandates to identify and determine the use of public land.⁶⁶ This lack of a clearly stated and systematic policy response to the massive rural out-migration and to the reconfiguration of land ownership has led to a challenging institutional context with significant developmental impacts.

As of 2018, only 16 percent of all urban parcels were registered in the cadastre.⁶⁷ This situation is further aggravated by the lack of up-to-date plans on land use: fewer than 20 percent of municipalities had updated land planning instruments as of 2015. The housing market is an example of sectors where these shortcomings have stifled both private sector investments and poverty reduction efforts. According to World Bank estimates, the housing shortage in Peru hovers around 1.3 million units.⁶⁸ Peru's housing deficit and lack of access to affordable housing are reflected in a high occupation index by square meter, which is above adequate quality living standards for 74 percent of the housing units.⁶⁹ As seen in figure 4.3, the vast majority of the urban population in some areas of Peru (such as Ucayali, Amazonas, Huancavelica, and Madre de Dios) live in informal, substandard neighborhoods without access to property rights and basic services, and this fraction has not changed significantly over the past two decades. Moreover, this type of settlement tends to be less resilient to catastrophic events because they are often located in high-risk areas and built using precarious materials or inadequate building techniques. For example, at least 40 percent of the poor population in the Ucayali and Loreto regions face flood risks.⁷⁰

FIGURE 4.3 URBAN POPULATION IN MARGINAL NEIGHBORHOODS, INFORMAL SETTLEMENTS, OR POOR HOUSING

Source: World Bank staff elaborations based on data from the National Institute of Statistics and Informatics (INEI) 2022.

Note: Data show the share of people in urban areas who live under the same roof and have at least one of the following: lack of a property title; no formal access to water, energy, or sewage; or poor housing material. The initial data for Callao, Lima province, and Lima region are from 2007.

The lack of a robust framework for land management and use, as well as the resulting uncertainty surrounding land property rights, is a major constraint to private investment in Peru. Globally, there is evidence suggesting a correlation between security of land and property and investment and income growth. In Peru, previous reforms that focused on strengthening property rights led to (a) increased labor force participation and housing investment in urban areas by reducing the risks of eviction,⁷¹ (b) increased investment in the agricultural sector through the use of land as collateral for access to credit and future appropriability of investment returns,⁷² and (c) more efficient responses from farmers to price signals from international markets when selecting their crops.⁷³

Land market failures continue, however, to be a key inhibitor of private sector investment in multiple sectors of the economy. Agriculture is a striking example: in rural areas, despite several unsuccessful efforts to improve the land regime, land titling and the delineation of the plots remain a constraint on both high-value crops exporters along the coast and smallholders in the Sierra and Selva regions. The growth of the modern export-oriented sector in the Costa region particularly depends on extensions of land. Land challenges also limit inclusion and investments by smaller farmers who could otherwise enter these promising value chains, thereby decreasing informality and inequality. The lack of clear property rights is one of the key deterrents to investing in more capital-intensive methods that could help boost productivity. Similarly, land administration reform, to the extent that it could improve land ownership transparency—for example, around communal property in peasant and native communities—could also boost competitiveness and investments in tourism, mining, and logistics and transportation, among others. Improvements in land markets would also increase investment in the form of PPPs and *obras por impuestos* projects, as the lack of a clear framework in land management is responsible for many of the delays between commercial and financial close of these projects.

Peru can harness its current performance-based finance instruments to incentivize subnational governments to simultaneously address the challenges of governance capacity and land markets. The governance of land management in Peru is complex: urban land titling is the responsibility of provincial municipalities, urban cadastres are the responsibility of district municipalities, and regional governments oversee rural land titling and rural cadastres. At the national level, multiple ministries exert responsibilities on territorial governance. Land market issues need to be addressed in a multisectoral solution that combines different policy and regulatory instruments. Performance-based financing programs that cover this scope of policies and instruments do exist in Peru, and they could be used to promote and establish targets for planning, cadastre development, and other related functions at the subnational level. However, these programs need to be much better coordinated and streamlined. Improvements do not require reforms: they consist of changes in the technical design and operational management of the programs. Using such improvements, the Ministry of Economy and Finance could include relevant land management targets in such programs and test the approach on a limited number of targeted urban and rural areas. Sectoral ministries and agencies could provide complementary advisory services to local governments on land management issues and other sectoral policies that translate into investments in public goods and services at the local level (for example, in agriculture, tourism, or aquaculture). The results from an initial experiment on a limited number of regions where economic impacts on sectors can be achieved (for example, tourism, agriculture, and aquaculture) could then be used to scale the programs more widely. See box 4.2.

BOX 4.2 RESULTS-BASED BUDGETING IN PERU

Results-based budgeting (RBB), or *presupuesto por resultados*, is a public management tool in Peru that links the allocation of resources to measurable outputs and results for the benefit of the population. Better leveraging of these tools, through better design and formulation of the programs they are based on, as well as more consistent and sustained implementation efforts, could deliver substantial results for private sector development and business environment improvements in Peru's regions.

The approval of Law 28927, Public Sector Budget Law for Fiscal Year 2008, Chapter IV, incorporated the basic elements for the introduction of RBB in the country for the first time and established a route for its progressive implementation in all Peruvian public administration entities and at all levels of government.

Before the RBB implementation, state entities budgeted for the same activities year after year, without evaluating whether the expenditures that were made translated into improvements in the

quality of life of citizens.

RBB requires a definition of the results to be achieved, the commitment to achieving them, and the determination of those responsible for implementing RBB instruments and making sure public spending is accountable. Also, information must be generated on the outputs, results, and management carried out for RBB achievement.

RBB implementation relies on four instruments: (a) Budgetary Programs (Programas Presupuestales; PPs), (b) implementation progress monitoring, (c) Independent Evaluations, and (d) Management Incentives (Incentivos a la Gestión). RBB implementation requires the intervention of entities from all three levels of government (national, regional, and local), where each one of them participates according to its competencies.

At present, there are more than 150 PPs in operation. Among these, some are PPs with territorial character, which are those in which the execution of one or more activities is carried out

by entities from different levels of government (national, regional, or local) that are also involved in or associated with a specific territory. Local governments participate in PPs with territorial character by carrying out various actions in the budget process programming, formulation, and execution phases. These PPs should have the benefit of coordinated efforts among the three levels of government, linking planning with the budget, in addition to allowing the allocation of resources for achieving results that benefit the population and evaluating public spending under a causal logic.

Challenges and opportunities

Despite significant progress in the design and creation of new PPs in various sectors, several studies and evaluations indicate that there are at least three challenges and opportunities for improvement of the system: scale, design, and implementation monitoring and evaluation.

First, the budgetary coverage of the PP is still quite low compared with all the projects and activities budgeted in the public investment system.

Second, and more importantly, the design of PPs can be improved to have substantially more impact. The theory of change of many PPs seems not to align with the diagnosis of the sector or the promoted sectoral policies. There is often a discrepancy between programs and the beneficiary population they serve. There is also little coordination between projects across different sectors within the same PP. The same is true for coordination between different levels of government. Moreover, even within the same sector, the various existing programs often do not leverage well the results-focused instruments available to policy makers. Also, there are often no concrete incentives for the budget allocations within PPs in a manner consistent with the desired results: the PP is reduced to a monitoring and evaluation tool rather than a performance-based financing tool. As such, it is necessary to strengthen the ability of regional and local governments to include their projects and activities in a coordinated manner

in the existing PP, and to ensure the necessary local monitoring so that their performance can be evaluated and budget allocations can be increased according to their performance.

Third, for the incentives in budget allocation to have impact, it is also necessary to improve the monitoring and evaluation of results of each line and in each PP territory—see implementation instrument points (b) and (c). The evaluation system still covers a very low percentage of PP interventions and in many cases lacks sufficient information sources to rigorously evaluate the processes and results.

Finally, as far as point (d) is concerned, management incentives are organized through the Incentive Program for the Improvement of Municipal Management (Programa de Incentivos para la Mejora de la Gestión Municipal; PI), which is managed by the Ministry of Economy and Finance. This program places conditions on the transfer of resources to local governments, requiring local governments to achieve targets set by the central government. According to a World Bank study,^a local governments generally consider the PI to be a useful instrument for aligning their interventions with national priorities and implementing performance indicators. Notwithstanding, there is room for program improvement. For example, the central government frequently replaces some targets with others, hindering continuity and consistency in local efforts. Also, weaknesses in the design of some of these targets allowed some local governments to find ways to meet PI targets only on paper, without achieving effective change. Additionally, in view of the variety in the level of development of local governments, the program may set very low standards for some, but very high standards for others.^b Finally, in 2019 the categorization of municipalities was reorganized and there are currently eight different types of municipalities for PI purposes, which could complicate cross-municipal alignments and collaboration on targets.

a. World Bank, "Peru: Building a More Efficient and Equitable Fiscal Decentralization System" (Report 112433-PE, World Bank, Washington, DC, 2017).

b. "Policy Note: Local Government Infrastructure Planning and Investment in Peru," World Bank, 2018.

Source: CPSD team.

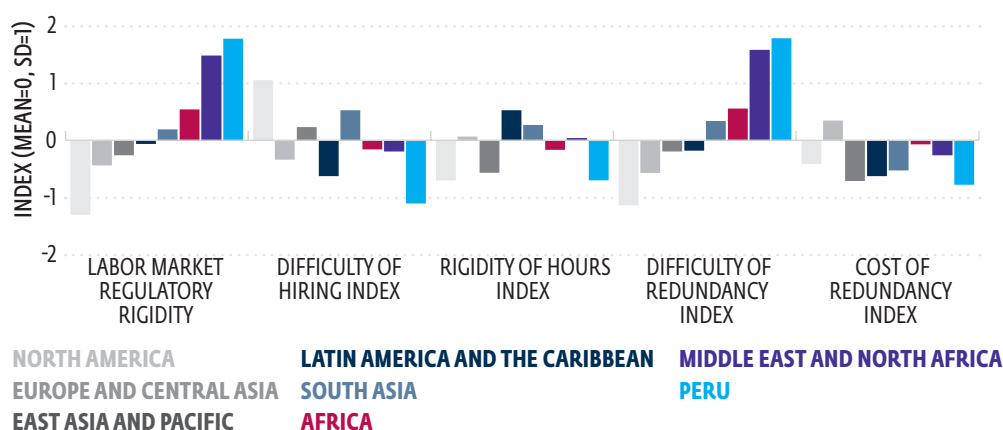
4.3 DISABLING LABOR MARKET REGULATIONS

Labor market regulations are cited by firms as an important factor hindering business expansion. According to the World Bank Enterprise Surveys, about 22 percent of firms in Peru reported that labor market regulations are an important barrier to growth, a share larger than the Latin America and the Caribbean average of 17 percent and the average for upper-middle-income countries of 13 percent.

Peru, together with Mexico, is one of the two countries in Latin America and the Caribbean that has the strictest employment protection measures in place. The labor market in Peru is characterized by a relatively rigid regulatory environment, contributing to a strong duality between well-protected formal sector jobs and unprotected informal sector jobs.⁷⁴ The index of labor market rigidity in Peru is higher than in its neighboring countries, advanced economies, or other developing regions (figure 4.4).⁷⁵ This level of rigidity is mainly caused by complex regulations for workers' dismissals. For instance, Peru's regulations on reemployment and dismissal of workers under indefinite contracts require third-party approval and a "just cause." If this cause is not considered just, then a judge can request the worker's reinstatement in the same job.

Despite the pressure that strict regulation poses on formal jobs, labor regulations in Peru are becoming stricter. A recently approved regulation to restrict outsourcing in the private sector (Decreto Supremo DS 001-2022-TR) may also have the unintended consequence of increasing informality and labor market segmentation. This measure establishes that firms can no longer outsource activities that are part of their core business. As a result, formal firms would have to hire labor under the more rigid regime and at the same time lose specialization-related productivity gains, which may affect their competitiveness and thereby weaken labor demand. Too-restrictive labor market regulations can have negative consequences on the incentives for firms to expand and hire new workers, as well as discourage the formalization of firms. Countries with higher redundancy costs and cumbersome dismissal regulations exhibit levels of informality above what would be expected with their income and educational levels.⁷⁶

FIGURE 4.4 INDEX OF LABOR MARKET RIGIDITY, BY COMPONENT

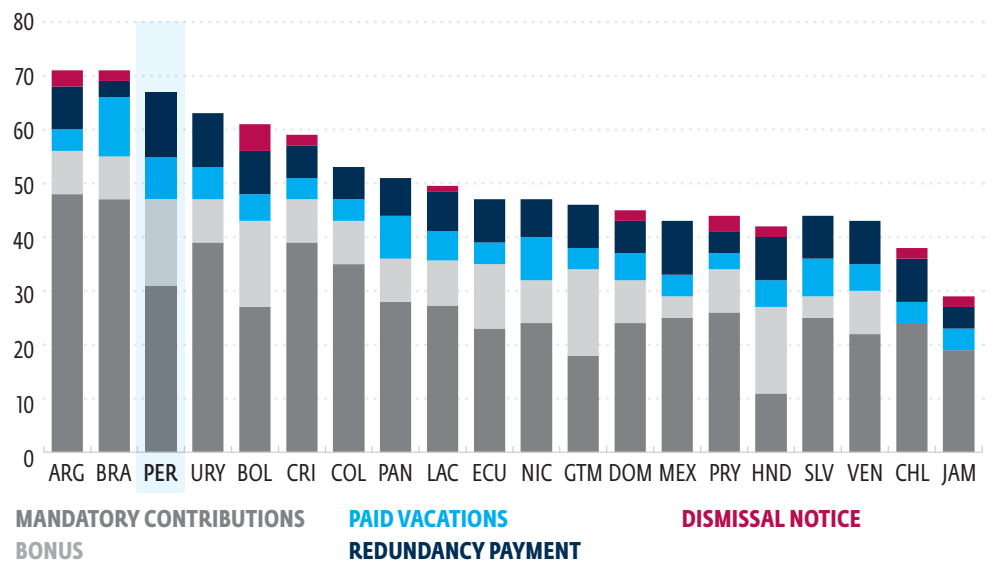


Source: World Bank staff elaborations based on data from L. Maratou-Kolias and T. Packard, "Profiling Worker Protection Policies in Latin America and the Caribbean" (World Bank, Washington, DC, forthcoming).

Note: Each bar shows the standardized index and subindexes of labor market rigidity (it has mean zero and standard deviation [SD] of 1 for the full sample of countries) in 2019. The Labor Market Regulatory Rigidity Index is the combination of the four subindexes: Difficulty of Hiring, Rigidity of Hours, Difficulty of Redundancy, and Cost of Redundancy.

In addition to stringent labor market regulations, nonwage labor costs are extremely high in Peru. The costs of salaried labor include wages and several nonwage components, such as mandated benefits (for example, bonuses and paid leave), social security contributions (for example, pension, health insurance, and training), and job security provisions (for example, firing notice and severance payments). In the case of Peru, nonwage costs are mainly driven by social insurance contributions and bonuses. Peru is the third-highest country in the region in nonwage costs, amounting to 68 percent of the salary of an average worker.⁷⁷ Argentina and Brazil lead the list with 72 percent and 71 percent, respectively (figure 4.5).

FIGURE 4.5 NONWAGE COSTS OF AVERAGE SALARIED WORKER BY COUNTRY (%)

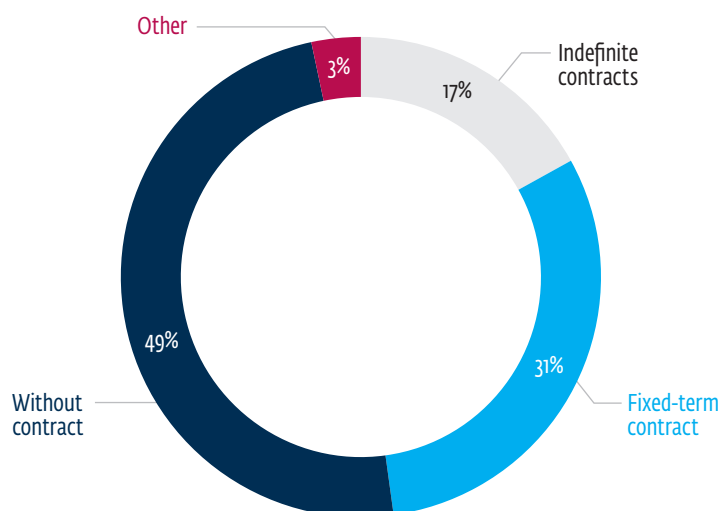


Source: V. Alaimo et al., "Measuring the Cost of Salaried Labor in Latin America and the Caribbean" (IDB technical note 1291, Inter-American Development Bank, Washington, DC, 2017).

Note: Mandatory contributions include health and pension contributions. For Peru, this includes a compensation for the worked time (CTS) that employers must pay to workers as preventive unemployment savings. ARG = Argentina; BOL = Bolivia; BRA = Brazil; CHL = Chile; COL = Colombia; CRI = Costa Rica; DOM = Dominican Republic; ECU = Ecuador; GTM = Guatemala; HND = Honduras; JAM = Jamaica; LAC = Latin America and the Caribbean; MEX = Mexico; NIC = Nicaragua; PAN = Panama; PER = Peru; PRY = Paraguay; SLV = El Salvador; URY = Uruguay; VEN = República Bolivariana de Venezuela.

As a result of stringent and complex labor regulations, employers prefer short-term contracts or no contracts at all. According to the 2020 National Household Survey (ENAH), 49 percent of salaried workers do not have a contract, 25 percent have a fixed short-term contract, and only 17 percent have an indefinite or a permanent contract (figure 4.6). These fixed-term and no-contract modalities favor short-term labor relations and high turnover. Labor turnover in Peru is higher than in any OECD country.⁷⁸ Similarly, officials estimate a churning rate (reallocation of workers and jobs) of 14 percent. This churn may have a negative impact on labor productivity, as constant replacement does not allow for company-specific expertise and capital to be developed. The consequences of rigid labor regulations are not the same for everyone in the labor market. Socioeconomic groups with a weaker labor market attachment could be more likely to be segregated into informal jobs when the bureaucratic costs are substantial for employers to formalize workers such as women and youth, who have a more limited formal record of labor market performance.

FIGURE 4.6 SALARIED WORKERS BY TYPE OF CONTRACT, 2020



Source: World Bank staff elaborations based on the National Household Survey (ENAH) in 2020.

Note: Salaried workers are those who have an employment relationship with an employer. These differ from self-employed or independent workers, who work on their own and do not hire any employees, and employers, who hire one or more workers to work in their company.

The political economy component of making labor regulations more flexible is challenging, and Peru is not an exception. For example, the agribusiness sector benefited from a more flexible labor regime, which allowed employers major exceptions to standard labor legislation in the country, therefore reducing labor costs and increasing labor flexibility (box 4.3). However, social protests by agricultural workers led to the reform of the special regime in 2020. This experience illustrates that achieving a reduction of informality in sectors where the organization of production is mostly informal requires a more thorough approach.

BOX 4.3 LABOR REGIME IN THE AGRIBUSINESS SECTOR

The Agrarian Promotion Law, Law 27360 (Ley de Promoción Agraria) entered into force in 2001 with the aim of promoting the expansion of the agrarian sector in Peru. This law established a special labor regime for the agribusiness sector that allowed employers major exceptions to standard labor legislation in the country, thereby reducing labor costs and increasing labor flexibility. For instance, holidays for agricultural workers were limited to 15 days per year, whereas under the general regime, the cap was set at 30 days. In addition, employers' contributions to social security (ESSALUD) were set as equivalent to 4 percent of a worker's monthly salary, compared with 9 percent under the general regime. Along with this less-stringent labor regulation, the law also introduced several fiscal benefits for agro-industrial companies, such as an income tax rate of 15 percent, which was half the rate applied to the rest of the sectors in the economy.^a These growth-enhancing measures have particularly benefited export-oriented companies, which have the capacity to operate in the formal sector. Although this law was temporary in nature, it has already been extended twice, first until 2012 and then in September 2019, when it was further extended until 2031. This latter extension introduced some modifications to progressively converge toward the general private sector regime, such as an increase in the minimum wage, employers' contributions to ESSALUD, and annual leave policy.

Although one of the law's objectives was to reduce the high rates of labor informality in the agricultural sector and to promote the creation of better jobs, data suggest that the law has not succeeded in meeting such goals.^b This lack of success is partly explained by the law's focus on improving the business environment of large exporting companies, which did not need special

economic incentives to be formal. On the contrary, many agricultural workers claim that the Agrarian Promotion Law has created a system of labor mismanagement in terms of working hours, compensation, and minimum conditions of safety and health at work. In addition, they claim that it has led to the improper use of labor instruments such as intermediation and labor outsourcing as well as the inappropriate use of short-term contracts. On November 30, 2020, hundreds of agricultural workers from Ica blocked the Panamericana Sur highway, a major transportation artery, to protest their precarious working conditions and to demand the repeal of the Agrarian Promotion Law. After five days of demonstrations and roadblocks led by farmworkers across the country, the Peruvian congress announced the repeal of the law. However, some of the issues raised by protest workers do not necessarily have to do with the Agrarian Promotion Law but with the lack of compliance with labor legislation, weak state control, and ineffective sanctions. A new law would not be sufficient to improve access to quality jobs if it were not accompanied by the strengthening of the supervisory work of the National Superintendence of Labor Inspection (SUNAFIL) and the Ministry of Labor.

A new law that amends Law 27360 has been approved, but regulations have not been approved yet. As long as there is no new standard for the agricultural sector, the labor and social security regulations corresponding to the general regime will be applied. This stricter regulatory framework is expected to bring higher labor costs for agro-industrial companies and might stifle growth and create new barriers for the development of the sector.

a. IPE (Instituto Peruano de Economía), "Efectos de la Ley Derogada en el Agro," December 7, 2020.

b. *Gestión*, "Norm that repeals the Agrarian Promotion Law after Protests in Regions," December 6, 2020; Congress of Peru, Bill (PL) 5759, December 2, 2020.

5. SECTOR ASSESSMENTS

In the coming years, Peru will have to recover from one of the worst economic contractions in history. By unleashing private sector investment in more inclusive and climate-smart economic activities, Peru could not only accelerate recovery, but also leverage it to achieve regional convergence and climate-resilient economic growth. The Country Private Sector Diagnostic aims to provide recommendations that can foster and accelerate private investment in a three-to-five-year time horizon while helping address the country's structural challenge of polarizing regional inequalities. To provide concrete illustrations of what policy actions could contribute to a faster, more inclusive, and more climate-smart growth, the CPSD looks at four sectors: agribusiness, aquaculture, tourism, and digital finance. These sectors have a high potential to create more and better jobs and maximize economic spillovers in the short to medium term. They also help showcase how addressing the cross-cutting constraints mentioned earlier can unleash private investments in the real economy.

5.1 AGRICULTURE

Global market trends in the agro-food industry

Demand for fresh high-value crops is projected to grow much faster than for commodities over the next decades. Since the early 2000s, overall growth in agricultural exports has been largely supported by strong demographic and economic growth in developing countries, particularly China, as well as by added demand of new segments such as biofuels.⁷⁹ This expansion is, however, limited to a few products and commodities. For example, while fresh fruits and vegetables are expected to grow annually by 5.79 percent and 6.79 percent (compound annual growth rate [CAGR] 2022–27) respectively, certain commodities, such as meats and cereals, are decelerating from 3 percent per annum over the previous decade, to a projected average of 1.1 percent.⁸⁰ In fact, demand of commodities will be primarily driven by nonproducing countries with increasing populations—so the additional food demand in the coming decade will largely originate in regions with high population growth (Sub-Saharan Africa, South Asia, and the Middle East and North Africa)—while demand in the most strategic market segments in the agro-food industry will be driven by sociocultural changes in all regions.

Production and trade of high-value crops and nutritious foods is mainly driven by lifestyle changes across global markets. For example, according to Symphony Retail, health-conscious customers account for 25–30 percent of all supermarket customers in the United States and European Union. Although evolving, the health food industry is currently estimated at US\$800 billion and growing worldwide.⁸¹ Final consumers of “wellness-oriented” lifestyles—mostly, but not only, in high-income countries—are changing the food industry. They are aware of their individual impact on the environment, expect firms to hold sustainable supply chains and natural components, and care about the appropriate use of chemicals, pesticides, and fertilizers. In high-income countries, for example, changes in consumer preferences will lead to a leveling-off in per capita meat consumption and a move toward the consumption of higher-valued meat cuts, higher-value foods (including fruits and vegetables), and an increasing replacement of red meat by poultry meat and dairy products.⁸² Younger generations are also seeing a shift to vegetarian and flexitarian lifestyles; currently 5 percent and 6 percent of the US and German population describe themselves as vegetarians, respectively, and growing, as middle-income young generations are catching up.⁸³

The food industry has already responded to these changes in consumer preferences by providing alternative products and is elevating their requirements along the value chain. The range of new products includes plant-based proteins (for example, soy, pea), new animal sources (such as insects), and biotechnical innovations (for example, cultured meat and fungal protein).⁸⁴ As these preferences move along the value chains, advanced buyers and regulators in these economies are increasingly requiring environmentally sustainable criteria for purchasing decisions and are increasingly requesting products with a point of difference (that is, more nutritious content, less caloric intake, and so on). This increasing demand is, however, facing a more limited availability of supply of such products, with value chains that tend to be sophisticated, with high traceability and quality standards.

The Latin America and Caribbean region is expected to reinforce its position as the world’s prime supplier of high-value agricultural products; with a projected increase in its net exports of 19 percent from 2018–20 to 2030.⁸⁵ The region accounts for 14 percent of global production and 23 percent of the world’s exports of agricultural products and is generally abundant in land and water. It is projected to benefit from a production growth of 22 percent for crops and 16 percent for livestock products, which is, respectively, 7 Percent and 2 Percent faster than the global average.⁸⁶ Imports by developed markets of high-value crops witnessed a shift in recent decades toward the Andean region within Latin America and the Caribbean, mainly Peru and Colombia. Peru especially benefits from a strong agricultural base with good arable land, rising levels of agricultural productivity, and a strong workforce, but policies will need to be differentiated according to resource endowments and market potential to sustain growth and increase socioeconomic impact (box 5.1).

BOX 5.1 PROMOTING CLIMATE-SMART COMPETITIVENESS IN PERU'S AGRICULTURE EXPORTS

Good environmental management is an emerging competitiveness parameter in food exports. Environmental concerns may affect Peruvian exporters through three channels: buyers' environmental requirements, media stories' focus on single issues, or the government regulations of importing markets. Firms managing environmental concerns may gain a competitive edge in markets where government and consumers value sustainability and safeguarding the environment of the home country.

Major buyers of Peruvian exports have committed to reducing their carbon footprints in their supply chains, but most exporters in Peru are only just beginning to adapt to buyer environmental requirements.^a Many exporters are aware of discussions of climate change and water scarcity in major markets, but few think carbon emissions are likely to influence their business soon. Some exceptions exist. For example, the avocado producer Westfalia Fruit Peru is part of a global avocado brand and has calculated the carbon footprint for its activities in another country.

Some larger exporters discuss environmental issues with their investors. The leading Peruvian exporter Cerro Prieto, for example, is reported in the media to have received a US\$160 million loan from a consortium including IDB Invest (part of the Inter-American Development Bank) for expanding operations in Peru and Colombia. This loan should include activities on climate-smart agriculture measures to reduce the firm's carbon footprint and the development of an Environmental and Social Action Plan comprising efforts to measure and improve Cerro Prieto's environmental performance, including the quantification of carbon emissions^a and water management.

The characteristics of the supply chain may help explain why other Peruvian exporters don't yet see the rising commercial relevance of carbon emissions and water management. Firms such as supermarkets and big brands (in destination markets of Peruvian exports) that directly face consumers are often connected to exporters through less visible wholesalers. Peruvian exporters say wholesalers rarely discuss

carbon emissions while supermarkets do so more frequently if buying directly. Further, the complexity of the supply chain matters as well. For example, Peruvian fish meal is a more carbon-efficient aquaculture input than other protein sources like soybeans. While aquaculture buyers look for carbon-efficient products, Peruvian fish meal is mainly sold to fish and shrimp producers in China and then exported to the United States and European Union from there. The result is that the final product has a relatively low carbon footprint because of the Peruvian fish meal, but this fact is obscured by the long and complex supply chain. Finally, the issue of environmental concerns as parameters in competitiveness is an emerging global agenda. Experiments by firms in adapting business models are only at their beginnings, and regulations in destination markets are still evolving. For example, the European Commission has announced draft regulations on carbon border adjustment mechanisms (CBAM), but they mainly cover heavy industrial products (and fertilizers).^b Yet, the potential threat from CBAM persists in the medium term, as some policy makers are starting to call for a CBAM to be extended to cover food and agriculture.

Peru can explore several strategies to gradually improve the environmental profile of food exports:

- **Explore the options for replacing air freight with ocean cargo shipping and improve the communication on this issue** because data suggest that for all products except fresh green asparagus, air freight is not the major transport mode.
- **Ensure that prevailing global standards and measurement methodologies are implemented in Peru.** Several international standards exist like ISO 14040 and 14044, the Greenhouse Gas Protocol, and PAS 2050, but they always need some degree of adaptation to national contexts.
- **Strengthen the capacity to estimate environmental footprints.** Some studies on Peruvian exports already exist, but a larger body of comparable studies is needed, and these must

be compared with similar products from other countries competing for the same markets. This research should be carried out as a collaboration between industry and academia.

- **Use footprint analysis to identify areas in need of technological innovation.** Existing analyses, for instance, point to the benefits of introducing modern irrigation technology to reduce both the water footprint and the carbon footprint. Peru could also experiment with methods to prolong the shelf life of products to reduce the use of air freight. A third area is innovations to better manage fertilizer use because fertilizer gives rise to the emission of nitrous oxide, a potent greenhouse gas that

creates 300 times the impact of the global warming of carbon dioxide.

- **Develop the argument that Peruvian exports are part of the solution rather than part of the problem of climate change.** Peru may use evidence that some products have lower-than-average carbon emissions as a source of competitiveness. Although popular opinion in main European and US markets views international transport as a major cause of carbon emissions, studies of Peruvian exports can demonstrate that the international transport share of emissions is minimal whenever produce is shipped by ocean.

a. This view is based on a literature review coupled with interviews with major Peruvian exporters and producers, industry associations, academics, and government agencies.

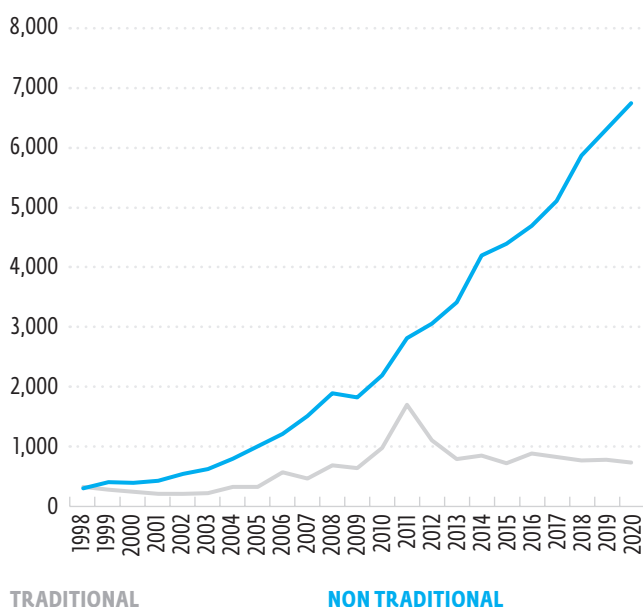
b. World Bank, Peru Country Climate and Development Report (CCDR) (Washington, DC: World Bank, 2022).

The duality of the agricultural sector in Peru

Over the past two decades, the agricultural sector in Peru has experienced an impressive boom in exports, led by private sector investment and innovation. Between 2000 and 2022, the total value of agricultural exports increased 15-fold, and the variety of export crops was greatly diversified. The export value of nontraditional (NT) crops has been growing at an annual rate of 22.5 percent since 1998 and reached an export value of US\$6.7 billion in 2020. Exports of fruits, such as avocados, grapes, and blueberries, multiplied by 61 and exports of vegetables, such as asparagus, multiplied by 6 over a similar period. In contrast, exports of traditional agriculture (mainly cotton and sugar) grew at a slower pace of 2.2 percent (see figure 5.1). The diversification of exports during this period is also sizable: 120 new agricultural export categories, more than half with values between US\$10 million and US\$100 million (figure 5.2). Even considering the effect of the pandemic, the exports' value for Peru's agricultural products between 2019 and 2020 grew in almost every continent: North America (up by 9 percent), Europe (up by 9 percent), Asia (up by 8 percent), and Oceania (up by 6 percent).⁸⁷ The expansion of Peru's exports value was particularly important in trade partners such as Jordan (up by 261 percent), Algeria (up by 100 percent), and Taiwan, China (up by 69 percent).⁸⁸ The observed overperformance in export growth of NT products from Peru, relative to the global growth of demand for these products, suggests a competitiveness-induced increase in market shares of Peruvian firms compared with competitors in China or India.

Agricultural exports from Peru were one of the most resilient parts of the economy during the COVID-19 pandemic and grew during both years. The agro-exporting sector provides 0.8 million formal agricultural jobs, up from 0.46 million in 2004, and supports indirectly another 0.7 million jobs, with high productivity and incomes.⁸⁹ The export boom was mainly driven by growing international demand for NT crops in Peru—mainly fresh fruits and vegetables, such as asparagus, mangoes, avocados, and grapes—which targeted seasonal windows with low or nonexistent domestic supply in the Northern Hemisphere. Between 2019 and 2020, in the middle of the pandemic, the NT agro-exporting subsector was one of the few drivers of economic recovery in the country, with an exported value growth of 8.7 percent.⁹⁰ This performance substantially improved during 2021, when fruit exports grew 21 percent compared with the previous year.⁹¹ Within this category, products such as avocados (up by 35.2 percent), blueberries (up by 19.4 percent), and grapes (up by 17.8 percent) had record high performances.⁹² Peru is currently the world’s leading exporter of blueberries, and the second in avocados and fresh grapes. In 2005, 1,144 firms in Peru reported agricultural exports. By 2020, this number had grown to 2,322, of which about 79 percent were either micro or small enterprises.⁹³ However, while the number of exporting firms grew, the larger firms consolidated their market share during the same period, accounting for approximately 80 percent of Peru’s total agricultural exported value.

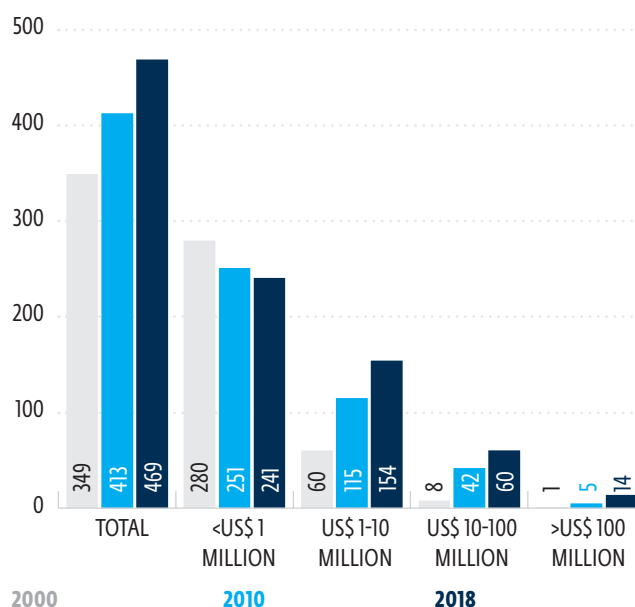
FIGURE 5.1 AGRICULTURE EXPORTS, BY SUBSECTOR, US\$ MILLIONS FIGURE



Source: CPSD team based on Central Bank of Peru (Banco Central de Reserva del Peru).

Note: Traditional = cotton and sugar. Nontraditional = fruits and vegetables.

5.2 NEW AGRICULTURE EXPORT CATEGORIES (6-DIGIT)



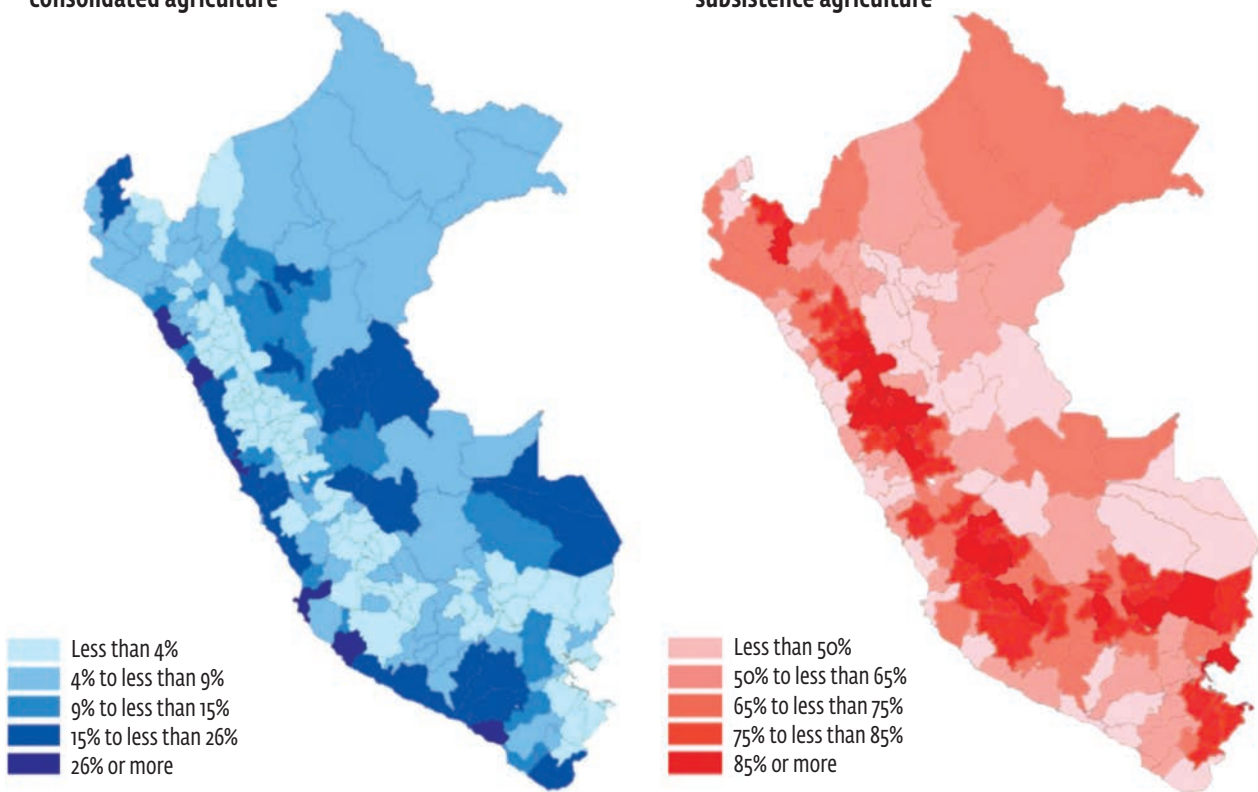
Sources: BBVA Research, "Informe de Exportaciones Agrícolas," 2018, <https://www.bbvarresearch.com/tag/exportaciones-agricolas/>.

The export boom has largely been concentrated in the coast, which is where most NT crops are produced. One reason is the heterogeneity in climate and geography across Peru’s three main agricultural regions. The coast (also known as Costa), the Andes (also known as Sierra), and the Amazon (also known as Selva) differ in topography, agro-ecological zones, farm sizes, and, increasingly, levels of technology and sophistication. The coast is characterized by its flat terrain, favorable climate, and strategic location because of its proximity to centers of consumption and export points.⁹⁴ The most common crops are avocados, grapes, asparagus, bananas, and other fruits. Coastal production contributes 57.8 percent of the country’s agricultural value added,⁹⁵ even though its cultivated land is only 23.7 percent of the country’s total agricultural land.⁹⁶ The coast also employs most of the workforce with 61.1 percent of total salaried agricultural employment. The adjacent Andes are characterized by small-scale subsistence agriculture, producing predominantly staple foods, such as quinoa, wheat, and potatoes. This region contributes to 28.6 percent of the country’s total agricultural value added, with 46.3 percent of the national cultivated land and 19.5 percent of the salaried agricultural employment. Agriculture in the Amazon is characterized by subsistence farming, although there has been an increase in farming for sale. The high temperatures and humid climate make the region a favorable environment for the cultivation of coffee, cocoa, and palm oil. The region contributes the remaining 13.8 percent of the value of national crop production, using 30.1 percent of the total cultivated land and 19.4 percent of employment.⁹⁷ (See figure 5.3.)

FIGURE 5.3 CONSOLIDATED (A) AND SUBSISTENCE AGRICULTURE (B)

a. Provinces with agricultural units with high shares of consolidated agriculture

b. Provinces with agricultural units with high shares of subsistence agriculture



Source: J. Escobal and C. Armas, “El Uso de Encuestas y Censos Agropecuarios para Desarrollar una Tipología de la Pequeña y Mediana Agricultura Familiar en el Perú,” en *Agricultura Peruana: Nuevas Miradas Desde el Censo Agropecuario*, ed. J. Escobal, R. Fort, and E. Zegarra, 15–69 (Lima: GRADE, 2015).

There is also substantial contrast in farm size and productivity across the three regions, as well as significant differences in access to inputs. Farmers on the coast, compared with farmers in the Andes and the Amazon, report double the share of access to some of the most critical agricultural inputs, such as irrigation, mechanization, technical assistance, and credit. For instance, the percentage of producers that report the use of certified seeds is 40.7 percent in the Costa, 5.7 percent in the Sierra, and 10.7 percent in the Selva; an equally stark difference is fertilizer use: Costa 34.2 percent, Sierra 7.6 percent, and Selva 4.2 percent; or credit application: Costa 20.7 percent, Sierra 5.5 percent, and Selva 11.8 percent.⁹⁸ The producers' segmentation follows a clear territorial pattern: coastal regions concentrate a predominant share of consolidated agriculture, while the highlands are home to most of the subsistence agriculture in the country (figure 5.3). Around 70 percent of export-oriented land in the country is owned by firms of 100 hectares or more and is concentrated in four coastal regions.⁹⁹ Ten firms in four coastal regions account for 37 percent of total agro-export value and the top 15 concentrate 50 percent of the total labor force.¹⁰⁰ Out of 2.26 million producers, 80 percent are smallholders with farms that do not exceed 5 hectares each. At a national level, only 7 percent of small- and medium-scale farmers (50 hectares or less) can be cataloged as consolidated, 73 percent are considered in a subsistence status (their income is below the extreme poverty line), and the remaining 20 percent are vulnerable to poverty.¹⁰¹ The difference in survival rates of firms producing different crops is also striking: “modern consolidated” crops such as asparagus, mangoes, grapes, and avocados present an average survival probability of about 80 percent over a period of 23 years, while for other crop-exporting categories such as “traditional consolidated” (coffee, cocoa, and banana) or “emergent” (for example, artichokes, quinoa, berries) the survival probabilities after year 5 lie between 50 percent and 25 percent.¹⁰²

Identifying the conditions that led to the agricultural export boom

It is important to highlight that public policy reforms and investments in public goods have underpinned and facilitated this export boom, triggering or supporting private sector investment and initiative, and resulting in remarkable gains in aggregate productivity, competitiveness, and employment in the sector.

Trade liberalization and a reduction of protectionist measures greatly expanded agricultural markets. Since the early 2000s the Peruvian government has opened new market opportunities by signing free trade agreements.¹⁰³ Peru's free trade agreements (FTAs) cover 72 percent of world GDP and 90 percent of world trade. At the same time, the government progressively reduced protection measures and subsidies to agriculture. By 2010, trade agreements with the United States and China had entered into force, and by 2014 the average level of protection provided to agricultural products, which was about 13 percent in 2004, had dropped to 2 percent.

Strengthening the phytosanitary regulations and supervision system (SENASA) was critical in making Peruvian products surmount nontrade barriers. For agricultural products, especially for fresh fruits and vegetables, phytosanitary barriers are more important than taxes and are not dealt with by FTAs. SENASA reinforced metrology, standardization, testing, and quality management standards, and supported specialized infrastructure and services in the sector. It also introduced effective phytosanitary processes and protocol, such as fruit fly control (see box 5.2).

Public investment in large-scale irrigation projects expanded the agricultural frontier and allowed firms to achieve scale. In the late 1990s, private interest in land acquisition was stimulated by two large irrigation projects in the Costa region. In the years that followed (1997–2008), almost 68,000 hectares in the Costa region were sold in more than 30 auctions, and more than 120 companies invested in agriculture for exports. Large plots of land were transferred to the private sector: the average size of sold land was 350 hectares, 100 times larger than the average landholding in the region of 3.5 hectares in 1997. The income for the state generated from the sales was modest (only about US\$45 million for the 67,000 hectares), but the sales were considered successful because they stimulated private investment in irrigation infrastructure, estimated at US\$500 million.¹⁰⁴ Over the past decade, three irrigation projects in the coastal area (Chavimochic, Olmos, and Majes-Siguas) have added 94,400 hectares of new agricultural land and improved 24,000 hectares of existing farmland.

Connectivity investments, particularly in the expansion of roads and telecommunications networks, were also key. Public spending on road infrastructure received a significant boost with decentralization starting in 2001 and with the fiscal boom of that decade. Thus, the budget for the construction, improvement, and rehabilitation of transport infrastructure (Provías Nacional) multiplied by six between 2001 and 2010, including regional and local-level road networks, which had an impact on quality of existing roads (resulting in travel time savings). The rate of expansion of the road network (kilometers per year) tripled as of 1995, increasing from 1,058 kilometers per year between 1940 and 1995 to 3,025 kilometers between 1995 and 2011. In the case of telecommunications, between 2008 and 2012, telephony has been integrated into the life of almost half of rural households in the country and the number of fixed and mobile telephone lines were multiplied from 3 per 100 inhabitants in 1992 to 118 in 2011.¹⁰⁵

The Agrarian Promotion Law (Ley de Promoción Agraria; APL) provided a more favorable and flexible labor and tax regime for agricultural exporters. The special labor regime made it easier to hire seasonal workers and reduced contributions/labor benefits (such as unemployment and social security contributions and vacations) to make it easier to hire workers according to growing seasons (larger when needed, such as harvest). Exporters also paid 15 percent income tax (versus 30 percent in the regular regime), drawback, and accelerated depreciation for irrigation investments. The law's externalities do deserve closer attention, however, and as such will be further discussed in the next section.

Land regulation changes eliminated restrictions for private foreign land ownership and investment. In a context of a highly fragmented land structure, constitutional changes introduced in the early 1990s removed restrictions to private ownership of land, liberalized land markets, redefined land ownership rights of communities, and incentivized private acquisition of land in the Costa region. These measures were reinforced in 1994 by the enactment of the law for the promotion of private investments in state enterprises (Law 674), which created the legal framework to sell public firms and public assets.¹⁰⁶ Building over these regulation changes, the government embarked on a series of public auctions, transferring ownership of much public land to the private sector.

Finally, private sector investment in innovation and technology were key in achieving the scale and quality required for the exponential growth in exports. Quality is key in the fresh fruit and vegetable segments that drove the export boom, and it requires very efficient control over all aspects of the value chain (box 5.2). Technology, finance, and management are needed to master the harvest and postharvest stages (irrigation, fertilization, packing, storage, transport) that are needed to ensure that the product reaches shelves fresh and on time. As a result, there is a high initial investment for the main NT agricultural export crops (avocado US\$67,300/hectare, grapes US\$106,500/hectare, blueberries US\$119,000/hectare, and asparagus US\$64,500/hectare), and high working capital (US\$37,000/hectare, including labor at US\$18,000/hectare); this cost underscores the critical importance of access to extension services focused on technology adoption, and access to finance by smallholders.

These policy reforms and investments resulted in remarkable gains in aggregate productivity, competitiveness, and employment. Between 2007 and 2015, the agriculture total factor productivity grew at a 2.1 percent rate on average, driven by a 7 percent growth in coastal regions (in contrast, it grew by 0.2 percent in the Amazon region, and -0.2 percent in the highlands).¹⁰⁷ The increased market share relative to key competitors (China and India) suggests that the consolidation of large-scale producers was driven by competitiveness gains. The average annual growth rate of agricultural exports between 1998 and 2016 was 16 percent, and only 42 percent of this growth can be explained by worldwide demand growth. Formality rates among agricultural workers under the modified labor scheme (APL) went from 66 percent in 2005 to 86 percent in 2019, and monthly earnings grew by 119 percent over the period 2004–19, representing yearly growth of 8 percent. Today, wages earned by formally employed agricultural workers are slightly above the minimum wage for the industry and much higher than those of agricultural workers employed informally on small farms and by independent farmers.

BOX 5.2 THE KEY ROLE OF THE NATIONAL AGRICULTURAL HEALTH SERVICE (SENASA)

Since its creation in 1992 and subsequent strengthening, the National Agricultural Health Service, SENASA, has played a key role in the development of Peru's agricultural export boom. This role is based on two action fronts. The first, internally, SENASA works with local producers to establish a pest surveillance system and carry out activities to improve phytosanitary conditions, such as projects dedicated to the eradication of fruit flies. The second, at the external level, SENASA negotiates with its counterparts in importing countries to open markets and provide services linked to exports (for example, certifications of production sites, packing houses, shipments, and so on). The balance has been important: since its creation, SENASA has managed to introduce 157 agricultural products in more than 20 countries, including recent examples such as the case of avocado in the Republic of Korea and India, and

blueberries and quinoa in China.^a

An example of SENASA's facilitating role can be found in the entry of the Hass avocado crop into the United States at the beginning of the last decade. Although the process of signing the free trade agreement began in 2009, it was not until a year later that Hass avocados gained approval through the phytosanitary supervision protocol between SENASA and its North American counterpart (USDA-APHIS), maintaining a quarantine treatment and limiting the exportable supply to fruit fly-free regions (north coast). In July 2011, compliance with the protocol led to all restrictions being lifted. Entry into this market meant that Hass avocado import prices doubled in less than two years, above the world average and direct competitors such as Mexico or Chile, owing to differences in quality and the supply period offered by Peruvian exports during the year.

Measures at four levels facilitated SENASA's contribution to the performance of the boom:

1. **The legal framework:** In 2000, the government managed and approved the Framework Law on Agricultural Health, which was designed in accordance with the mandates given by the World Trade Organization, the International Plant Protection Convention, Organization for Animal Health, and the Codex Alimentarius Commission, and updated the legal framework on plant protection that was in force since 1905.
2. **Institutional strengthening:** Four public investment projects for a total amount of US\$435 million aimed to improve infrastructure and equipment, train personnel, strengthen quarantine and surveillance systems, and improve phytosanitary/zoo sanitary conditions, among other activities.
3. **Strengthening of personnel:** Improvements are aimed both at relevant personnel for the protection, surveillance, and improvement of phytosanitary conditions and at such personnel who carry out negotiation activities, risk analysis, quarantine, and diagnoses.
4. **Trade facilitation policy:** Activities were undertaken in phytosanitary negotiations, genetic entry processing, and export process. In the first case, priority was given to phytosanitary access to large markets, including the development of phytosanitary studies and an intense dynamic of bilateral meetings for market access.
5. **Other measures that were adopted to facilitate the agro-export process** included the establishment of procedures to approve production sites, improve packing houses, provide certification, and assume costs related to the application of measures or requirements, such as pest surveillance, facilitating the establishment of alliances with producers and guilds (joint investments, access studies, meetings in export campaigns, and so on), providing flexibility for service hours for inspections, applying the phytosanitary risk profile approach, and including phytosanitary procedures in the VUCE (Peruvian Single Window for Foreign Trade), among activities.

a. M. Mesquita and E. Stein, eds., "De promesas a resultados en el comercio internacional. Lo que la integración global puede hacer por América Latina y el Caribe," Banco Interamericano de Desarrollo (BID), 2019.

"Shadow" costs of the boom and challenges to sustaining this growth model

This highly concentrated productive structure, however, has taken a toll on inclusiveness and environmental sustainability. The boom and accompanying policy making reflected and reinforced a dual economy of large-scale, highly competitive, and vertically integrated coastal export firms, and traditional small-scale and subsistence farmers in lagging agricultural regions in the Andes and Amazon. The NT fresh fruit and vegetable crops that drove the export boom require high-quality standards that are capital intensive, limiting the participation of medium and small farmers. Farmers with low levels of productivity, finance, and scale have found it challenging to adapt and enter the boom segments.¹⁰⁸

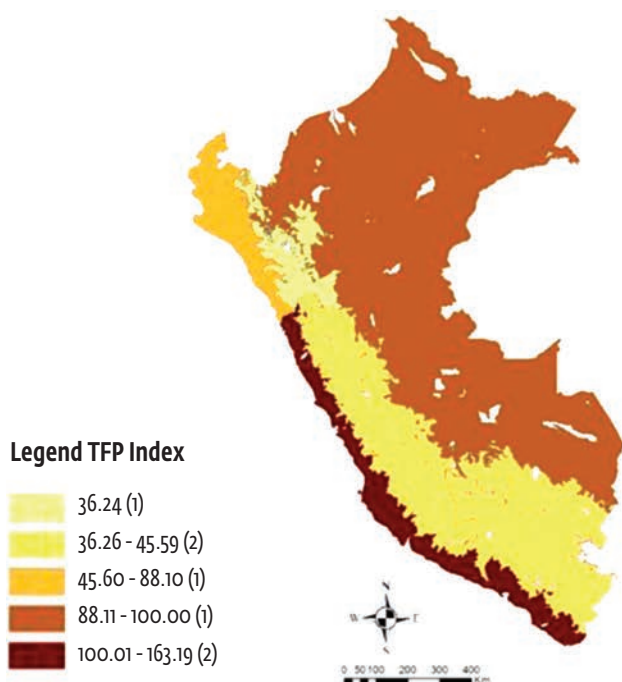
To the same extent that they underpinned the export boom, public investment gaps have also limited the participation of small producers and organizations outside the coastal areas. Despite the implementation of large infrastructure projects, many areas outside coastal regions still face challenges in local and last-mile infrastructure and public services, and public investments remain unaligned with the priorities of rural areas with exports potential.¹⁰⁹ These investment gaps are a systemic barrier that

persists in preventing farmers in the Sierra—which is adjacent to the coast and has a conducive climate for exports of many high-value-added NT products—from entering the market. Poor territorial planning led to infrastructure investment gaps that are critical for smallholders to be able to participate in export value chains. This lack of planning is, to a large extent, explained by the low capacity of local governments in Peru and the resulting weak design and implementation of integrated territorial development and strategic investments in public goods.

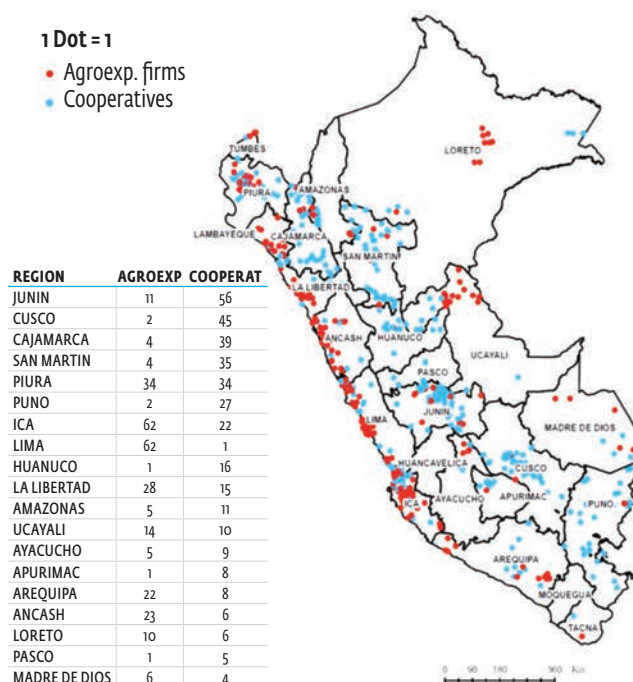
The lack of adequate and sufficient supporting services for smallholders also precluded farmers outside the coast from reaping the same benefits. The public budget for agriculture over the past two decades shifted substantially toward the provision of public goods and away from protection and subsidy measures and direct support to producers. By 2012, 50 percent of rural public investment was designated for infrastructure and only 10 percent for direct support to small-scale producers. Although the provision of appropriate public goods is key to reducing distortions in agricultural markets, it is equally important to note that in the context of aggressive trade opening, the different capacity for appropriation of benefits between large-scale and small-scale actors has reinforced the duality instead of mitigating it. This result is consistent with lessons learned from other economies.¹¹⁰ Direct support services to producers, such as extension services, play a key role in providing smallholders with market intelligence and support for technology uptake needed to scale up production in response to changing demand. The provision of those types of services, however, has substantially declined since 2012, becoming both insufficient and inconsistent, therefore not allowing smallholders from the Sierra (or even the Selva) to leapfrog and become integrated in export value chains. (See figure 5.4.)

FIGURE 5.4 REGIONAL TOTAL FACTOR PRODUCTIVITY (AGRICULTURE) AND PRODUCERS' LOCATION (BY TYPE)

a. Total factor productivity index – Agriculture, 2019



b. Location of agro-exporting firms and cooperatives, 2019



Sources: Panel a., World Bank, "Gaining Momentum in Peruvian Agriculture: Opportunities to Increase Productivity and Enhance Competitiveness" (World Bank, Lima, 2017); panel b., E. Zegarra, "Auge Agroexportador en el Perú: Un Análisis de Supervivencia de Productos y Empresas" (Informe Final CIES-GRADE, 2019).

Competitive gains from labor regulations have been threatened by social unrest caused by perceived low-quality employment in the agricultural sector and unequal labor conditions. As mentioned earlier, the 2001 APL reforms helped agro-exporters hire workers at a lower cost and played a key role in driving the export boom.¹¹¹ Even though the APL was set to last only 10 years, in 2006 it was extended until 2021, and in 2019, it was extended for another 10 years as increases in agro-exports and agricultural employment were becoming evident. Workers that are hired under the APL have become more formal and have seen their wages increase. Nonetheless, APL workers' wages are lower than in many other economic sectors, with average monthly earnings in 2019 at only 84 and 71 percent of construction and mining workers, respectively.¹¹² On average, the workday is slightly longer for workers employed under the APL regime. During the 2004–19 period, the share of APL workers whose workweek exceeded 48 hours was 5 to 15 percent higher than the share in the closest comparison group.¹¹³ Farmers not hired under the agrarian regime face even worse labor conditions and work mostly in the informal sector without access to health care, vacations, or any other social benefit. The continued disconnect between the relatively higher aggregate productivity of the sector and the relatively lower wages became a source of conflict.¹¹⁴ A strike in November 2020 led to violent demonstrations in several coastal cities, and roadblocks disrupted traffic and threatened the stability of the country. In response, Congress passed a new Agricultural Promotion Law, which does not seem to produce the desired effects. The labor inspection system in Peru has also been shown to be ineffective with little to no effect of enforcement measures on the compliance with labor rules.¹¹⁵

The distribution of benefits along the supply chain is also a cause for concern. For example, a recent review of nine international cases of different value-chain coordination structures, including native potatoes in Peru, concludes that while the most frequent choice of coordinating actor in the chain is the lead commercial firm in the chain, this comes at a cost for the other, smaller, actors.¹¹⁶ This is echoed in global experiences too: the trade-off between the benefits of coordination and the cost to producers of potential monopsony pricing was notable in the value chains of exported fresh produce, such as tomatoes in Morocco and Türkiye. Even in a case of multistakeholder platforms like native potatoes in Peru (CAPAC), with nongovernmental organizations (NGOs) playing the role of quality assurance and contract fulfillment insurance for the processors, no gains in smallholders' horizontal coordination, market power, or agency to deal directly with processors have been identified.¹¹⁷

The current production structure also poses serious environmental concerns, particularly regarding water use, land use, and soil pollution. The intense use of water in agriculture in coastal regions has become one of the most pressing environmental issues. Agriculture exports have generated considerably more value added and employment but at the cost of more than five times more water from the aquifer than local crop production.¹¹⁸ For example, in 2020, Peru cultivated 30,000 hectares of mangoes, which translated into US\$280 million of mango exports, a 11.4 percent increase in exports just from the previous year.¹¹⁹ The northern areas of the country, specifically Piura, produced 75 percent of the national mango crop. However, the mango has the third highest water-footprint among fruits consumed worldwide (after plums and avocados), with an average of 1,800 m³ ton, 40 percent of which comes from groundwater and freshwater resources to meet water quality standards.¹²⁰ The

appropriation of groundwater resources has been driven by the promotion of high-value crops for agro-exports, representing 90 percent of total water consumption, and the existing agro-export model in the Ica valley could be under risk due to declining water levels and increased pumping costs.¹²¹ The tension between exporting lobbies and weakly enforced environmental regulations constrains collective action for water conservation and gives firms substantial discretion for water extraction.¹²²

Peru's capacity to address the water emergency is neutralized by capacity gaps in key water and investment planning administrations, as well as weaknesses in compliance with existing provisions (for example, the restriction to drill new water wells to ensure the sustainability of aquifers). Agricultural expansion has led to the unsustainable use of water resources and threatens the long-term sustainability of groundwater sources.¹²³ Using a combination of spatial analysis of farm-scale and irrigation modeling, some studies show that nearly three-quarters of the agricultural expansion since the 1990s involving large farms has taken place in desert areas (that is, highly groundwater-dependent agriculture) and that water consumption for high-value crops of agro-exports represents 90 percent of total water consumption.¹²⁴

Other practices and emerging insights: Integrating smallholders into export value chains

Some productive alliances (PAs) in Peru have pointed to an alternative growth model that has been relatively successful in promoting stronger inclusion of smallholders in export value chains, minimizing the risk for both small producers and large firms and maximizing value addition and productivity for both.¹²⁵ Specific experiences with different levels of success (for example, contract farming, associations and cooperatives, or mixed schemes) have integrated smallholders into export value chains and connected them to international markets. These experiences suggest an underexploited potential for the promotion of inclusive linkages while also showcasing limitations that recent advances in technology can help address. Growing international demand coupled with limited availability of irrigated land has provided a natural incentive for export firms in the Costa to source an increasing share of their produce from smallholders, particularly in the adjacent Sierra where climate, geography, and water availability allow for the growth of NT crops. Thus, PAs have formed where large firms were linked with producer organizations by small-to-medium farmers, formerly with limited productivity, access to finance, and scale, resulting in higher returns for smallholders and increased growth for exporters. Such PAs have benefited large exporters by allowing them to diversify geographically, increase the number of crops, and extend peak harvest time, all of which help safeguard against seasonality, weather shocks, and price uncertainty in international markets. The approach has directly increased the competitiveness of large agribusinesses by leveling demand for labor and facilities; that is, longer peak harvest seasons allow companies to reduce facilities' idle time, hire more permanent labor, and invest in training to improve productivity. Tangible assets, such as irrigation facilities and packing equipment, as well as intangible assets, such as knowledge and skills, often need only marginal modifications to be shared among multiple crops and therefore can be used more efficiently with crop diversification.

An analysis of such experiences in a sample of crops (for example, organic bananas, avocados, artichokes, quinoa, mangoes, native potatoes, cocoa, and coffee) found that most successful PAs started with a private-led push to satisfy international demand.¹²⁶ For example, organic bananas' potential for agro-export was identified by COPDEBAN (Dole subsidiary) and Biocosta S.A.C. These export firms identified the international demand—reflected in the increase in international prices—and realized the potential of responding to this demand because of the extremely suitable agro-climatic conditions and favorable trade policies (mainly, to European Union countries). The firms also leveraged the 1998-MINAGRI program, which promoted the conversion of conventional to organic hectares in the northern coastal region.¹²⁷ In 2000, the first 210 hectares suitable for organic production were implemented in the Chira Valley. In the following years, several export firms started to work in the valley, increasing the volume of organic banana exports by more than 30 times its initial level in less than five years. An example in other crops where PAs facilitated technology transfer can be observed in Gandules Inc. S.A.C., a firm that exports beans and paprika. The firm works with 14 formal collectors/intermediaries. Through them, the firm transfers technology to producers. Price premiums and prompt payments through bank transfers are some additional key elements that sustain this association.

The need to expand production prompted small-scale producers to become a part of the value chain. A mango and avocado exporter, Sunshine Export S.A.C, saw a 500 percent export value growth between 2000 and 2006 based on a supply expansion strategy. Ninety percent of total sourcing comes from external producers: 9 percent from large producers, 18 percent from medium producers, and 63 percent from small-scale farmers who were part of an organic certification project. Similarly, the decision by MC and M S.A.C. to expand exports of artichokes, bell peppers, and paprika induced them to start working with producers with fewer than 10 hectares, and in the past five years the firm has started working exclusively with small producers. A similar case is DANPER S.A.C., which undertook an expansion of asparagus, artichokes, peppers, and fruits exports since 1994. This expansion led to 50 percent of the company production depending on small-scale producers through SERVIAGRO, an advisory services provider, and CARE Peru, an intermediary supporter.¹²⁸ (See table 5.1.)

Across various crops, PAs had a significant positive effect on smallholder outcome. The findings are confirmed by the research presented in figure 5.5, which shows not only that articulation schemes like PAs deliver better results for producers compared with the local alternative, but also that typical individual contract farming, or direct export by cooperatives, is less beneficial than Productive Alliances. From the producer's side it is evident that mixed participation schemes (linking organizations of producers to exporting firms) seem to work better, ease entry conditions, and enhance welfare impacts. Sometimes an intermediary, such as an NGO, is needed to generate trust and secure a more equitable contract.

TABLE 5.1 INCLUSIVE PRODUCTIVE ALLIANCES IN PERU 2018

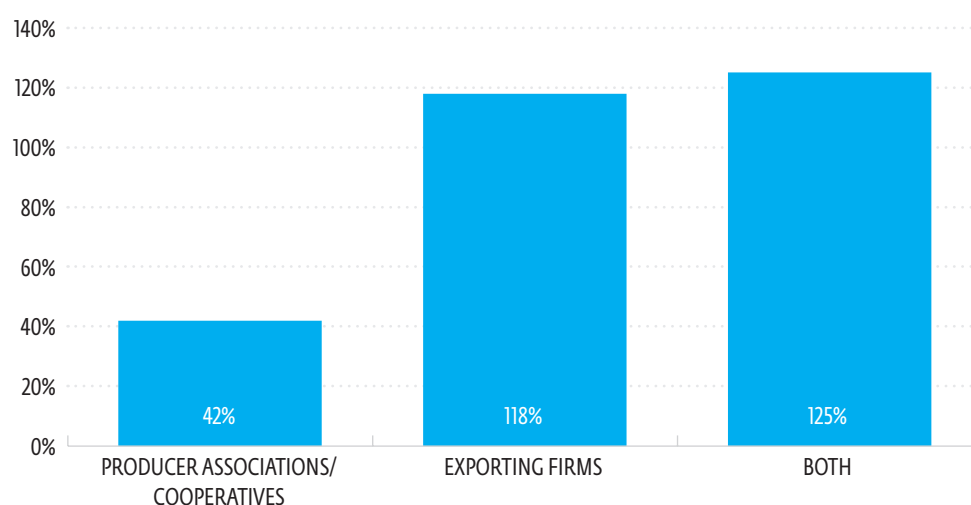
	ORGANIC BANANAS	HASS AVOCADOS	ARTICHOKEs	QUINOA	MANGOES	NATIVE POTATOES	COCOA	COFFEE
Predominant region	Northern coast	Coast	Coast and central highlands	Highlands	North coast (Piura, Lambayeque, and La Libertad)	Highlands	Amazon	Amazon
Initial development	Large-scale firms	Large-scale firms	Large-scale firms	Large-scale firms (initial)	Private sector articulation	Private sector articulation	International cooperation (PDAs)	Associations and international cooperation (Programas de Desarrollo Alternativo - PDAs)
Share of integrated smallholders	< 5 hectares (99%)	< 5 hectares (90%)	< 2 hectares (67%)	< 5 hectares (98%)	Not available	< 5 hectares (93%)	< 5 hectares (94%)	< 5 hectares (93%)
Structure of exportable land	Producers (87%); firms (13%)	Producers (11%); firms (89%)	Producers (44%); firms (56%)	Producers (63%); firms (37%)	Not available	Producers (100%)	Producers (100%)	Producers (96%); firms (4%)
Predominant export actor	21 Associations and cooperatives (APPBOSA, CEPIBO, and so on): 70% FOB value	23 firms (DROKASA, Camposol, and so on): 80% FOB value	3 firms (Soc. Ag Viru, Camposol and Danper): 66% FOB value	6 firms (Exportadora Ag. Orgánica, ALISUR, and so on): 50% FOB value	9 firms (44% of FOB value) and 7 main associations (Coremango, APEM, Promango)	Not available	14 firms (Sumaqaq, Amazonas Trading, and so on): 80% FOB value	10 firms (Perales Huancaruna, Comercio & Cía., and so on): 71% FOB value
Public/private intervention	1998: conventional to organic transition; Private impulse: COPDEBAN, Biocosta	Private impulse: DROKASA, Camposol; Competitive funds (for example, Procompite) for Producer Organizations	PRA, Sierra Exportadora, COFIDE	PC Granos Andinos (Ministry of Production)	Senasa, COREMANGO, CITE Mango Agroindustry and Ministry of the Development of Agriculture and Irrigation promotion of the fruit for investments	NGOs – articulation role (Capac Peru, ADERS Peru and FOVIDA) + CIP; INCOPA (innovation broker)	Alianza Cacao (traceability articulation scheme); competitive funds	International cooperation (Belgian, others), USAID for certified origin cocoa as alternative crop; competitive funds

Source: Based on H. Paredes and R. Fort, "On the MARGINS of the Agroexporting Boom: Smallfarmers' Integration to Global Value Chains," in *Peru: The Agrarian Problem in Debate*, eds. R. Fort, M. Varese, and C. de los Ríos, 35–130 (Lima: SEPIA, 2018).

Note: CIP = Centro Internacional de la Papa; CITE = Centro de Innovación Tecnológica, Empresarial y Social; COFIDE = Corporación Financiera de Desarrollo; COPDEBAN = Corporación Peruana de Desarrollo Bananero; FOB = free on board; PDA = Peru Alternative Development Program; PROCOMPITE = Iniciativa de Apoyo a la Competitividad Productiva; USAID = US Agency for International Development;.

FIGURE 5.5 SOME EVIDENCE ON THE INCOME EFFECTS OF ALTERNATIVE VALUE-CHAIN ARTICULATION SCHEMES**a. Marginal income effects of articulation to value chains (general, by type of scheme)**

PRODUCER ASSOCIATIONS/ COOPERATIVES	MEDIAN (S/.)	EFFECT (S/.)	VAR. %
Articulated producers	206.8	41.5	25
Controls	165.3		
ARTICULATED TO FIRMS			
Articulated producers	213.8	24.8	13
Controls	189		
MIXED SCHEMES			
Articulated producers	264.7	76.8	41
Controls	187.9		

b. Marginal income effects of articulation by value chains (exports, by type of scheme)

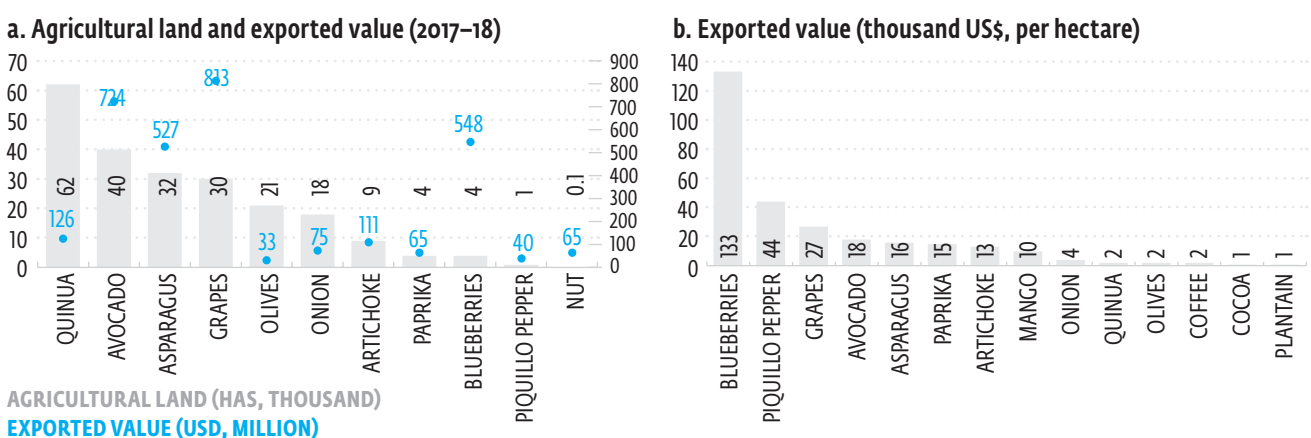
Sources: World Bank staff estimates based on studies using census and national survey data from, respectively, R. Fort and R. Vargas, "Estrategias de Articulación de los Productores Agrarios en la Costa Peruana: ¿Asociatividad, Vinculación con Empresas o Ambas?" en *Agricultura Peruana: Nuevas Miradas Desde el Censo Agropecuario*, ed. J. Escobal, R. Fort, and E. Zegarra, 87–143 (Lima: GRADE, 2015); H. Paredes and R. Vargas, "Cadenas de Valor Agrícolas y su Impacto sobre los Ingresos de Medianos y Pequeños Productores: Evidencia para el Caso Peruano" en *SEPIA XVII Perú: El Problema Agrario en Debate*, ed. R. Fort, M. Varese, C. de los Ríos (Lima: SEPIA, 2018).

Note: In both cases, producers are matched based on observable characteristics (for example, land structure, average income, irrigation access, technical capacities, and so on) to generate groups that are reasonably similar in every aspect but on their type of articulation with exporting markets. Three groups are differentiated: producers exporting directly through associations or cooperatives, those linked formally or informally with exporting firms, or a combination of both. In both cases, the income marginal effects from integrations to value chains are larger for mixed schemes: more than 41 percent vs. 13–25 percent based on census data (panel a), and about 125 percent vs. 40–110 percent using national survey data (panel b).

Although the combination of market demand and limited access to land and water has pushed some large anchor firms to proactively integrate smallholders into a productive alliance, there are factor conditions that are preventing the approach from being scaled up. Improved design and implementation of integrated territorial development can support strategic investment in public goods and remove key constraints to more comprehensive integration of small-scale producers outside coastal regions. For example, last-mile secondary and tertiary road connectivity, internet connectivity, water and sanitation infrastructure, irrigation, access to certified seeds, support for technology adoption, or improvement to land tenure to facilitate the use of land as collateral for bank credit, insurance, and so on could be pursued through public sector reform and investment with strategic participation by the private sector. One mechanism that could be used is *obras por impuestos*, which allow private companies to coordinate with regional or local governments and execute high-priority public works in exchange for a deduction of expenses of up to 50 percent of their income tax.

In addition, although private firms are better endowed to identify such market opportunities, a public effort can mitigate information asymmetries and increase access to information on market trends and demand conditions by smallholders. For instance, some of these trends suggest a current mismatch between land use for export crops and market-driven profitability of specific crops. Some regions could benefit from switching their production to more profitable export crops, particularly where the yields have comparative advantages. Examples would be blueberries in La Libertad, Lambayequ, and Ica; grapes in Piura and Arequipa; and avocados in Pasco and Arequipa (see figure 5.6).¹²⁹ This effort could be facilitated by the government or by a private organization such as the Association of Agricultural Producers Guilds of Peru, AGAP.¹³⁰ Providing access to this type of information can be used to improve firms' competitiveness (particularly for small enterprises) and enhance the incentives and bargaining conditions of producers and organizations integrated in PAs. The cost of demand analysis in destination markets is prohibitively high for small producers, which could justify providing such information as an (accessible) public service.¹³¹ The promotion of certain institutional arrangements (for example, contracts) can also improve specific conditions of trust and enhance mutual potential gains between firms and individual producers. A systemic effort and a fresh look at how to scale and improve results can be conducive to alternative development routes in Peru. See box 5.3.

FIGURE 5.6 EXPORTED CROPS LAND DISTRIBUTION AND CROP PROFITABILITY



Sources: Ministry of Agricultural Development and Irrigation (MIDAGRI); BBVA Research, "Informe de Exportaciones Agrícolas," 2018, <https://www.bbva.com/tag/exportaciones-agricolas/>.

BOX 5.3 THE TALSA EXAMPLE

In 2018, the Grupo Rocío, an agro-export firm based in Trujillo for more than 50 years, created a division called TALSA with the main purpose of promoting opportunities for small (less than 5 hectares) and medium (less than 100 hectares) growers of fruit and vegetables in the world through empowering the growers and helping with the direct or indirect solution to their producing, commercial, and financial challenges.

TALSA provides advice at no cost to the small growers through different channels (webinars, training, farm visits, technical information, and videos); provides a fair and transparent processing and commercial service to the small growers; helps

farmers access inputs at better prices through alliances with key and proven suppliers; designs and installs low-cost irrigation systems with producers; and provides access to working capital at a low interest rate. They source avocados, green asparagus, and pomegranates, and work with farmers in La Libertad, Ancash, Cañete, Ica, Apurímac, Ayacucho, and Arequipa. The business model is based on sharing production, processing, and certification know-how to increase and improve production; providing transparent access to information along the value chain; and sourcing products directly through small growers without intermediaries.

Path forward: Toward an inclusive and climate-smart export boom

Going forward, Peru's demonstrated private sector capacity to respond competitively to global market trends, combined with growing global demand for fresh foods (often with a premium on positive social and environmental impact), point to promising private sector investment opportunities in the export-oriented agriculture sector. Provided policy actions are undertaken to scale these markets, Peru can harness the momentum created by its "coastal boom" to increase inclusive growth and contribute to regional convergence.

Private investment will play a critical role in adapting value chains to the growing imperatives of climate change and social inclusion that will be led by both market-side consumer trends and supply-side social pressure. Importers and advanced buyers are increasing the sustainability requirements, such as making carbon and water footprints visible for consumers, with front-of-pack environmental scores. In high-income economies, where 30 percent of consumers—and rising—are exclusively buying eco-friendly foods, regulations on the type and quantity of pesticides, chemicals, and fertilizer used will be much more stringent by 2030—for all products, not just organic.¹³² Peruvian exporters have continuously adjusted to increasingly strict buyer requirements, such as complex and tight food safety controls—with testing requirements, certification, buyer codes, and so on—or environmental requirements like deforestation. Further policy actions can promote and improve the adaptation to this evolving market—more recently on topics such as carbon emissions—while also unlocking the potential for smallholders to supply exporters and help them meet expanding demand (and its conditions) and increasing their resilience in the face of climate change. The following section focuses on the policy actions that could, in a three-to-five-year horizon, facilitate private sector investment and growth in inclusive and climate-smart value chains of exportable high-value-added crops.

In the coastal region: Special attention to water and labor market concerns

Climate change adaptation and mitigation

Integrated planning, access to information, and promotion of climate-smart agricultural (CSA) practices can protect fragile ecosystems and contain land erosion. The rise in global demand led to a considerable increase in unsustainable crop production that led to a rise in land erosion and unsustainable agricultural practices. For example, when global demand for quinoa rose from 80,000 tons in 2010 to 180,000 tons in 2014, farmers in Peru increasingly planted crops on land in fragile ecosystems and in lowlands, which are more susceptible than highlands to diseases and infestations. Also, inexperienced farmers entered the field but failed to maintain the quality of production and in some cases left traces of chemicals and other pesticides in the final products. A study estimates that, accounting for changes in land use, evenly distributed increments of 1.5 degrees Celsius to 3.0 degrees Celsius in average daily temperatures will lead to the coastal regions suffering large losses (8–19 percent of total output) while the highlands, with a cooler climate, will slightly benefit from warmer temperatures.¹³³ Taking that into account, a more sustainable strategy to respond to market demand would be to leverage productive alliances and extension services so that exporters in the Costa can widen their sourcing to farmers in the Sierra and Selva. These can adopt new crop varieties or cultivation processes that are suitable to both local microclimate and market demand. In the case of mangoes—for example, for commercial cultivars—farmers are starting to adapt rootstocks that allow the plant to tolerate salinity, as well as waterlogging and dry conditions. Making these and other best practices available more widely, especially to smallholders, will be key for climate change adaptability. New lands can also be made available at higher elevations, where it could be more suitable under the new climate.¹³⁴ The Statistics and Information Office (DEIA) at the Ministry of Agricultural Development and Irrigation (MIDAGRI) has already developed a platform with some geospatial information that can be used to model new areas for sustainable agriculture.

Multiple policy actions and solutions need to be combined to address the critical challenge of increasing water scarcity in the Costa. The expansion of agricultural sourcing by exporters from the Sierra's smallholders (as described in earlier sections) could contribute to decreasing water consumption pressure on the Costa's aquifers. If adequate policy actions are undertaken to facilitate smallholders' adoption of exportable crops, and their alignment with required standards, then Peruvian exports of NT products could grow in more sustainable ways, depending more heavily on rainwater and climate-smart technologies. Several policy alternatives have been proposed to increase the capacity for locally renewable water resources on the coast. They include creating areas for artificial groundwater recharge, increasing recharge using surplus surface water during the wet period, and levying taxes on large water users, updated annually.¹³⁵ Recently, the National Water Authority (ANA) implemented a monitoring system for groundwater users in Ica with support from the World Bank. Other potential options include groundwater pricing, water rights, and withdrawal permits.

Labor standards and working conditions

Improved worker representation and better enforcement of existing labor laws and regulations, still allowing for seasonal hiring, could improve access to quality jobs in the sector and distribute the benefits of the export boom. First, better representation of workers under the APL (to communicate claims and have a space for discussion with employers) provides substantial advantages for all parties involved and should be actively promoted. The seasonal character of agriculture and the resulting mobility of workers pose a challenge to labor representation, but an adequate space for collective negotiation could avoid conflicts and provide better working conditions, as is the case in the comparable construction sector. Second, the enforcement of existing laws and regulations is crucial to alleviating the current tensions and securing workers' rights. Consultations suggest that the agency responsible for monitoring and enforcement has not been endowed with the necessary resources to adequately fulfill its mission.¹³⁶ Large agribusiness firms claim compliance with the law, arguing that low salaries, subpar working conditions, and informal or outsourced hirings are mostly practiced in informal and semiformal businesses. Rigorous surveillance and collaboration with other public institutions could greatly improve the oversight of both informal and formal agribusiness firms. Finally, the expansion and adoption of private standards—moving beyond food quality and safety—is a promising approach, with evidence of positive impacts of labor-specific standards in the horticultural export chain: minimum wage compliance, contract formalization, and training.¹³⁷

Outside the Costa—particularly in the adjacent Sierra regions: A coherent targeting of barriers to the development of inclusive and cross-regional value chains

Leveraging geospatial technology and market-oriented territorial planning to facilitate inclusive value-chain growth

Improved geospatial mapping technologies and well-informed spatial planning can help identify smallholders that likely could participate in export value chains, especially in water-rich areas (such as the Sierra). The government of Peru is investing in several experimental uses of geospatial mapping technologies to inform the design of territorial development policies. MIDAGRI is discussing the approval of the Family Farming Plan with support from the Food and Agriculture Organization of the United Nations (FAO) and its poverty-alleviation-oriented “Hand-in-Hand” initiative, including its geospatial tools for territorial targeting and prioritizing. Peru's Presidency of the Council of Ministers (PCM) and Ministry of Economy and Finance (MEF) are also exploring territorial approaches and geospatial technologies (see box 5.4) to improve the alignment of public investments with local priorities, design municipal fiscal incentives, or design instruments for decentralized promotion of value chains (Estrategias de Desarrollo e Innovación Regional; EDIR). Other examples include the new Law of Agricultural Industrialization and new Law of Agrarian Cooperatives (pending implementation decrees), which also propose to leverage territorial development to promote their objectives. But these experiments remain uncoordinated, highly centralized (not sufficiently appropriated by local governments), and incipient. Policy action to enhance decentralized capacity for infrastructure and service planning and delivery, based on such instruments, could effectively leverage advances in mapping and data processing to identify lands and smallholders that can better leverage their assets and climatic endowments, and inform strategic investments in critical public goods (for example, last-mile rural roads and irrigation) to maximize impact on the competitiveness and growth of smallholders (see box 5.4).¹³⁸

Improvements to the targeting and impact of infrastructure investments

At the national level, there is a significant margin to improve public interventions and enhance transport and logistics to make the agriculture sector more competitive. Peru still ranks 83rd out of 200 countries included in the World Bank logistic performance index 2018, much below direct competitors such as Mexico (51th), Colombia (58th), or Chile (34th). According to a BBVA study from 2018, the main causes of logistic costs are services (where technology adoption remains insufficiently generalized) safety operational issues, lack of transparency on fees charged, the lack of multimodal services and cabotage, weak coordination between border control officials, inefficient infrastructure in specific border corridors, and the poor quality of regional and local roads.¹³⁹

At regional and local levels, it is critical to improve the targeting and alignment of public investments with the priorities for subnational economic growth. The inclusion of the Sierra's smallholders in export value chains can be much enhanced through targeted last-mile infrastructure planning oriented to the reduction of logistical costs (connectivity, processing, and storage) and provision of adequate irrigation needs. The literature is extensive on the potential gains of such services in the context of value-chain development, particularly when accumulated and coordinated. For Peru, an analysis of positive income and expenditure effects of basic infrastructure access at the household level (access to water, sanitation, electricity, and telecommunications) shows that the benefits from having more utilities together (two, three, or four) are greater than summing up their individual impacts.¹⁴⁰ Furthermore, a 150 percent additional increase in household income impacts has been demonstrated when the interventions were complemented by input and output market interventions.¹⁴¹

Leveraging public-private dialogue to link small suppliers with markets

Value-chain development initiatives can be facilitated and catalyzed by regional authorities to help inform agricultural practices, align local producers with existing and growing demand by exporting firms, or directly connect dynamic smallholders with export markets. Public-private dialogue (PPD) and supplier development mechanisms (such as productive alliances) can be a critical input to transformative policy action in the short term, in part by helping direct investments to public goods and services that are most effective, and in part by identifying and supporting linkages between local producers and markets (for example, local smallholder organizations with exporters, or directly with international buyers). As suggested by recent studies, PPDs can perform different but interlinked functions such as creating a space for learning and joint innovation (innovation intermediary or broker), performing a governance function to improve coordination, or advocating to secure policy change or influence.¹⁴²

There are different approaches to supply and value-chain development mechanisms, but the inclusion of smallholders in Peru's "agricultural boom" requires ones that (a) capitalize on the gains made in the Costa (rather than ignoring them), (b) identify existing strategic market opportunities for firms and smallholders alike, and (c) inform government actions aiming to address key market failures that limit farmers' access to markets and competitiveness (for example, rural roads, irrigation, technology adoption, research and development, or sustainable access to finance). One such approach is the productive alliance model, which has been proven to positively affect smallholders, introducing market orientation and awareness, promoting technology adoption, and

leading to revenue increases.¹⁴³ Other approaches include public-private dialogue pilot programs recently conducted in Peru. Centrally led examples include the Mesas Técnicas Agrarias, with participation of MEF, PRODUCE, SUNAT, and agrarian organizations, or the more recent Mesas de Cadenas de Valor, led by MEF with the participation of other ministries and producing organizations with the specific goal of promoting competitiveness in agribusiness and identifying constraints and bottlenecks limiting the growth potential of strategic value chains. Other PPD experiments point to more decentralized or deconcentrated approaches, including a number that were conducted under World Bank–financed innovation-focused projects (for example, Programa Nacional de Innovación Agraria, Strengthening the Science, Technology and Innovation System in Peru, and Programa Nacional de Innovación en Pesca y Acuicultura). Further, lessons can be learned from global good practices that leverage technology to improve the PPD process and promote more effective and inclusive market-based solutions (see box 5.5 on the leveraging of blockchain technology in Haiti).

BOX 5.5 VALUE-CHAIN TRACEABILITY IN AGRICULTURE THROUGH BLOCKCHAIN TECHNOLOGY AND ADVANCED LOGISTICS

Value-chain traceability can successfully leverage blockchain technology to transform market power dynamics and enhance the inclusion of smallholders in export value chains. The approach was piloted in a World Bank project in Haiti, and it showcased the potential of blockchain technology to increase competition and efficiency, facilitate cross-border trade payments, and increase real incomes for participating farmers. The Haitian Ministry of Trade and Industry conducted value-chain analyses through Competitiveness Reinforcement Initiatives in which local teams visited thousands of producers working in dozens of different value chains in the poorest regions of the country and identified smallholders for the project pilot. Wageningen University and Research supervised and monitored the technical dry run of the pilot that was launched in May 2018. The project used a matching grant to include third-party logistics service providers and brokers, some equipped with blockchain (distributed ledger) technology, to connect Haitian coffee, cacao, mango, and avocado farmers with consumers in the United States, Japan, and Europe to obtain better sale prices.

The use of blockchain technology successfully connected Haitian smallholders directly to markets and, by cutting out intermediaries, greatly increased their profits. Preliminary data

for six mango shipments completed to the United States during the pandemic show that spoilage rates were reduced dramatically, while quality of produce improved because of better post-harvest handling. Participating farmers gained an average premium of 335 percent (up to 801 percent) compared with a previous US Agency for International Development project that achieved a 15 percent premium without this system. The gain materialized mainly because the technology helped eliminate inefficient intermediary resellers and therefore reduced markups. Smart contracts and cross-border mobile payments reduced transaction costs, and real-time data enabled all parties (including the government) to track merchandise throughout the whole value chain. More pilot programs in Haiti in coffee, avocado, and cocoa are currently under implementation.

Value-chain traceability through blockchain can support smallholder inclusion in value chains by eliminating information asymmetries and reducing the market power of intermediaries. Blockchain technology enables farmers to sell directly into efficient markets because the producer retains ownership of the product until the moment of final sale. The spot price is determined by supply and demand at the destination, not by the negotiating power of a small farmer (or farmers' association) and a limited number of local buyers. Intermediaries

that do not add value disappear from the value chain, unless they pivot to becoming service providers, which allows producers to keep margins that would have traditionally been arbitrated by local exporters. Third-party logistics service providers provide necessary services for a fee or profit sharing under standard operating procedures for each product. The blockchain technology can also make obsolete the role of traditional financial intermediaries because smart contracts and online payments dramatically reduce transaction costs. Third-party logistics service providers can become the holders of collateral, and working capital can be provided from a blockchain escrow account.

The blockchain traceability approach can also play a key role in making markets more efficient and transparent. The transparent trade ledger can improve “fair trade” types of certification because it provides real-time information to consumers who are aware of this provision. The consumer can scan a QR code, which shows information on who the farmer is, where the tree is located, what is the timeline from harvest to table, including the temperature at which the product has been kept along the journey, and how much money everyone made along the way. The access to all this information is regulated by a smart contract between the farmer and the retailer. The blockchain solution can send payment instructions directly to a local bank, offering the possibility of payment by bank transfer, e-wallet, or cash transfer. The availability of real-time data along the entire value chain makes the market more transparent and efficient because tax revenues can be more easily tracked and charged even if the producers or service providers are not official registered taxpayers.

The built-in openness and transparency of the blockchain/distributed ledger technology solution can safeguard against some of the most common market power risks and protect both smallholders and consumers. The technology is open source, and anyone can replicate it and offer the same solution, which can counter market dominance. There are no exclusive agreements to deter entry because anyone can be registered by a public entity with a simple verification of identity. The blockchain-aggregated real-time data will flag any collusion or abnormal price increases along the value chains

like real-time traffic data. It will register activities and costs independent of ownership and record the transfer prices. Discrimination and unfair treatment can be circumvented because the producer is free to change the broker for each transaction. Data cannot be used as a source of market power because the producer owns the data, individual transactions are transparent, and aggregated data are public. Consumer protection is also enhanced as consumers can see all the value-chain information for the product or service without revealing their own identity.

Both public and private investments are critical to developing blockchain value-chain traceability and successfully leveraging it to support the integration of smallholders in value chains. Across different types of value chains, some examples of public investments include developing and hosting a public blockchain platform, piloting of production and product-testing facilities, or creating common training facilities. Public investments specific to agriculture value chains include maturity mapping services, collection points, rest stops for refrigerated trucks, port terminal areas with electricity, docks for high-frequency “roll on–roll off” ferries, and so on, while private investments specific to agriculture value chains include third-party hot water treatment plants (for example, required for mangoes), third-party forced cooling stations, and third-party high-pressure processing or ripening chambers.

In Peru, many exporters have acquired or developed advanced technologies and expertise in cold chain logistics and could pivot to compete as service providers (of third-party logistics services) in such a new market. They could subsequently export their services (not only their products) to smallholders in other Latin America and the Caribbean economies. As such, the blockchain approach mentioned earlier could not only increase the socioeconomic impact of the “boom”—by capitalizing on the knowledge and know-how it generated to the advantage of smallholders aiming to export—but it also could allow Peru’s agrifood exporters to become exporters of services to the many economies in Latin America and the Caribbean where producers are following Peru’s agricultural evolution and targeting markets Peruvians know well (for example, the United States and the European Union).

Upgrading and scaling extension services to smallholders to improve access to technology, know-how, market intelligence, and climate-smart practices

Some of the extension services in Peru could be upgraded or better leveraged to strategically focus on supporting growth-oriented smallholders in adopting technology and overcoming information asymmetries. The Peruvian experience shows that tech transfers from large-scale to smaller-scale producers can naturally occur (that is, market driven), even under informal contract arrangements. DANPER S.A.C. exporting company, for instance, relies on small-scale producers for production under a verbal agreement. The company transfers these small-scale producers' technology through SERVIAGRO.¹⁴⁴ Increasing the level of trust and investment in the relationship with the downstream firm can make investments in specific technology for small-scale suppliers less risky. Market failures, however, often prevent such market-driven transfers from naturally occurring. In other instances, smallholders suffer from information asymmetries that limit their bargaining power with off-takers, or their ability to access markets directly. In such cases, there is a role public authorities can play, helping smallholders with such higher barriers benefit from extension services, and leveling the playing field.¹⁴⁵ SENASA's know-how and experience is particularly relevant and should be leveraged to support to smallholders more frequently and substantially. Traditionally, SENASA has been more focused on agrifood firms, but the spatial identification (see earlier discussion) of smallholders who have the needed assets and motivation to export (or to supply exporters) should help scale SENASA's services to small farmers, too.

Boosting the adoption of climate-smart agriculture in inclusive value chains

Promoting CSA practices should aim to achieve at least two of the following three goals: (a) maintain or increase agricultural productivity, (b) enhance resilience (adaptation), and (c) reduce carbon-intensive activities (mitigation). In the coastal regions, an emphasis on adaptation practices is critical, while mitigation practices in the Amazon and Sierra regions are also a priority. There is technology adoption potential by linking adaptation/mitigation and productivity gains through CSA practices. A World Bank report assesses different production systems on the degree to which they are, or could be, climate smart.¹⁴⁶ Table 5.2 highlights the adaptation, mitigation, and productivity outcomes associated with certain CSA practices for a sample of selected crops. The assessment demonstrates the potential for CSA to become a driver of development and growth, not only resilience, in the sector.

TABLE 5.2 CLIMATE-SMARTNESS ASSESSMENT FOR TOP CSA PRACTICES BY SELECTED PRODUCTS 2014

CSA PRACTICES		CLIMATE SMARTNESS	ADAPTATION	MITIGATION	PRODUCTIVITY
Plantain Agricultural area 2%	Agroforestry (high adoption, > 60%)	4.1	Generated microclimates, water regulation, soil conservation	Increased carbon reserves and sequestration	Livelihood diversification, high potential for income generation
	Organic agriculture (medium adoption, 30-60%)	3.8	Greater yield stability despite climate variability	Improved efficiency in fertilizer use reduces nitrogen emissions	Enhanced yields reported
Coffee Agricultural Area 6%	Post-harvest community infrastructure (low adoption, < 30%)	4.5	Efficient water use, reduced contamination of water and soil	Unidentified	Maintained grain quality for higher market value
	Tree crop rejuvenation (low adoption, < 30%)	4	Avoided high humidity and fungus development, reduced competition for nutrients	Increased carbon reserves and sequestration	Maintained yields
Potato Agricultural Area 5.2%	Recovery from ancestral production practices (high adoption, 60%)	4.5	Soil conservation, genetic diversity	No significant benefits	Maintained productivity
	Efficient use of fertilizers (medium adoption, 30-60%)	3.7	Soil conservation, reduced soil salinity	Reduced nitrous oxide emissions. Increased soil carbon content	Increased productivity
Multiple Crops	Agroforestry (quinoa, avocado, golden berries, and so on) (low adoption, < 30%)	4.2	Wind protection and soil conservation	Increased carbon reserves and sequestration	Increased agricultural diversification, high potential for mixed income generation
	Terracing/stone contour bunds (quinoa, avocado, golden berries, and so on) (low adoption, < 30%)	3.5	Soil conservation	Unidentified	Maintained productivity

Source: World Bank, CIAT, and CATIE, *Climate-Smart Agriculture in Peru. CSA Country Profiles for Latin America Series* (Washington DC: World Bank, Group 2014).

Note: CSA = climate-smart agriculture.

Integrated territorial development can help implement the advanced regulatory provisions recently adopted in Peru. The recent Peruvian Framework Law on Climate Change and the Nationally Determined Contributions define (a) national adaptation and mitigation targets, and (b) multisector and multilevel coordination spaces for monitoring. The law represents an important step forward. The agriculture priority within this legislation includes measures such as implementing good fertilizing practices in climate-change-vulnerable areas, using technologies for the management and control of soil erosion, protecting crop extensions vulnerable to floods, diversifying crops toward less-vulnerable varieties, transferring genetic resources to gradually improve climatic resilience, creating agro-climatic information systems, and incorporating corporate strategies for climatic risk management. The challenge is in the implementation of these measures. For example, funds such as the Mecanismos de Retribución por Servicios Ecosistémicos (MERESE), led by the Ministry of Environment, have been established to promote public-private agreements for conservation, recuperation, and sustainable ecosystem use, but they are currently underused. PPDs and territorial planning strategies focused on promoting the growth of climate-smart and inclusive value chains can strengthen implementation. Furthermore, instruments such as results-based budgets (*presupuesto por resultados*) (see box 4.2) and budgetary incentives (*incentivos presupuestarios*) can help set targets for regions and municipalities, monitor progress, and reward performance in the implementation of well-designed policies and goals for the expansion of green value chains in the Sierra and Selva.

Improving access to finance

Improving access to finance is also a necessary complementary measure (if access to markets and information is already available or made available). The limited access of small producers to formal credit in the country (5 percent in the last agricultural census), particularly in the Sierra and Selva, is typically concentrated in working capital (short-term) financing. There is a need to explore alternatives like guarantee funds, information mechanisms to better assess risks specific to agriculture, and additional funding lines for business plans or advisory services as part of the loans.

Green agricultural credit is particularly relevant. Existing opportunities should be identified to provide risk mitigation/transfer vehicles that enable financial institutions to invest in resilient agriculture and enable the transition to a green economy. These vehicles would include existing funds, government programs that would benefit from but also facilitate risk mitigation, and bilateral programs. Once these opportunities are identified, financial institutions, governments, and other actors should evaluate how they can be put into practice, with a particular focus on aligning incentives between all the relevant stakeholders, building a structure with clear rules, and providing access to longer-term concessional capital. This work could form the basis of a green credit line, which would be developed to fit the specific opportunity.¹⁴⁷

Promoting transformative private sector investments

Although the earlier discussion highlights policy actions that public authorities can undertake, private investment will also be critical for adapting value chains to the growing imperatives of climate change and social inclusion. The Peruvian successful experiences in market-driven productive alliances point to an underexploited market that can be scaled. To exploit this growing market, exporting firms wishing to scale and diversify their sourcing will need to invest in strengthening their internal logistics activities (for example, cold chain facilities or traceability technologies), as well as scaling their operational expenditures (which could include investing in their suppliers' capabilities, training, and working capital), or strengthening their capacity to estimate and reduce their environmental footprints. If digital solutions are promoted (for example, using blockchains), private operators of digital platforms and e-commerce could help provide smallholders with more direct access to consumer markets. Peru's vertically integrated agribusiness firms—with advanced capabilities in logistic services—could then also choose to evolve toward becoming third-party logistics service providers to smallholders, which would be a line of business services they could subsequently export to many Latin American markets with similar needs. Peru will also have to improve and scale agrifinance and microfinance for growth-oriented smallholders, who should be provided by private financial intermediaries with enhanced capabilities in this field. Finally, private sector investments in the water sector could be key and would include investments in water management, water technologies, and wastewater treatment.

See table 5.3 for a summary of recommendations.

TABLE 5.3 RECOMMENDATIONS TO PROMOTE INCLUSIVE, CLIMATE-SMART, AND INNOVATION-BASED AGRICULTURE

POLICY OBJECTIVE	SPECIFIC ACTIONS	TIMELINE
Reform and improve the labor market	• Create representation mechanisms for workers under the APL to hear their claims and have a space for discussion with all actors involved.	Short term
	• Improve supervision tools and performance of SUNAFIL to ensure implementation of the law.	Medium term
	• Reform the labor law to improve access to quality jobs while continuing to allow seasonal hiring.	Long term

Note: APL = Agrarian Promotion Law (Ley de Promoción Agraria); SUNAFIL = National Superintendence of Labor Inspection.

POLICY OBJECTIVE	SPECIFIC ACTIONS	TIMELINE
Design and implement targeted and coordinated territorial development programs to address subnational constraints preventing the participation of smallholders in export value chains	<ul style="list-style-type: none"> • Use technology and geospatial tools – including satellite and drone imagery - to map and locate clusters of smallholders (in the Sierra and Selva) with adapted/adaptable assets to participate in export value chains (currently led by coastal exporters); identify gaps in local infrastructure and services. • Promote market-oriented public-private dialogues and productive alliances to link local smallholders in the Sierra (for example, in targeted pilot subregions at first) to coastal exporters and off-takers, or directly to exporting markets. Such facilitation services must be based on market analytics and a technical understanding of the value chain, from destination markets to local clusters of agricultural production. • Adjust current Budgetary Programs (Programas Presupuestales; PPs) to incentivize selected regional and local governments to achieve specific targets on cadastre development, tenure regularization, connectivity, irrigation, and potentially other private sector development services (such as bottom-up PPD or PA facilitation approaches described earlier). In some cases, although this could complexify implementation, programs can be streamlined and consolidated into multisectoral budgetary programs that include specific targets for agricultural development (along with other sectors, such as tourism, if relevant). Targets and results could be collaboratively elaborated to reflect spatial and market-oriented analytical work and PPDs and PAs listed earlier. 	Short term
Value-chain-specific investments in enabling public goods	<ul style="list-style-type: none"> • Develop and host a public blockchain platform to facilitate and trace exports of fresh fruits and vegetables to destination markets. • Pilot production and product-testing facilities when value-chain analyses point to their need. • Develop (fruit, for example, mango) maturity mapping services to inform farmers (including smallholders) on optimal harvesting dates. • Set up collection points in remote regional areas (in Sierra and Selva), and rest stops for refrigerated trucks. 	Medium term
Target and scale the provision of export-focused extension services to smallholders	<ul style="list-style-type: none"> • Incentivize local governments to implement identified infrastructure investments through Budgetary Programs (Programas Presupuestales; PPs) and the Incentive Program for the Improvement of Municipal Management (Programa de Incentivos para la Mejora de la Gestión Municipal; PI) • Use Budgetary Incentives and Programs more effectively. • Leverage SENASA and other institutions in Peru to enhance training and extension services for smallholders that aim to export or supply exporters. • Provide smallholders with information on market demand conditions for high-value-added products. 	Medium term Short to medium term

Note: PAs = productive alliances; PPDs = public-private dialogues; SENASA = phytosanitary regulations and supervision system.

POLICY OBJECTIVE	SPECIFIC ACTIONS	TIMELINE
Promote CSA Incentivize sustainable water use	<ul style="list-style-type: none"> Scale the provision of CSA-focused advisory services (for example, by SENASA) to smallholders and firms in export value chains—particularly on how to adapt to changing crops and technologies. 	Short term
	<ul style="list-style-type: none"> Support the modeling platform of DEIA-MIDAGRI to improve data-driven adaptation to climate change. 	Medium term
	<ul style="list-style-type: none"> Encourage and incentivize exporters in the Coast to source exportable crops from the Sierra/Selva through PAs, if said crops can be grown in these regions based on renewable water sources (for example, rainwater). 	Medium to long term
	<ul style="list-style-type: none"> Develop a policy mix for agricultural regions in the Coast considering groundwater pricing, water rights and withdrawal permits, or legal and regulatory controls. 	
	<ul style="list-style-type: none"> Prioritize feasibility studies for water treatment and management through PPPs in the Coast, particularly sub-regions in the south where agricultural production is exceeding sustainable rates of water usage. 	
Other actions that can be led by private sector firms	<ul style="list-style-type: none"> Invest in capability for third-party logistics services (including by graduating from internal services to externalized specialized services, in Peru as well as other relevant Latin America and Caribbean markets). These services can include also third-party hot water treatment plants (for example, required for mangoes); third-party forced cooling stations; third-party high-pressure processing or ripening chambers, and so on. 	Short term
	<ul style="list-style-type: none"> Invest in operational expenditures and the capabilities, training, and working capital of small suppliers and producer associations and use contractual agreements. 	
	<ul style="list-style-type: none"> Invest in digital platforms (for example, using blockchains) and e-commerce to create more dynamic and competitive markets connecting farmers (including smallholders) directly with consumer markets. 	
	<ul style="list-style-type: none"> Invest in agrifinance and microfinance for growth-oriented smallholders, in partnership with private financial intermediaries. 	
	<ul style="list-style-type: none"> Invest in water management, water technologies, and wastewater treatment. 	

Note: CSA = climate-smart agriculture; DEIA- MIDAGRI = Statistics and Information Office of the Ministry of Agricultural Development and Irrigation.

5.2 TOURISM

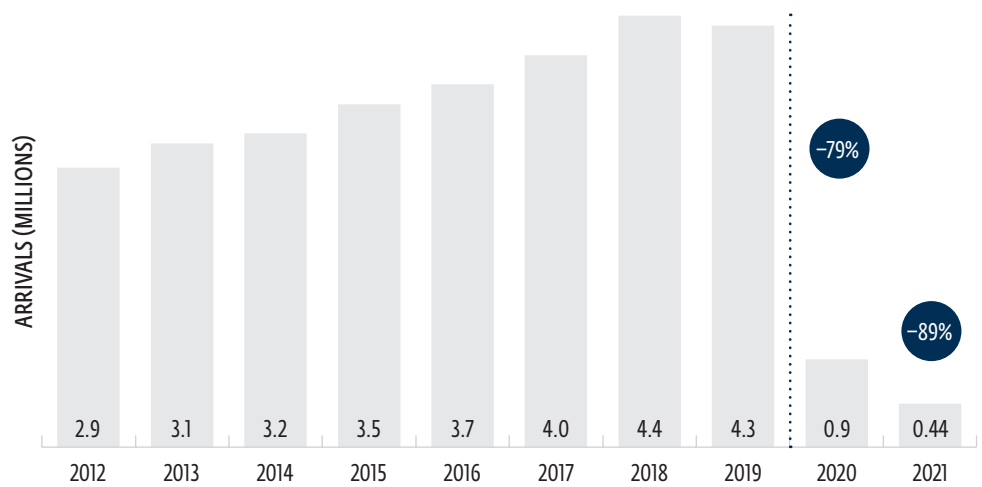
Peru's underexploited potential offers an opportunity for a more diversified and inclusive tourism sector, as well as an accelerated post-COVID-19 recovery

Tourism is a key sector for Peru, both in its contribution to economic growth and as an important source of employment. With 4.4 million visits in 2019, Peru reached fifth position for international arrivals to the region. In 2019 tourism contributed 9.3 percent of Peruvian GDP and generated almost 1.3 million total jobs, which translated to 7.5 percent of the country's total employment. Tourism exports also represent 9.5 percent of the country's total exports.¹⁴⁸ In 2019 the average international visitor spent US\$932 on a trip and stayed an average of 10 nights.

Peru's historic tourism growth has been boosted by a combination of strong cultural assets, gastronomy, and successful tourism promotion. Important tourist attractions include the city of Cuzco, historical centers of Lima and Arequipa, the Historic Sanctuary of Machu Picchu, Lake Titicaca, Cordillera Blanca, Cañón del Colca, Manu National Park, and the Amazon River, but also intangibles like its world-renowned gastronomy—which was championed by world-class chefs, some of whom were named as Latin America and the world's best. Several attractions are recognized by UNESCO as World Heritage Sites. Machu Picchu was voted one of the new Seven Wonders of the World in 2007 and the World's Leading Tourist Attraction in 2018 and 2021. Peru was also voted the World's Leading Culinary and Cultural Destination in 2021. Successful tourism promotion efforts have contributed to Peru's growth as a destination.

COVID-19 has ravaged the tourism sector worldwide, and its impact in Peru has exacerbated some of the underlying weaknesses. As figure 5.7 shows, international arrivals in 2020 were below 900,000, nearly 80 percent less than the previous year.¹⁴⁹ Receipts were down by US\$3.8 billion.¹⁵⁰ This drop contributed to a GDP contraction of 11.1 percent in 2020.¹⁵¹ As of October 2021, international arrivals had further decreased, to about 280,000 or by 93 percent, higher than the regional average of 86 percent.¹⁵² Arrivals had recovered in 2022 when compared to 2020 and 2021, but had done so more slowly than in the rest of the region (–58 percent versus –49 percent for South America, compared to 2019).¹⁵³ Unemployment increased from 3.4 percent in 2019 to 7.5 percent in 2020 and 9.6 percent in 2021.¹⁵⁴ Employment losses in the tourism sector were among the highest in the region: between 2019 and 2020, an 84 percent decline, compared with less than 45 percent for the region.¹⁵⁵ Since the start of 2021, GDP has greatly rebounded, growing 17.5 percent cumulatively.¹⁵⁶ However, Peru's tourism sector has yet to fully recover from the COVID-19 crisis.

FIGURE 5.7 INTERNATIONAL ARRIVALS TO PERU, 2012–21

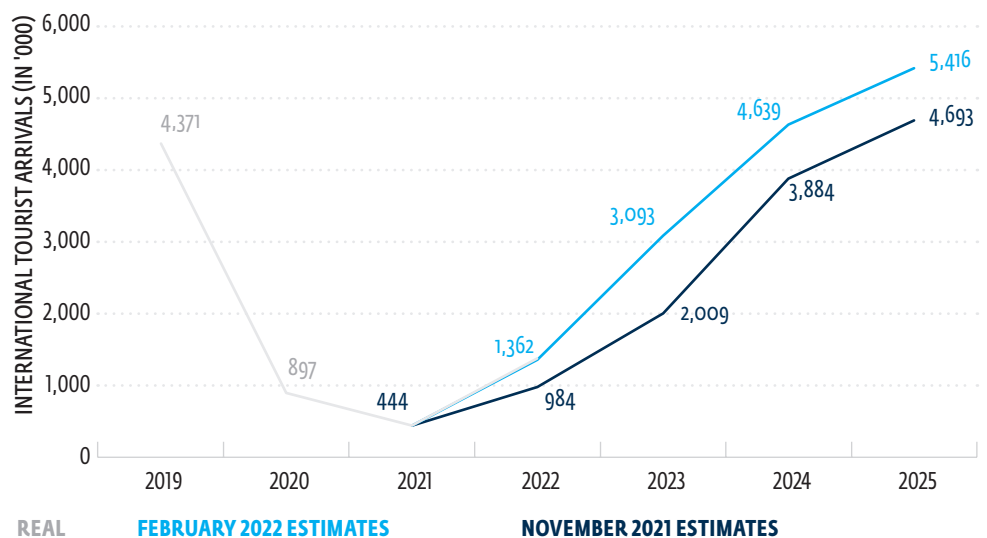


Sources: World Tourism Organization (UNWTO) and Peru tourism board (MINCETUR).

Note: Arrivals for 2022 cover the period January to October 2021.

As travel restrictions ease, consumer confidence returns at the global level, and vaccinations and booster rollouts continue, the release of pent-up demand could mean a strong rebound, as started to be seen in 2022. Preliminary global recovery trends in 2021–22 signal the possibility of a faster tourism recovery than originally foreseen, especially in some segments. In line with this, Fitch Solutions revised upward its projections for international arrivals to Peru (figure 5.8). According to estimates based on new data Peru could return to a pre-pandemic level of arrivals about 2025.¹⁵⁷ Latest actual international arrivals confirm Fitch Solutions projections, although recovery is happening at a slightly faster rate.¹⁵⁸

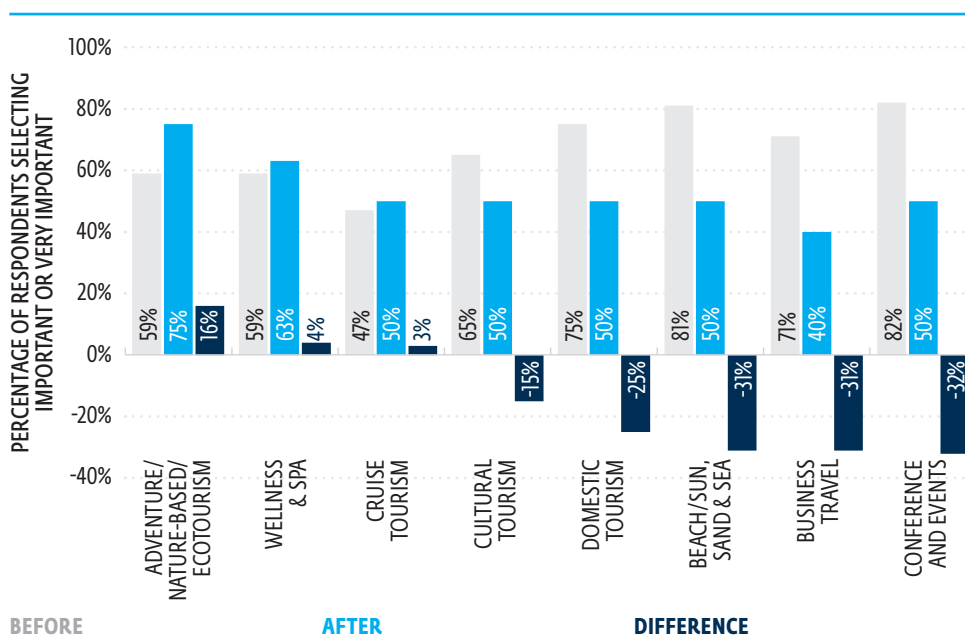
FIGURE 5.8 FITCH SOLUTIONS RECOVERY PROJECTIONS FOR PERU



Source: Fitch Solutions, "Peru Tourism Forecast" (Fitch Solutions, New York, February 2022) and Ministry of Tourism of Peru (MINCETUR).

Nevertheless, post-pandemic trends already appear to present characteristics that could be proactively leveraged to speed up recovery and increase the resilience and economic impact of the industry. Tourism that is focused on open areas and with an emphasis on sustainability—such as nature-based tourism, adventure tourism, and ecotourism—is anticipated to become key for recovery. According to a 2021 WTTC Member Pulse Survey, respondents saw an anticipated 16 percent increase in importance when international travel resumes for this type of tourism. In a November 2021 survey by data firm STR, more than 30 percent of respondents expressed that they continue to seek out more rural experiences to escape the crowds and engage more with the outdoors. See figure 5.9.

FIGURE 5.9 WORLD TRAVEL AND TOURISM COUNCIL MEMBER SURVEY SEGMENT IMPORTANCE VARIATION



Source: WTTC and World Bank Group, October 2021 survey.

Nature-based tourism offers Peru an opportunity to recover faster, while creating a stronger and more diversified sector

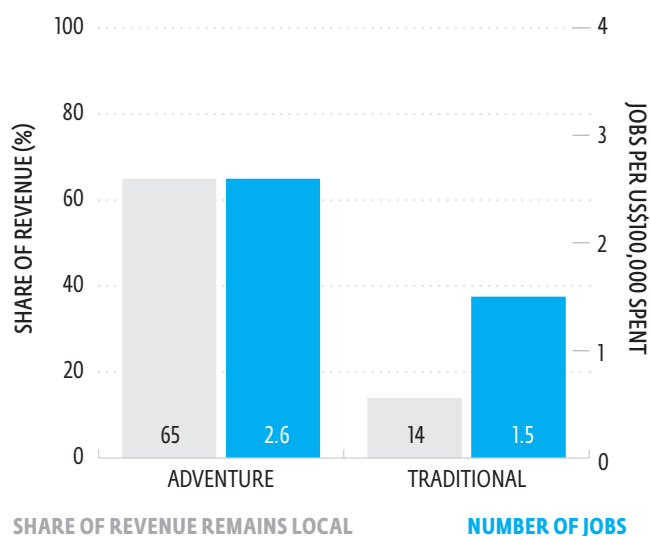
Despite structural competitive weaknesses and high geographic concentration of destinations, Peru has untapped potential to diversify into higher value-added tourism segments. Although culture is the predominant activity driving tourists to Peru, the country is well placed to capture other market segments such as nature-based tourism, including adventure and ecotourism (see box 5.6). As per the World Economic Forum's Travel and Tourism Competitiveness Report of 2019, Peru ranked 13th (out of 140 countries) for its natural resources, although only about 40 percent of all arrivals identified a nature-based activity as a reason for their visit to Peru in 2019. But visitor distribution remains heavily concentrated in two areas, Lima and Cusco, with limited diversification to other regions. Access and connectivity outside of these two regions, safety and security, and the lack of a conducive business environment remain key challenges for subnational diversification of destinations in the sector.

BOX 5.6 MEET THE NATURE-BASED TRAVELER: EXAMPLES FROM THE UNITED STATES AND AUSTRALIA

- Adventure Intensives** look for experiences that give them a deeper contemplation of life while getting out of their comfort zone and supporting local communities. This is the most adventurous of the three target segments and the only group willing to endure some discomfort for an interesting experience. They are both single millennials and the adventurous 35–44-year-old couple with children. This group is also likely to visit more than one country on a single trip. They are looking for some element of risk and typically do the same adventure activities repeatedly and regularly, giving them expert and advanced skills. This segment is worth about US\$40 billion, only accounting for US tourists.
 - Experience Samplers** want to get out of their comfort zone and connect with the local community and will take some risks along the way. They are composed of two groups. Both have more women, and the younger group of travelers (18–24 years old) have lower incomes and education levels and are more likely to live on their own while the older group (45–54 years old) has higher incomes and education and is more likely to be married and living with a spouse and possibly children. What ties them together are that both groups are interested
- in learning new things and having new experiences. They are not competitive, and they want to get the most out of their vacations, so they are interested in a wide variety of activities. They talk about taking risks and like experiences with an element of danger—although what they perceive to be “dangerous” might not actually be that risky. They are looking for excitement and are generally interested in culture but do not want to sacrifice comfort in the process. This segment is worth US\$32.2 billion, only accounting for US tourists.
- Cultural Explorers** are older travelers (55+ years old) and just slightly more male. The majority are in middle-income households and are more highly educated than average. This segment is usually married and living with their spouse (no children in the house) or sometimes alone. Cultural Explorers are very interested in learning new things and actively seeking new experiences. They are not risk takers nor competitive and enjoy nature and scenery more than average. Cultural Explorers want to engage in cultural experiences and enrich their knowledge. This segment is worth US\$23.8 billion, only accounting for US tourists.

Source: IFC, “Shaping the Future of Adventure and Cultural Travelers from the United States and Australia” (IFC, Washington, DC, 2019)

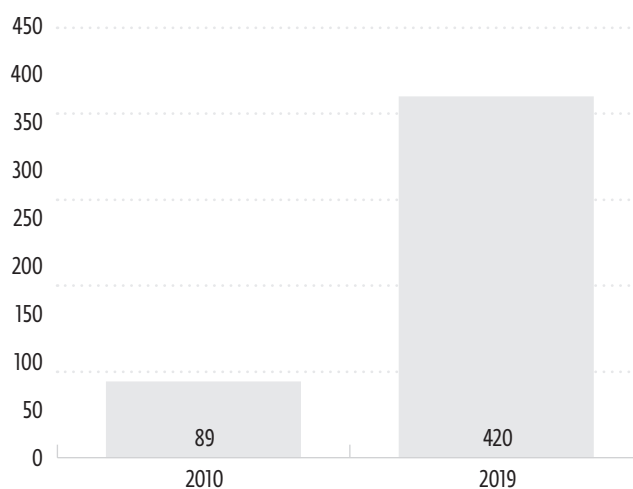
Nature-based and adventure tourism has a stronger and more direct impact on local economies, increasing the potential role of these types of tourism in generating inclusive growth and promoting regional development. The Adventure Travel Trade Association (ATTA) estimates that the global nature tourism market represents about 30 percent of global travel expenditures.¹⁵⁹ This places the global value of the segment between US\$420 billion and US\$683 billion for 2021. While showing considerable variation, these estimates seem consistent with other sources—US\$586.3 billion for the overall market in 2018, or US\$470 billion just for the soft-adventure market.¹⁶⁰ Nature travelers tend to be more interested in experiencing the authentic destination and therefore spend more money locally. In Peru, nature tourists spent an average of US\$1,553 and stayed for 15.5 nights in 2019. Non-nature tourists spent approximately US\$507 and stayed 6.5 nights. Research from the World Bank, US Agency for International Development (USAID), and ATTA found that generating US\$10,000 in a local economy takes approximately 96 cruise-tourists, 9 package tourists, or 4 nature travelers.¹⁶¹ Adventure tourism’s impact in the local economy is much larger than traditional tourism, as seen in figure 5.10. Given its heavy dependence on the ecosystems and consumer preferences—almost half of adventure tourism providers in South America are confident their clients would pay more to have funds directed to climate action—adventure tourism has strong potential to incorporate regenerative practices. See figure 5.11.

FIGURE 5.10 TOURISM SEGMENT COMPARISON


Source: ATTA (Adventure Travel and Trade Association), 2021.

FIGURE 5.11 GLOBAL ADVENTURE TOURISM MARKET SIZE








(in US\$ billions)













Source: ATTA (Adventure Travel and Trade Association), 2010, 2021.

Peru is well positioned to attract this tourism market segment, particularly around soft-adventure subsegments. On the 2020 Adventure Tourism Development Index, Peru ranked relatively high in both global and regional rankings, 29th and 4th, respectively. For Latin America and the Caribbean, Peru is behind only Chile, Costa Rica, and Uruguay. This index measures the adventure tourism competitiveness of the countries' destinations and the destinations' overall resilience. The number of foreign visitors engaging in adventure activities grew by 28 percent annually between 2013 and 2017. In Amazonas, the main visitors are either backpackers or high-spenders, interested in cultural (Kuelap) and nature-based activities (Gocta Waterfall). International history and culture lovers are also interested in the region's many archaeological sites and museums. In Playas del Norte, most visitors are millennials, digital nomads, national surfers, young Ecuadorians, and nature-based tourists. The nature-based segment is more relevant in Tumbes than in Piura, given the presence of two natural, protected areas. Although overall arrivals have increased, the nature-based segment is currently stagnated. Within each destination the combination of various soft-adventure activities for most visitors reveals the potential to attract Adventure Intensives, Experience Samplers, and Cultural Explorers. See table 5.4.

TABLE 5.4 SOFT-ADVENTURE MARKET POTENTIAL, PERU FIT AND COMPARISON WITH SELECTED COUNTRIES

SOFT ADVENTURE	RATING	EXPLANATION
ECONOMIC IMPACT		
Market size		Globally 30% of all travel. For Peru, 1.6 million international visitors and 13.7 million domestic tourists.
Growth potential		13.3% CAGR globally from 2009 to 2016. Broad appeal and low barriers to entry
Economic impact		Estimated at US\$4.8 billion only accounting for tourists' spending in Peru. Global average trip spending is \$3,000 for 8 days compared with Peru's average of US\$932 and 11 days, respectively.
Resilience		Small-group, outdoor activities are less vulnerable to COVID-19 risks.
Inclusiveness		At least 65% of total Adventure and Soft-adventure trip costs remain in-country. US\$10,000 in a local economy takes approximately 96 cruise-tourists, 9 package tourists, or 4 nature travelers.
PERU'S COMPETITIVENESS		
Advantage		Sixth-most biodiverse country in the world
Destination readiness		Asset-rich and protected areas often lack visitor infrastructure, staffing, services, and connectivity.

SOFT ADVENTURE	RATING	EXPLANATION
Visitor and market fit		Strong market fit. Top markets are United States, Australia, United Kingdom. Demographics: Diverse, younger groups and families. Distribution: Self-organizing (41%); use local tour operators (21%). For regional inbound tour operators, 26% of bookings are own website, 31% through phone/email/social media, 28% travel agent, and 14%, online travel agencies.
Segment enablers		Low stakeholder coordination, private sector participation, and public sector capacity. Environmental regulations are outdated, lacking implementation and enforcement.
COLOMBIA'S COMPETITIVENESS		
Advantage		Colombia is the world's second-most biodiverse country (10% of global biodiversity).
Destination readiness		Protected areas often lack adequate visitor infrastructure, staffing, basic service provision, and suitable ICT connectivity.
Visitor and market fit		Strong market fit, appealing to domestic, international, and regional markets. Demographics: Mostly couples, followed by family, friends, and groups. Distribution: Direct sales, 60% and growing. ^a Social media is increasingly important.
Segment enablers		Ecotourism is regulated by the 2003 Policy of Eco-Tourism Development, and 1996 Tourism Law. Concessions guidelines in place. Reduced 9% tax rate. ^b
CHILE'S COMPETITIVENESS		
Advantage		Chile possesses about 30,000 species, 25% endemic. The central and southern zones are considered a global biodiversity hotspot and among the most threatened.
Destination readiness		Lack of visitor infrastructure, staffing, basic service provision, and ICT connectivity.
Visitor and market fit		Strong market fit, appealing to all markets. Includes soft adventures and custom.
Segment enablers		Has the Route of Parks trail that connects 17 national parks. Chile was named the World's Leading Nature Destination for 2020 and 2019 in the World Travel Awards.

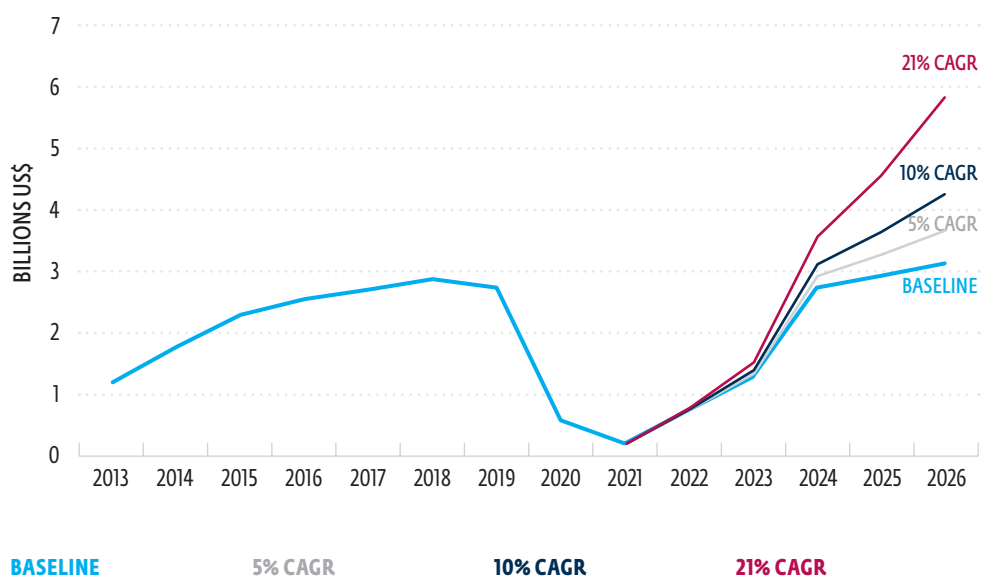
Note: CAGR = compound annual growth rate; ICT = information and communication technology.

a. Adventure Tourism Market Report, Allied Market Research, 2020.

b. "Colombia Aims for Post-pandemic Tourism Market," Financial Times, October 7, 2020.

If recommendations are put in place, Peru could increase its share of nature-based and adventure tourists, thereby accelerating the recovery in the sector and boosting the economic impact of tourists, especially in the regions outside Lima. Recovery is expected about 2024. If growth goes back to historic levels equal to the average growth from 2014 to 2019 (8 percent per year for domestic travel and 7 percent per year for international travel), Peru can expect 64 million domestic tourists (spending US\$120 on average) and 5 million international visitors (spending US\$932 on average) in 2026. This is overall total spending of US\$12.35 billion. If there is no change in the composition of current international travelers to Peru over the next five years, 2026 will see a total international nature-based tourism revenue of approximately US\$3.15 billion. Because of its overall constraints, the share of nature-based tourists to Peru has decreased since 2015 and yearly growth has shown a timid 5 percent. However, Peru could reach the tourism average CAGR of 21 percent, increasing the share of nature-based tourism, accelerating the recovery, and increasing the overall impact, if adequate recommendations are put in place. Even if that is not attainable, Peru stands to gain between US\$500 million and US\$1 billion additional revenue as shown in figure 5.12.

FIGURE 5.12 PERU NATURE-BASED TOURISM REVENUE SCENARIOS



Source: World Bank analysis.

Note: According to ATTA research, the adventure tourism market showed the highest growth between 2012 and 2017, with a 21 percent CAGR. When the same estimate methodology was used for adventure tourism in Peru, the CAGR for 2012–19 was about 75 percent. With that estimate, three scenarios were formulated: no reforms (Peru would lose competitiveness in the global markets and its growth, while present, would be lower than until now); a medium degree of reforms (thanks to some reforms, Peru would not lose competitiveness and could be able to reach a higher level of growth, around 10 percent CAGR); and a high degree of reforms (given the potential of its asset base, and in combination with reforms that strengthen promotion, infrastructure, planning, and product, Peru could aspire to reach a growth similar to the one in best-performing years for the market, 21 percent.)

ATTA = Adventure Travel Trade Association; CAGR = compound annual growth rate.

Illustrative destinations where existing supply and market fit for shifting global demand could be leveraged to trigger investments and jobs

Data analysis, consultations with stakeholders, and dialogue with the Ministry of Foreign Trade and Tourism (MINCETUR) reveal a range of destinations for diversification focused on nature-based tourism in Peru. MINCETUR's diversification agenda proposed a series of illustrative destinations for development. The following section provides an overview of the offering of some of the most prominent for nature-based development: Amazonas, Arequipa, Playas del Norte, and Selva Central. By implementing strategic policy actions, tourism's average industry CAGR could reach 21 percent. Given the higher spending potential of nature-based tourism, the country could be expected to gain up to an additional US\$2.6 billion in revenue in 2026 alone, compared with a business-as-usual scenario.

The department of Amazonas is a relatively unknown destination with significant potential for nature-based tourism. The combination of Amazonas's key cultural and natural attractions (Chachapoyas, the Archaeological Complex of Kuelap, and the Waterfalls of Gocta) is aligned with what is demanded by the Experience Sampler and Cultural Explorer segments. The ability to see rare birds, butterflies, and wildlife amid the towering cliffs, pristine waterfalls, wild rivers, and cloud forest is highly appealing to these groups. They want to enjoy the clean air, peaceful scenery, unspoiled villages, hiking trails, and unexplored ruins. The region accounts for only 1 percent of domestic tourism arrivals and 0.5 percent of international, revealing that it is relatively unknown in global markets. However, it attracts a larger share of Peru's international nature-based tourists, 1.3 percent, which shows untapped potential. Limited market intelligence, limited product offering (only 4 percent of trip expenditure is spent on activities), informality in and limited quality of accommodation establishments (only 32 percent are classified according to Peru's star rating; no hotel above 3 stars), and lack of satisfaction with access infrastructure show key areas where improvements are needed to increase visitation from these segments and achieve better tourism planning.

Arequipa, with a tradition of strong domestic business tourism, could leverage its appeal to nature-based travelers to diversify its offering. Arequipa attracts about 14 percent of all international visitors to Peru, and 29 percent of all nature-based ones, showing a stronger appeal and a more advanced stage of development. Attractions like the Monastery of Santa Catalina and Colca Canyon offer a mix of adventure and cultural activities, with plenty of natural appeal for the three identified segments. Connecting the Arequipa City area to popular destinations such as Lake Titicaca with tours offering small groups and unique immersive experiences could strengthen the offering and appeal to those looking to visit the lake. Existing tours should be redesigned, or new tours should be developed to incorporate the cultural aspects of Arequipa City. Festivals and cultural centers in the city could appeal to all three of these segments if they are not too crowded and offer an authentic and respectful experience. Deficient connectivity and internal transportation and limited product—only 6 percent is spent on activities—are key areas for improvement. Its traditional meetings, conferences, and exhibitions focus has resulted in relatively higher-quality

hotels; 6 percent are above 3 stars and 44 percent are classified. However, about 75 percent of the hotel supply is concentrated in Arequipa City, which limits the potential to extend tourism outside the city. Given that between 10 percent and 15 percent of all domestic visitors are business travelers, a segment that is likely to have less importance after COVID-19, recovery strategies should aim to leverage Arequipa's potential for nature-based tourism.

Playas del Norte could be partially reoriented toward the growing nature-based and adventure tourism, but product and institutional shortcomings present a challenge.

The destination includes two regions, Piura and Tumbes. On average, 16 percent and 10 percent of international visitors visit them, respectively, mostly due to the proximity to Ecuador. Until recently the destination attracted tourists searching for sun and sea, but nature and other travelers are increasing. Nature travelers enjoy ocean activities like snorkeling, scuba diving, surfing, and kayaking, and they also want to explore the local area. Some of this segment may be interested in a combination trip exploring other parts of Peru. Marine-activity enthusiasts will more likely be interested in this region, with the highest-value travelers being scuba divers, but the region could also develop water-based wildlife viewing tours (including live-aboard experiences for divers). The segment most likely to be interested in this are Adventure Intensives. Limited and informal hotel supply—90 percent are 3 stars or less and no eco-lodges exist—is holding the potential back. Lack of a common destination management organization (DMO), proper zoning, access to data and market intelligence, water and sanitation, planning, and marketing, as well as uncoordinated product development, weakens the potential to attract the segment.

Selva Central is the least-developed destination of the prioritized set, but its offering is primarily nature based and offers soft-adventure tourism for Peruvian visitors.

The destination has strong natural and cultural assets that could underline a strong adventure tourism sector. For example, the Yanachaga Chemillen National Park and its links with indigenous communities (such as the Ashaninka and Yanesha) make the destination attractive to both Experience Seekers and Cultural Explorers. Moreover, its proximity to Lima makes it an ideal destination for weekend and other short domestic tourism getaways. However, the destination receives about 3 percent of all domestic tourists and less than 0.3 percent of international tourists. Complex administrative setup (the destination crosses two different administrative regions and does not have a management entity) limited ground and air connectivity, lack of product development, and poor promotion are critical bottlenecks to tourism development. See box 5.7.

BOX 5.7 UNLOCKING GREEN GROWTH THROUGH TOURISM: OPTIONS AND EXAMPLES FOR A NATURE-SMART ECONOMY

Peru's potential as a nature and adventure tourism destination depends on its ability to maintain healthy landscapes and adapt to and mitigate climate change impacts. Environmental degradation in Peru is estimated to cost about US\$7 billion to US\$10 billion per year, or about 6 percent of GDP.^a An increase in tourism, decarbonization, safeguarding natural assets and biodiversity, and protecting against climate change can complement each other. However, both policy action and private sector buy-in are necessary to support the transition to a nature-smart economy. Some innovative approaches and cases are presented here:

Tourism-linked green bonds: The example of Rwanda and opportunity for Peru

Gorilla tourism generated US\$107.3 million in 2019, which corresponds to 21.5 percent of total tourism revenues but only 15.7 percent of visitors. Capitalizing on this success but also with the objective of bridging the investment gap in nature-based restoration for protected areas—about US\$3.5 billion gap between 2020 and 2021—the World Bank studied the potential for the issuance of a tourism bond that follows a similar approach to the Seychelles Blue Bond. This bond would combine some of the features of a sovereign green bond for capital raising with an environmental impact bond for capital deployment. The capital deployed would benefit entities in the commercial tourism sector with a track record of advancing nature-based tourism, as well as the expansion of conservation areas. It is expected that tourism-generated revenue would allow for the coupon payments to be paid.

Peru released its Sustainable Bond Framework in July 2021, and the Lima Stock Exchange issued its guidelines in April 2021. Given the high visitation numbers and a revenue estimate of US\$50 million a year for Machu Pichu in entry fees alone, Peru can capitalize on its tourism industry to ensure the climate-smart development of the country. The country could study a similar approach to issue a sovereign Peru Tourism Bond. This bond would use an anticipated increase in user fees from the

tourism sector to key areas (like Machu Pichu) and tax revenue. Like a green sovereign bond, it could be issued to rescue and redevelop the nature-based tourism sector in Peru by the expansion of the conservation areas together with concessions rights as well as the recapitalization of the tourism and hospitality industry. The government could deploy these resources on a loan or grant basis to the commercial tourism sector in the anticipation that the tax revenue generated from such re-lending of the monies would enable the repayment of the bond. The selection of the beneficiaries within the tourism and hospitality industry would focus on reputable and tax-paying commercial entities with a strong track record of advancing nature-based tourism.

Decarbonization of tourism destinations: Replicating and expanding Machu Pichu's example

In September 2021 Machu Pichu became the first Carbon Neutral Destination in Peru, thanks to the collaboration between the municipality of Cusco, the National System of Natural Protected Areas (SERNANP), the hotel group Inkaterra, and the AJE Group, a multinational beverage manufacturing firm. To that end, a series of actions were developed: donation of a plastic compacting plant, the installation of an organic waste treatment plant, which transforms garbage into natural coal, and the reforestation of a million trees for the Historic Sanctuary of Machu Pichu directed by the SERNANP. Furthermore, Inkaterra was named the first "climate-positive" hotel brand in the world.

This situation presents an opportunity for Peru, which has already prioritized the decarbonization of tourism in its nationally determined contributions. The Machu Pichu partnership could become a model for destination development in Peru. There have been conversations to extend this partnership to another eight cities.

To do so, a series of coordinated actions should be put in place. Collaboration between stakeholders is a must for mobilizing the private sector. Increasing the sense of urgency through public awareness

campaigns, increasing promotion of sustainability efforts at the firm and destination levels, and fostering knowledge sharing and best practices from Inkaterra are important. Developing financial products targeted to promote investments in

decarbonization, offering more attractive financial structures, and devising financial incentives are necessary measures to overcome the main barriers to decarbonization.

Source: UNWTO (UN World Tourism Organization), Machu Pichu: Primera Maravilla Carbono Natural del Mundo” (2020); Benitez Ponce, Pablo Cesar; Blignaut, James Nelson; Kalisa, John; Katanisa, Peter; Rutebuka, Evariste; Mulisa, Alex Muyombano., “A post-pandemic, nature-based tourism and conservation Recovery Plan for Rwanda” (2021, World Bank, Washington, DC).

- a. IADB (Inter-American Development Bank), “Carbon Neutrality Could Provide Peru with US\$180 Billion in Net Benefits,” July 26, 2021. <https://blogs.iadb.org/sostenibilidad/en/carbon-neutrality-could-provide-peru-with-us140-billion-in-net-benefits/>.

Unlocking private sector investment and growth in nature-based tourism in Peru

Strengthen institutional capacity for prioritization, coordination, and planning

Overall, limited prioritization of the adventure and nature-based tourism segment is holding back Peru’s potential. Despite Peru’s endowments, efforts to develop and capitalize on the potential of adventure and nature-based tourism have been limited. Until recently, research efforts to understand trends in adventure tourism have been sparse, and the segment is missing from marketing and promotion efforts. Investing in research on target adventure markets, adventure trends, and products with potential, and sharing that information with stakeholders, will help demonstrate the prioritization of the adventure sector and encourage PPPs. Any marketing push should include business-to-business marketing, which will build relationships with adventure operators who can sell adventure products; business-to-consumer marketing through digital channels to inspire travelers to experience the adventure product; and connecting the travelers to the businesses that sell the adventure products.

Public sector actors, particularly local and regional governments, have low capacity for tourism asset development, including in natural settings. Municipalities and regional government lack the necessary skills to develop, promote, and manage tourism development. Implementation of the Strategic Regional Tourism Plans is limited as is the enforcement of regulations applicable to the tourism sector, including environmental. Even in cases where new regulations align with current best practice, lack of capacity results in limited enforcement. Issues of competencies and skills are also problematic, with a general lack of understanding of what should be in place for adventure and nature-based tourism. Most jurisdictions have not prepared relevant planning instruments (for example, ecological and economic zoning, a territorial conditioning plan, and urban development plans) and when prepared, these often do not include disaster risk management considerations. Assistance and incentives should be put in place to ensure that required planning mechanisms are developed, and enforcement and implementation are strengthened.

Poor stakeholder engagement and institutional coordination stifle the potential growth of nature-based and adventure tourism. Stronger institutional collaboration on the management and promotion of adventure and nature tourism, such as the one reflected in the 2021 memorandum of understanding between MINCETUR and SERNANP, could have a strong impact on markets. The goal should be to ensure proper tourism management plans for protected areas, actionable market research, joint promotional efforts, and the development of tourism products that consider both tourism revenue potential and conservation efforts. Public-private coordination and overall destination management should be reinforced through the creation or the revamping of DMOs (box 5.8). The funding and structure would benefit from stronger alignment with best practices, ensuring a participatory approach, and considering past experiences in each destination. Coordination and capacity-building efforts should also include local communities, which adventure travelers put a lot of value on. Coordination is also necessary to ensure proper planning, because three different central government agencies—the Presidency of the Council of Ministers, the Ministry of Environment, and the Ministry of Housing, Construction, and Sanitation—have responsibilities related to territorial organization, refurbishment, and planning.

BOX 5.8 DESTINATION MANAGEMENT ORGANIZATIONS: ROLE, CHARACTERISTICS, AND LESSONS LEARNED FROM PERU

A destination management organization (DMO) is the leading entity that facilitates partnerships with various authorities, stakeholders, and professionals to achieve a unified mission toward a destination's vision.^a The role of a DMO is to lead and coordinate activities in a coherent manner and at the service of the entire tourism value chain and the varied groups of private and public sector stakeholders. The management of destinations is a comprehensive process that includes activities such as handling marketing, local accommodations, tours, events, activities, attractions, transportation, and more. Depending on the specifics of a destination and its needs, these functions could be much broader and include strategic planning, implementation of the tourism policy, product development, crisis management, quality improvement and assurance, workforce development, and sustaining the cultural and natural assets within its geographic boundaries. Destinations that are effectively managed have several advantages over those that are not. For example, good management can give destinations a competitive edge, boost their sustainability and their resilience to external shocks, increase the

inclusion of local communities, and ensure both visitors and residents feel heard. The governance structures of DMOs are varied: they include a single public authority, public-private partnership models, and entirely private models. The financing mechanisms of DMOs are also varied, but they are usually funded through appropriations, specific tourism taxes and levies, or membership fees. No system is necessarily better than another, and successful DMOs exist in all cases.

Although specifically referred to public-private models, past experiences in Peru hint that DMOs should (a) consider the social, geographic, and political context of their territories, incorporating them into their identity; (b) put in place the mechanisms to ensure they are strong institutions, including financial and human resources with the relevant knowledge; (c) establish goals and milestones in the financial aspects, to ensure management strategies can be deployed; and (d) ensure broad representativity of institutions and the private sector, critical to attain buy-in, effective planning, and long-term sustainability.^b

a. UNWTO (World Tourism Organization), *UNWTO Guidelines for Institutional Strengthening of Destination Management Organizations*, 2019.

b. SECO (Switzerland State Secretariat for Economic Affairs), *Lecciones de la Implementación del Modelo de Gestión Público-Privado de Destinos Turísticos en el Perú*, 2014.

Infrastructure and connectivity

Connectivity and access are key constraints to developing tourism in secondary destinations, including nature based locations. Issues related to access infrastructure and lack of interregional routes affect both road and air connectivity, to and within Peruvian cities and regions. For example, in Amazonas the Chachapoyas airport does not have the capacity to receive large aircraft. Jaen’s airport has the facilities to receive large carriers, but the ground connection with Chachapoyas city presents clear roadblocks to demand. In Arequipa, the airport is congested and difficult to access. In Playas del Norte, internal ground connectivity—small roads, inexistence of bypasses, and limited secondary roads to access tourism assets—also affects potential development. The government of Peru—and regional governments—could explore options to upgrade regional airports and various access roads through existing PPP frameworks. An expert-led working group of stakeholders (small operators, airlines, regulators, and so on) should be set up to understand barriers to interregional air travel, based on international good practice. Improvements in access infrastructure and transportation would have positive spillovers for export-oriented sectors, like agricultural products, in these regions. Although adventure travelers are less sensitive to deficiencies in hard tourism infrastructure, they are much more sensitive to soft infrastructure, such as signage, good guide training, and clean trails. As such, adventure destinations need to prioritize the latter.

Health and safety facilities and equipment—essential to nature and adventure tourism, which usually takes place away from serviced cities and towns—are very limited, presenting a critical bottleneck. For Arequipa, none of these issues seem to be binding constraints for tourism development, although they could be a problem around Colca. The situation is the reverse for Amazonas and Playas del Norte. In Amazonas the lack of medical equipment and personnel and emergency response services could create important bottlenecks to tourism development, particularly around adventure tourism. Emergency services are also lacking in Playas del Norte, despite its having a hyperbaric chamber, which would help with the development of diving and related tourism products. Lack of multirisk maps and information, as well as of early-warning systems and resilient infrastructure, is also an issue for the overall safety of the destination. Direct financing or budget support would be required to support the establishment of emergency, safety, and health systems and facilities. Specific bottlenecks to the establishment of private health services could be studied with the objective to complement existing public offerings.

Lack of water access and inadequate solid waste and sanitation infrastructure and management are a health hazard and have an impact on both the attractiveness of and the ability to develop destinations.¹⁶² In the illustrative destinations, access to water, water treatment, and waste management is concerning for the private sector, particularly in rural areas, but relevance varies between and within regions. Arequipa is better positioned in the three metrics, although its performance depends on the district (some of them have access to drinking water, solid waste management plants, and sanitation infrastructure, while others do not). In the case of Playas del Norte, in 2019 only 71 percent of rural households in the Tumbes Region and 75 percent of the Piura Region had access to public water supplies, and only 14 percent of rural households in Tumbes and 20 percent in the Piura Region had access to wastewater systems. Even in urban areas, only 85 percent of households in the Tumbes Region

have access to solid waste collection services (the lowest in the country), and very few rural households have access to waste collection. In Amazonas, access to these services is better, but only 61 percent have access to wastewater systems.

Investments in infrastructure that can bolster tourism development can generate positive developmental spillovers for the overall public in these regions. The enhancement of these health, water, and sanitation services are not only justified to strengthen the enabling environment for tourism development but also constitute investments with the potential to have multiplier developmental impacts on other sectors, such as agriculture, and on the overall inclusion, equality, and quality of life of citizens in these areas. Although tourism can increase the rate of return and feasibility of these investments, socioeconomic impacts and returns on investments in these services and infrastructure need to be analyzed with the broader set of beneficiaries in mind.

Product adaptation to strategic market demand

Existing products should be upgraded, while new ones should be developed and targeted to attract identified strategic segments. Adventure and nature-based tourists seek destinations and companies that can offer unique, high-quality experiences. To offer such services, there is a need to improve the overall skills of operators, particularly for specialized tourism such as risky activities, nature observation, bird-watching, interpretation of heritage, and languages. Advisory services for designing experiences in accommodation and travel agencies are also needed. Given distribution channels for adventure tourism, digitalization and technology adoption by service providers should be increased.

Absence of certifications for specialized tourism operators is a deterrent to adventure and nature-based tourists. Nature travelers would appreciate that operators have nonessential certifications such as from the National Institute for Civil Defense (INDECI) for responding to disasters, and international ecotourism awards and seals. These should be used in promotional materials to entice visitation. The British Standard for Adventure Tourism, which sets out requirements to ensure that effective operational systems are in place to assess and manage the risks, is expected by British and European travelers and valued by US travelers. For coastal destinations that focus on water-based adventure tourism, internationally recognized certifications (Professional Association of Diving Instructors, PADI; Scuba Schools International, SSI; Divers Alert Network, DAN; and so on) would appeal to this niche of travelers. International Organization for Standardization (ISO) Certificates would help with safety and security issues. Capacity-building programs will be required to improve the quality of MSMEs and enable them to formalize and gain relevant certifications. In light of the pandemic, expanding the biosecurity certification of operators—WTTC Safe Travels Seal, ATTA COVID-19 Guidelines—should be continued. See box 5.9.

BOX 5.9 COMPARISON OF PERUVIAN GUIDE CERTIFICATIONS WITH MAIN COMPETITORS

Official tourist guides must be registered with the Regional Offices or Offices of Foreign Trade and Tourism of each region, and in the case of Metropolitan Lima with the Ministry of Foreign Trade and Tourism. Once guides are registered, their data are entered into the National Directory of Qualified Tourist Service Providers. The directory of cardholders is publicly available. However, interviews suggest that this is not frequently enforced or publicized for travelers, so the requirements are not always adhered to, and it is a much more “informal” process. In summary, regions and niches in the industry have defined their own procedures and requirements, but there is no consistent measurement or standardization.

Chile has two separate elements for tour guide registration—the Registry and the Q seal of tourist quality. The Registry corresponds to the registration of Chilean companies in Sernatur (National Tourism Service). It is voluntary, except for adventure

tourism companies and accommodations. On the other hand, the Q Seal requires that, to be certified, guides must comply with quality and safety standards, established in Technical Standards. However, the requirements are not well publicized for tourists, similar to Peru.

Colombia has a new, voluntary certification to recognize businesses that comply with the government’s health and safety protocols (for COVID-19). Articles 61 and 62 of Ley 300 of 1996 require all tourist guides to have a professional license card. A further decree (504) in 1997 clarified that there are three ways to obtain the card: from a university qualification, from qualifications done before 1996, or, as for most new guides, by doing a course in the government’s National Training Service (SENA) technical schools. It seems that this requirement is more enforced than in Peru or Chile but still not well publicized for tourists.

Sources: Gobierno de Peru, “Registro de Empresas turísticas Calificadas,” 2021; Secretaria Nacional de Turismo de Chile, <https://registro.sernatur.cl/> and <http://www.calidadturistica.cl/la-certificacion/>; interviews with industry experts.

Regulatory framework

Despite small, recent modifications, the Adventure Tourism regulatory framework is still in need of an upgrade. IFC worked with previous governments to that effect, but shifting priorities have stalled progress so far. The 2016 Adventure Tourism Safety Regulations were modified in July 2021 to include a wider range of adventure tourism activities like bungee jumping, kite surfing, or kayaking, but the overall provisions are still outdated. As stated before, any regulatory update should be accompanied by actions directed to increase the capacity of relevant institutions (Office of Trade and Tourism, MINCETUR; Regional Offices of Trade and Tourism, regional directorates of foreign trade and tourism, DIRCETURs; regional offices of foreign trade and tourism, GERCETUR; local governments) and the private sector. Previous unfinished efforts to update regulations should be picked up.

Labor regulations in tourism are relatively inflexible and unspecific for the sector, which has implications on informality. Licensing for tour operators should be simplified on a national and regional level to improve both formalization and visitor safety (for example, MINCETUR, Municipal Operation License, Licensed Inca Trail Tour Operator, local operating licenses). Unlike other sectors, such as agriculture, the tourism industry does not have a specific labor regime. Because of the seasonality of tourism employment, current labor regimes create inefficiencies in hiring practices and drive-up informality. Chapter 4, box 4.3, of the CPSD touches upon the impacts and externalities of the special labor regime for agriculture. Important lessons can be learned from that experience—which was a factor in the growth of agriculture in Peru— but their application to tourism could prove challenging because the economic activities typically mapped to tourism are quite broad (ranging from tour operators and hotels to restaurants and transportation). In addition, the National Superintendence of Labor Inspection (SUNAFIL) does not have standardized and predictable protocols for its interventions. The combination of these factors, paired with the incentive system in place for its agents and the fact that inspections only take place in formal businesses, further increases informality. A review of the incentive systems for SUNAFIL should be undertaken to remove negative impacts on formalization. In parallel, a specific tourism labor regime that adapts to the realities of the sector could be assessed and, if necessary, put in place. Resuming establishment of the Single Window for Tourism could centralize and streamline processes and help reduce informality.

Inadequate property and land management and titling and district zoning regulations are key hurdles to greenfield investments in the tourism sector and increase informality. Incomplete land records, missing or conflicting land titles, and land disputes at the community level impact private and public sector investment in Peru's nature-based tourism assets. Affected public and private investments range from the development and expansion of the supply of hotels and other tourism establishments to the upgrading of local roads, services walkways, and so on. The complexity of this issue is accentuated by the fact that land and property ownership, including collective ownership of land by native and peasant communities, has often passed from generation to generation without a property title or without being registered in the National Superintendence of Public Registries. These issues are of particular importance for destinations like Playas del Norte and Amazonas, and rural areas of Arequipa. District zoning and the lack of urban development plans (only 16 percent of municipalities have one) also generate uncertainty for builders and investors, promotes arbitrariness from authorities, and increases costs due to payment of nonmandatory certificates. These costs are usually paid to reduce the impact of zoning and parameter changes and to increase legal certainty by builders. If in-depth destination analyses are performed and the development of integrated development zoning planning, led by regional or local governments with strong private sector participation and consultation, are put in place, significant improvements could be made.

Interventions by subnational governments can directly affect entry and expansion of new players in the sector. Subnational government not only lack the skills to develop tourism but also often introduce barriers through interventions that affect entry or expansion in the sector. For example, they lack an estimative assessment of how interventions will affect market competition. INDECOPI can, with objectivity and facts, eliminate barriers and in the past few years has identified barriers that affect sectors relevant to tourism, such as telecommunications, transport, construction, and retail, among others. Municipalities might also promote characteristics beyond what is foreseen in the National Building Code, and could help protect the character of districts and neighborhoods. In addition to zoning, the construction and operation of private bus terminals, and access to public bus terminals, are issues they can address. Licensing requirements are very restrictive and said access under fair, reasonable, and nondiscriminatory terms remains elusive. Strengthening INDECOPI's ability to eliminate bureaucratic barriers could be key to enabling the entry of competitors into sectors that are directly related to tourism. Coordination mechanisms could be established with tourism authorities for INDECOPI to focus its official actions on regulatory barriers introduced by subnational governments that could be (directly or indirectly) affecting the tourism sector.

Access to finance

Lack of adequate financial products by local banks limits the potential for diversification outside of Lima. Loans have shorter terms and grace periods than what investors are demanding. Currently, banks in Peru offer about seven-year terms with a one-year grace period, while the industry – by the very nature of its investments – requires 12–15-year terms with about a 24-month grace period. This change would help cover the average construction times. Moreover, investors would prefer a project finance structure where debt and equity would be paid from the cash flow generated with collateral limited to the assets of the project. Some of these are offered when the project is in Lima but are not a possibility outside the capital, given that those regions are considered higher risk. In those regions, it is common for banks to demand extra-business collateral, personal guarantees, or corporate guarantees, or offer lower amounts than what would be required for the project. It will be necessary to build the capacity of financial institutions to manage tourism lending portfolios based on a sound understanding of the specific characteristics of tourism businesses. These changes will also require enhanced skills in structuring financial products, accepted risk assessment and mitigation techniques and instruments, like guarantees, or the implementation of tourism-specific Risk Sharing Facilities to encourage banks to provide liquidity to firms for short- and medium-term credit.

See table 5.5 for a summary of recommendations.

TABLE 5.5 RECOMMENDATIONS TO PROMOTE NATURE-BASED AND SUSTAINABLE TOURISM

POLICY AREA	SPECIFIC ACTIONS	TIMELINE
National level regulatory reform	<ul style="list-style-type: none"> Review SUNAFIL incentive systems. Support the assessment of reforms to the labor regime that are adapted to seasonal sectors like tourism. 	Long term
Sector-specific regulatory reform	<ul style="list-style-type: none"> Streamline procedures for nature-adventure related certification and formalization. Resume the Adventure Tourism Regulations Upgrade. Update quality and environmental regulations for tourism. Revise and adapt standards to meet ecotourism (quality norms for eco-lodges, NPA visitor centers), and specialized adventure activities needs (ISO security). Promote property regularization in rural areas especially for native and peasant communities. Support regulatory reform for the establishment of Green Building Codes and Incentives. Support the development and adoption of sustainability criteria throughout the tourism value chain (for example, accommodation providers, tour operators) to reduce emissions and overall environmental impact. 	Short to medium term
Territorial and spatial planning policies	<ul style="list-style-type: none"> Undertake in-depth destination analysis and integrated development zoning planning, led by regional and local governments with strong private sector participation and consultation. Develop cadastres and planning instruments in targeted urban and rural areas. Assess the use of Budgetary Programs (PPs), adjusted and coordinated to meet carefully designed targets. Similarly, assess the use of Incentive Programs for the improvement of municipal management by establishing targets for specific categories of municipalities. Develop master plans in key natural areas in selected destinations focused on understanding infrastructure required by nature-based tourism segments. 	Short to medium term
Subnational government capacity reinforcement	<ul style="list-style-type: none"> Support the adoption of WTTC Safe Travels protocols, including for Adventure Tourism for Destinations. Boost capacity and coordination for the prioritization, promotion, and research of nature-based and adventure tourism. Support capacity and interagency coordination for nature-based and adventure tourism. Support the creation of DMOs in selected destinations—following good practices and lessons learned to ensure long-term sustainability. Invest in capacity building for DMOs and other regional and local institutions to boost coordination and planning capacities. Support the development and implementation of destination-sustainable criteria and data collection to reduce overall tourism emissions and environmental impact. Provide capacity to local and regional governments and relevant bodies, like SERNANP and DIRCETURs, for implementing existing and new regulations. 	Medium term

Note: DIRCETUR = Office of Foreign Trade and Tourism; DMOs = destination management organizations; ISO = Organization for Standardization; PPs = Programas Presupuestales; PPPs = public-private partnerships; SERNANP = National System of Natural Protected Areas; SUNAFIL = National Superintendence of Labor Inspection; WTTC = World Travel and Tourism Council.

POLICY AREA	SPECIFIC ACTIONS	TIMELINE
Local infrastructure investments	<ul style="list-style-type: none"> • Improve and develop on-site adventure and nature-based tourism infrastructure in selected destinations (for example, signage and trails). • Improve last-mile access infrastructure to key tourism assets. • Support the acceleration and establishment of PPPs in waste and wastewater management systems and related infrastructure. • Implement waste and wastewater management systems (especially for plastic) in and around key tourism assets. • Provide capacity-building efforts to subnational entities to boost understanding of Works for Taxes (obras por impuestos) mechanism 	Medium to long term
Connectivity infrastructure	<ul style="list-style-type: none"> • Evaluate and address key blockers for domestic air travel, including regulatory reform, the establishment of Air Service Development Committees, and capacity building. 	Short term
	<ul style="list-style-type: none"> • Attract private capital to improve existing roads to secondary destinations and key assets through PPP models in regions where additionality with other export-oriented sectors can be exploited (for example, Arequipa: Route 34A between Arequipa and Patahuasi). • Support existing PPP engagements in regional airports for upgrades of secondary airports in underserved areas (for example, Chachapoyas Airport, Talara). 	Long term
Firm-level and financial sector support services	<ul style="list-style-type: none"> • Support certification and formalization for specializations in key activities (bird-watching, adventure, diving – PADI, DAN, SSI) and safety protocols. • Increase technology adoption and digitalization in tourism, including support to travel tech firms providing services to tourism providers. • Support the adoption of WTTC Safe Travels protocols including for Adventure Tourism for Operators. • Increase capacity of hotels for environmental and safety standards and green building principles. • Support EDGE certification efforts in Peru for hotels to reduce the tourism sector environmental footprint. • Support training programs with local financial institutions to launch programs on sustainable finance, with a focus on green financing, green real estate, and other sustainable solutions. 	Short to medium term
	<ul style="list-style-type: none"> • Create a guarantee fund to de-risk investment portfolio in tourism in nature-based tourism in lagging regions by local banks with government support. • Implement tourism-specific risk-sharing facilities to encourage banks to provide liquidity to firms for short- and medium-term credit. 	Medium term

Note: DAN = Divers Alert Network; PADI = Professional Association of Diving Instructors; PPPs = public-private partnerships; SSI = Scuba Schools International; WTTC = World Travel and Tourism Council.

POLICY AREA	SPECIFIC ACTIONS	TIMELINE
Other actions that can be led by private sector firms	<ul style="list-style-type: none"> • Investment in digital platforms to leverage increased direct commercial business-to-consumer relationships. • Investment in accommodation facilities within or near protected areas (for example, the Reserva Nacional de Salinas y Aguada Blanca in Arequipa) leveraging the Guidelines for Granting Rights for Tourism in NPAs and concessions arrangements. • Investment on anchor attractions around key nature-based tourism assets (for example, Colca Canyon skywalk). • Facilitate investment in luxury lodge/boutique accommodation (for example, &Beyond, Aman, Banyan Tree, Six Senses, Wilderness) in low-developed destinations to serve as an anchor for additional future investments. 	

Note: NPA = National Protected Area; PADI = Professional Association of Diving Instructors.

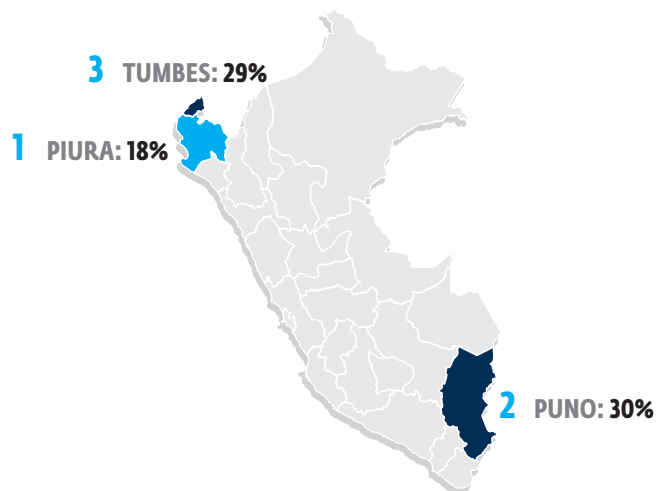
5.3 AQUACULTURE

Since the beginning of the 21st century, aquaculture has progressively contributed to the global production of aquatic living resources and animal protein. It is estimated to gain more prominence by 2030. At the national level, the controlled harvesting of species would allow a sustainable use of the various bodies of water in Peru, safeguarding its biodiversity. In addition, the accelerated growth of aquaculture production in Peru over the past decade provides good development prospects to consolidate the activity at the national level, complementing the important Peruvian fishing activity.

Overview

Peru has a growing aquaculture sector, both marine and fresh water, building on an established fishing industry. Peruvian marine aquaculture concentrates on scallops and shrimp, which are either cultivated in the Pacific Ocean or in saltwater ponds close to the ocean. Freshwater aquaculture primarily cultivates trout, using lagoons, rivers, and artificial ponds. In 2021, 96 percent of Peruvian aquaculture was concentrated in these three species with scallops accounting for 39 percent of produced volume, trout for 32 percent, and shrimp for 24 percent. Before 2020, trout registered the highest cultivation volume.¹⁶³ Most shrimp and scallops are grown on the north coast of the country in Piura and Tumbes, which account for 60 percent of the total harvest (figure 5.13). The success in Piura builds on a history as one of the most important fishing regions in Peru where the aquaculture activity benefits from an already developed cold chain to maintain product quality through its distribution to Lima for exporting purposes. The cultivation of trout is concentrated in the Andean Puno region, where the cold chain is not as developed as the regions in the coast.

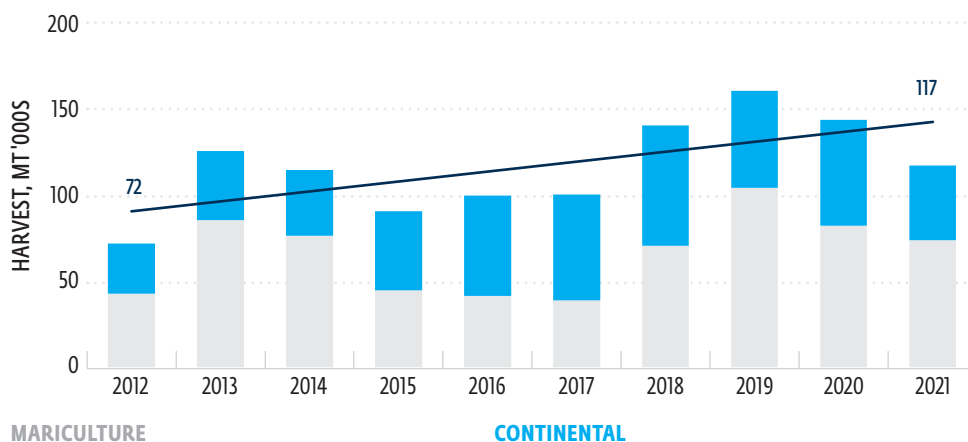
FIGURE 5.13 REGIONAL DISTRIBUTION OF HARVEST, 2022 (% CULTIVATION)



Source: World Bank staff elaborations based on statistics from the National Aquaculture Information Network in Peru (RNIA), 2023.

Before the COVID-19 pandemic, the sector had been growing rapidly, exceeding the global and Latin America and the Caribbean average. In 2021, Peru harvested 117,000 metric tons (MT) of aquaculture products (figure 5.14). Between 2012 and 2021, Peruvian aquaculture grew by an annualized 6 percent, with sizable variations between years because of the country’s vulnerability to ocean disturbances and diseases. In the pre-COVID-19 period (2015–19), Peruvian aquaculture grew at an annual rate of 14 percent, well above the global average of 4 percent. Peru’s growth was above China’s, the world’s largest producer, and the top producers in the region, Chile and Ecuador (figure 5.15).¹⁶⁴ Initial estimates show a significant fall in cultivation and commercialization of aquaculture products in 2020 and 2021, linked to the COVID-19 crisis. Total cultivation, export volume, and export value decreased by 27 percent, 13 percent, and 5 percent, respectively, compared with 2019.

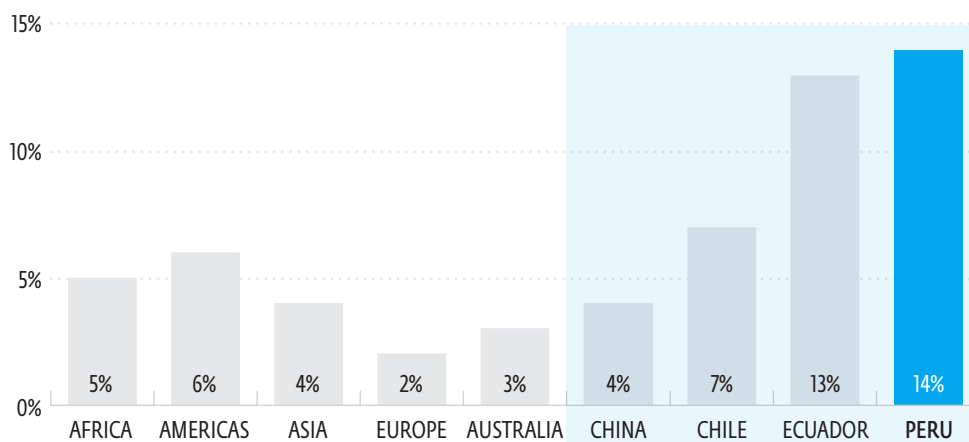
FIGURE 5.14 NATIONAL CULTIVATION IN METRIC TON BY AREA, 2012–21



Source: World Bank staff elaborations based on statistics from the National Aquaculture Information Network in Peru (RNIA) and the National Aquaculture Registry (Catastro Acuicola Nacional), 2022.

Note: MT = metric tons.

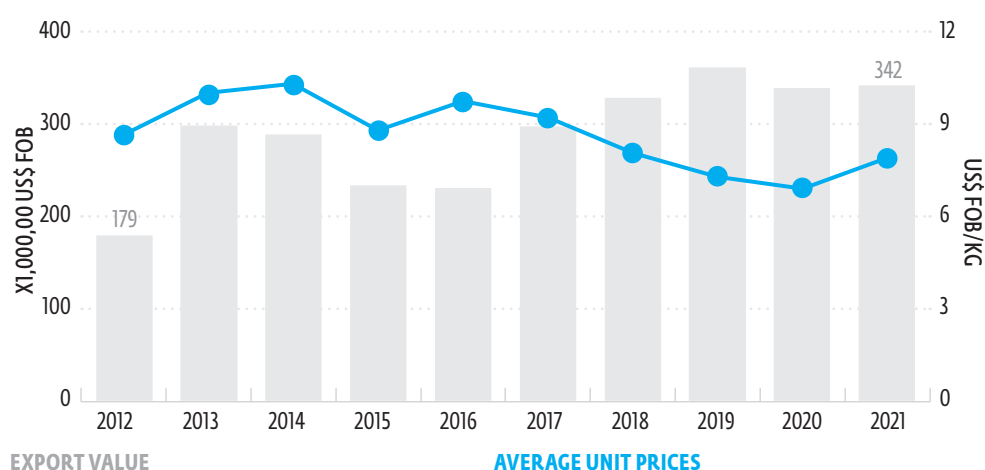
FIGURE 5.15 AVERAGE ANNUAL GROWTH OF AQUACULTURE PRODUCTION BY CONTINENT AND HIGHLIGHTED COUNTRIES, 2015–19



Source: World Bank staff elaborations based on statistics from the National Aquaculture Information Network in Peru (RNIA) and the National Aquaculture Registry (Catastro Acuicola Nacional), 2022.

Although Peru has a significant domestic market for aquaculture products, most of the production is exported. In 2021, the internal sales of aquaculture products were 37,383 MT, compared with 26,639 MT in 2012. Most of this amount corresponds to trout, which represents 87 percent of internal sales. The largest growth in aquaculture production and revenue has been generated by exports. Between 2012 and 2021, aquaculture exports doubled, reaching 51,795 MT and a value of US\$342 million in 2021 (figure 5.16).

FIGURE 5.16 NATIONAL EXPORT VALUES AND AVERAGE UNIT PRICE, 2012–21



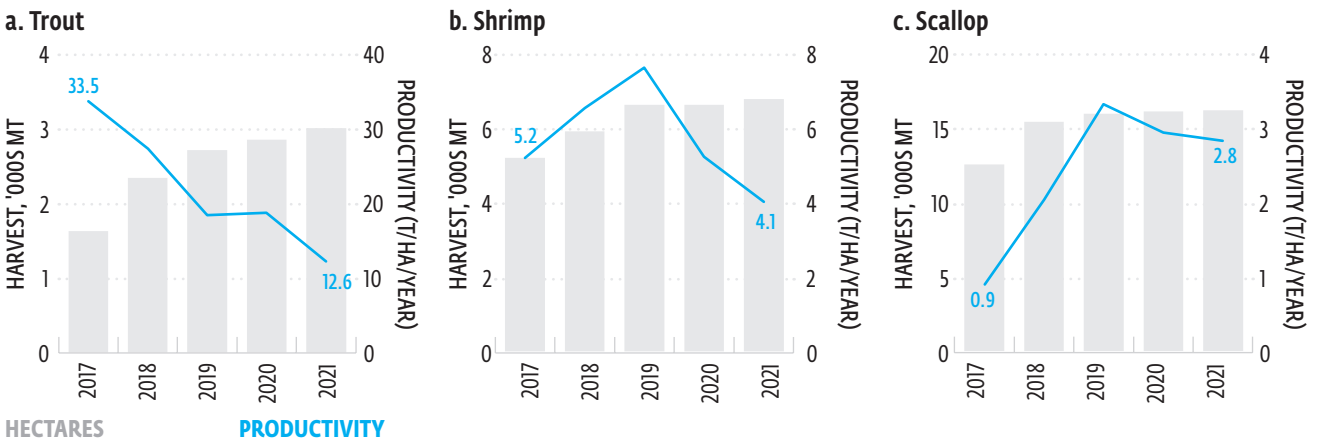
Source: World Bank staff elaborations based on statistics from the National Aquaculture Information Network in Peru (RNIA), 2022.

Note: FOB = free on board; kg = kilograms.

Developments in Peru's aquaculture value chains

Harvest volumes of marine species had been growing significantly in the three years before COVID-19, despite fluctuations in oceanic conditions being exacerbated by climate change; some of these gains reversed after the start of the pandemic. Between 2017 and 2019, the shrimp and scallop harvest grew steadily at 23 percent and 112 percent annually, respectively, while the reported harvest of trout decreased (4 percent). Over the period 2017–19, yield per hectare grew for shrimp and scallops, indicating increased productivity (figure 5.17). This growth was mainly due to large technology investments that helped offset increasing climate change–induced volatility in oceanic conditions. Yield per hectare decreased for trout, reflecting an increase in artisanal production. Since 2020, all three species have decreased their cultivation volume (figure 5.18). Of these species, shrimp have been the most affected because of COVID-19, decreasing the volumes harvested by 26 percent on average per year.¹⁶⁵

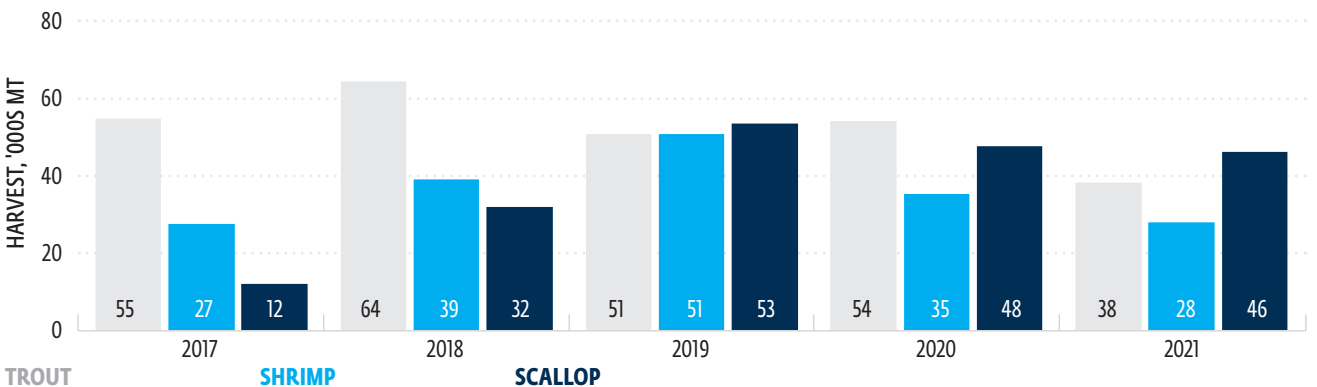
FIGURE 5.17 DEVELOPMENT OF AQUACULTURE PRODUCTION COMPARED WITH AREA UNDER CULTIVATION



Source: World Bank staff elaborations based on statistics from the National Aquaculture Information Network in Peru (RNIA), 2022.

Note: t = metric ton; ha = hectare.

FIGURE 5.18 HARVEST VOLUME BY SPECIES, 2017-2021



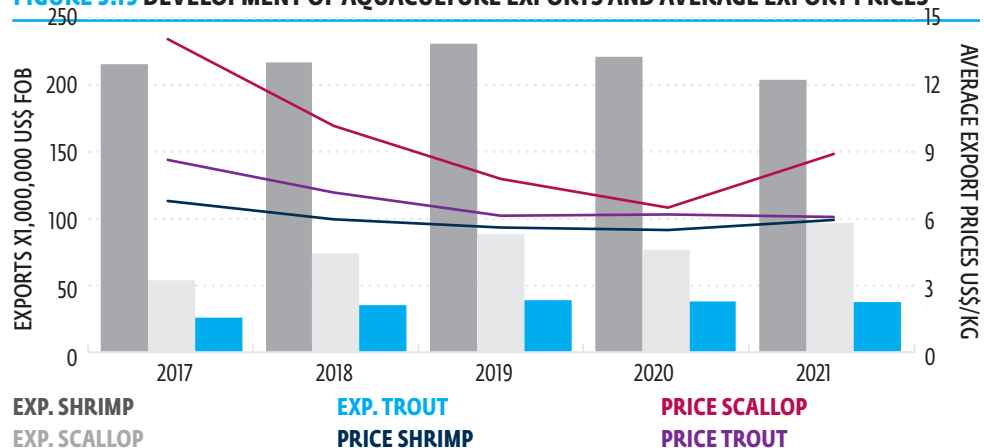
Source: World Bank staff elaborations based on statistics from the National Aquaculture Information Network in Peru (RNIA), 2022.

Note: MT = metric ton.

Peruvian aquaculture yield per hectare compares favorably with competitors for **shrimp**, with room for improvement for **scallops**. Even with the decline in yields (metric ton per hectare, or t/ha) in the context of the COVID-19 pandemic, Peru's productivity of export species is above that of major competitors. For shrimp, Peru compares favorably with Vietnam (1.3 t/ha) and Ecuador (2.7 t/ha) and is similar to India (4.7 t/ha), while both China and Chile have higher productivity in scallops with 5.1 t/ha and 5.5 t/ha, respectively. The yield/ha of trout production has been decreasing over the past five years, primarily because of a shift toward smaller-scale informal producers.¹⁶⁶

Export revenues increased for trout and scallops, although increases in export volumes were partially offset by price drops. Export volumes of all three species grew over the past five years with scallops showing an average annual growth of 30 percent compared with 20 percent for trout and 2 percent for shrimp (figure 5.19). These gains were partially offset by price decreases for scallops and trout, which nonetheless showed sizable average annual increases in export revenues of 12 percent and 8 percent, respectively. Overall export value of shrimps decreased by 1 percent annually after modest growth of 2 percent before the COVID-19 pandemic (figure 5.19).

FIGURE 5.19 DEVELOPMENT OF AQUACULTURE EXPORTS AND AVERAGE EXPORT PRICES



Source: World Bank staff elaborations based on statistics from the National Aquaculture Information Network in Peru (RNIA), 2022.

Note: FOB = free on board. Exp = exported.

The market structure of producers varies significantly by value chain. Trout production is primarily undertaken by individuals¹⁶⁷ as well as micro and small enterprises (see box 5.10 for firm classifications). Of the overall 3,241 producers, only nine are medium and large firms (figure 5.20). Scallop and shrimp are primarily produced by micro-to-small and medium-to-large producers. These facts are also reflected in the average areas of cultivation (table 5.6) as well as export data. In 2020, the top three exporters of each species exported 99 percent of all trout, 62 percent of all scallops, and 61 percent of all shrimp tails.¹⁶⁸ The difference in structure has implications for the primary impact on the industry's growth. Additional growth in trout production is likely to result in the expansion of smaller-scale, more labor-intensive producers with a larger inclusion angle, while growth of the scallop and shrimp industry will contribute more to increasing economic growth as well as export income and diversification.

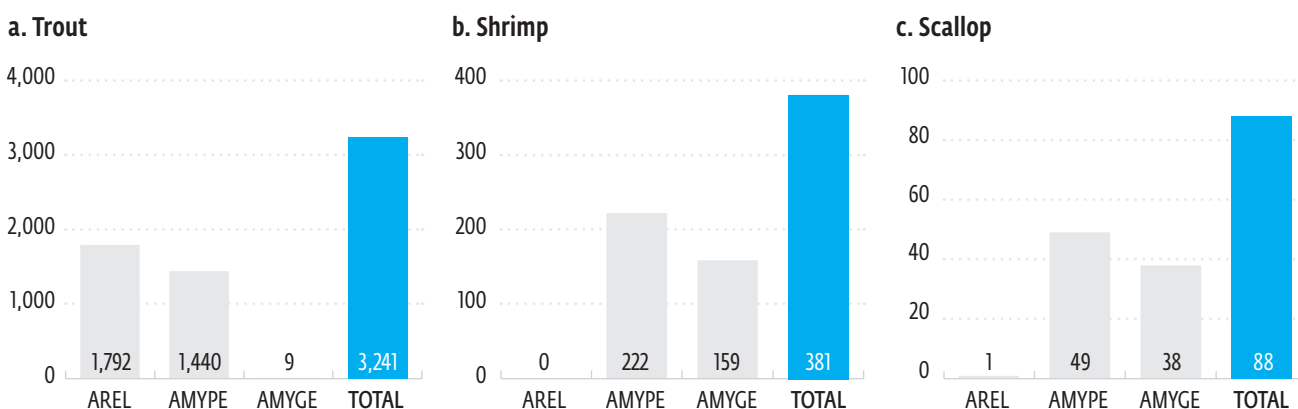
BOX 5.10 CLASSIFICATION OF AQUACULTURE PRODUCERS

The Ministry of Production (PRODUCE) categorizes aquaculture firms by scale and productive practices:

1. Limited resource aquaculture (Acuicultura de Recursos Limitados; AREL): Activity developed through extensive management, practiced by natural persons for self-consumption or self-employment. AREL's annual production does not exceed 3.5 metric tons (MT). Regulated and overseen by regional governments (GOREs).
2. Micro and small business aquaculture (Acuicultura de Micro y Pequeña Empresa; AMYPE): Activity developed through any of the three cultivation management practices, practiced by natural or legal persons for commercial purposes. The annual production of an AMYPE does not exceed 150 MT. Regulated and overseen by GOREs.
3. Medium and large business aquaculture (Acuicultura de Mediana y Gran Empresa; AMYGE): Activity developed through semi-intensive or intensive management, practiced by natural or legal persons for commercial purposes. The annual production of the AMYGE is greater than 150 MT. Regulated and overseen by PRODUCE.

Note: There are three classifications by management: (a) Extensive aquaculture: based on the natural productivity of the environment; (b) Semi-intensive aquaculture: uses supplementary feeding together with a higher level of management and conditioning of the environment; and (c) Intensive aquaculture: uses advanced technologies and feeding with balanced diets to obtain high yields per area by a high level of management and control.

FIGURE 5.20 NUMBER OF ACTORS WITH PERMITS TO CULTIVATE IN THE AQUACULTURE SECTOR, ACCORDING TO PRODUCTION SCALE AND SPECIE, 2021



Source: World Bank staff elaborations based on the National Aquaculture Registry (Catastro Acuicola Nacional).

Note: AREL = limited resource aquaculture (Acuicultura de Recursos Limitados); AMYPE = micro and small business aquaculture (Acuicultura de Micro y Pequeña Empresa); AMYGE = medium and large business aquaculture (Acuicultura de Mediana y Gran Empresa).

TABLE 5.6 AVERAGE AREA OF CULTIVATION PERMITS IN HECTARES, ACCORDING TO PRODUCTION SCALE AND SPECIES

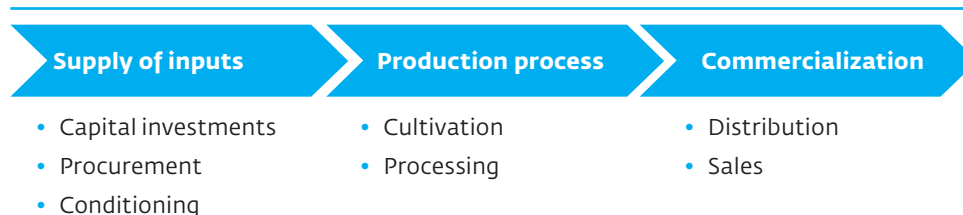
SPECIES	AREL	AMYPE	AMYGE	AVERAGE
Trout	0.1	1.7	48.0	0.9
Scallop	—	27.3	64.7	42.9
Shrimp	1.6	31.7	138.5	77.5
Average	0.1	5.9	77.6	7.1

Source: World Bank staff elaborations based on the National Aquaculture Registry (Catastro Acuicola Nacional).

Note: — = not available; AREL = limited resource aquaculture (Acuicultura de Recursos Limitados); AMYPE = micro and small business aquaculture (Acuicultura de Micro y Pequeña Empresa; AMYGE = medium and large business aquaculture (Acuicultura de Mediana y Gran Empresa).

According to the National Institute of Statistics and Informatics of Peru, the fish and aquaculture industry provided approximately 100,000 jobs in Peru in 2021. The Ministry of Production estimates that 30,000 of these were in aquaculture—47 percent in the informal sector—combining both extractive and processing activities. Aquaculture is incipient, but it could contribute to economic and social development. The trout value chain, for example, is dominated by small producers who would especially benefit from support to increase productivity to move out of subsistence aquaculture or low income activity.

The aquaculture value chain presents opportunities beyond cultivation. Figure 5.21 presents the aquaculture value-chain framework based on the National Aquaculture Development Plan, which includes all the activities before the consumption of products.¹⁶⁹ The first link, supply of inputs, includes investments in infrastructure and equipment, which requires obtaining permits to carry out operations in the cultivation areas beforehand, as well as the provision of water, energy, seeds, and food for the species. It also includes the process of creating conditions for species to thrive, including the monitoring of environmental and sanitary aspects. The production process consists of the cultivation of the species and processing, which also includes control of health and environmental aspects. Finally, commercialization covers activities for the consumption or export of products.

FIGURE 5.21 PERUVIAN AQUACULTURE VALUE-CHAIN FRAMEWORK

Source: World Bank staff elaboration based on the National Aquaculture Development Plan (PNDA).

Demand

Globally, there is a growing demand for aquaculture products as a source of sustainably produced animal protein. In 2018, the global production of aquaculture products reached 82.1 million MT. It is estimated that, given the high potential of the industry, production will grow to reach 109 million MT by 2030.¹⁷⁰

Shrimp demand has grown in Asian countries. In 2019, global shrimp exports were 3.2 million MT, with more than 50 percent of global imports made by China, the United States, and Japan. Peru contributed only 1 percent of this volume.¹⁷¹ However, Asian countries' demand for Peruvian shrimp grew exponentially between 2015 and 2018. For example, economies like China, the Republic of Korea, and Taiwan, China, increased their purchases of Peruvian products. Exports to these destinations grew annually by over 100 percent in this time frame. In 2021, China surpassed the United States and became the primary destination of Peruvian shrimp, accounting for 33 percent of total export volume. Peru shares competitive advantages in shrimp production with leaders in this market. In 2020, Ecuador, whose oceanic conditions are similar to Peru's, surpassed India and became the largest global shrimp exporter. It is estimated that in 2021, Ecuador was the first country to produce 1 million tons of shrimp from aquaculture.¹⁷² Its competitive advantages have allowed Ecuador to ensure a stable supply and low prices and become Peru's main seed supplier. This success has enabled Ecuador to be a price-setter as well as to capture a large part of the US and European markets.¹⁷³

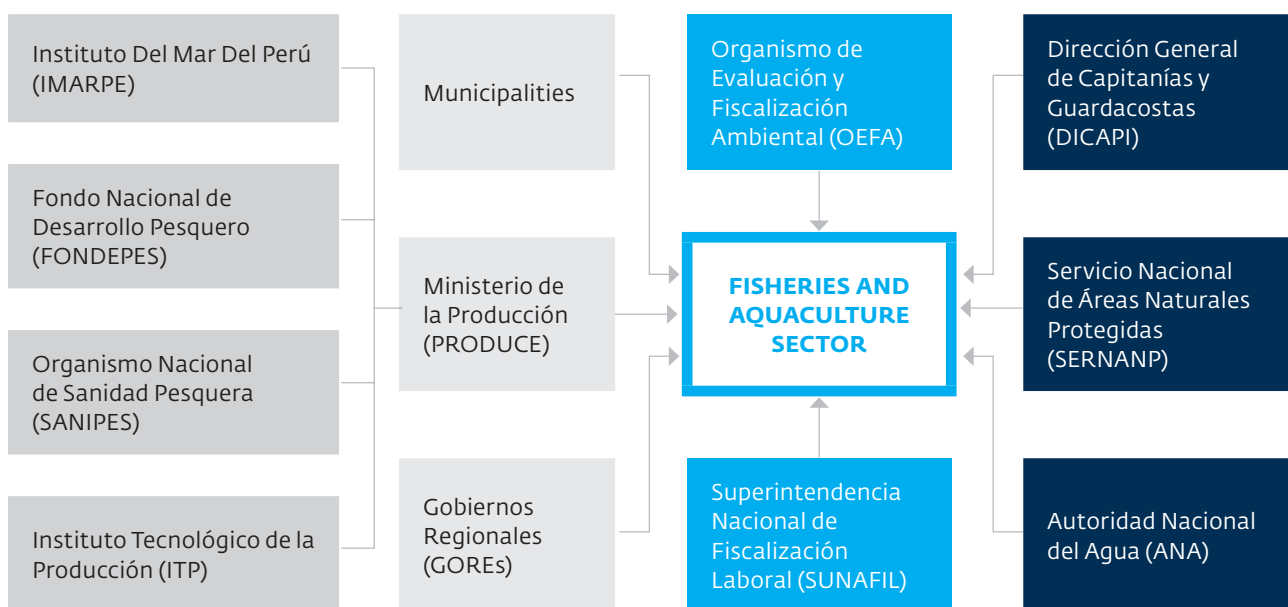
There is potential to expand to new scallop markets, including Brazil and Canada. In 2019, global scallop exports amounted to 162,000 MT. Because of its competitive price, Peru ranked third, with 6 percent of this volume.¹⁷⁴ Currently, the United States and France (the main importers of scallops, together with China) are the main destinations for Peruvian scallop exports. There are, however, other markets with high potential, such as Brazil, Canada, and New Zealand, whose demand for these products has at least doubled between 2019 and 2021. Recently, there has been a gradual decline in the average prices of scallop products globally because of overproduction and stored stocks purchased by the United States and Europe; however, global demand is expected to grow at a higher rate than supply.¹⁷⁵ Therefore, the expected tendency is for prices to recover.

There is an exponential growth in demand from Asian countries for pan-size trout. In 2019, global trout exports amounted to 280,000 MT. Peru contributed 1.9 percent to this total and is the fifth-largest exporter of frozen fillets.¹⁷⁶ Until 2020, the United States was the main destination for Peruvian trout exports (concentrating 37 percent of total exports); however, Asian countries' demand for pan-size trout (200 to 350 g), which is produced by Peru, has grown exponentially in recent years.¹⁷⁷ In 2021, exports to Japan exceeded those to the United States, and Japan currently is the main destination of Peruvian trout. In addition, of the main global importers of this size—Japan, Germany, and the Russian Federation—Peru exports a significant volume only to Japan. This indicates that international demand for Peruvian products is not yet a binding constraint. Larger operations in Peru have competitive production costs compared with leading countries in this sector. For example, Peru's production costs compare favorably to Chile's, the second largest exporter globally and the largest in Latin America.¹⁷⁸

Governance

The regulatory framework for aquaculture has been evolving as the importance for the sector has increased. Currently, the General Aquaculture Law, with its respective Regulation,¹⁷⁹ seeks to promote, develop, and regulate aquaculture, which the law defines as “the cultivation of aquatic organisms, which implies intervention in the breeding process to increase production.”¹⁸⁰ According to the General Aquaculture Law, the Ministry of Production (PRODUCE) is the governing body for aquaculture through the coordination of the National Aquaculture System. This system guides the sector’s sustainable growth and development at the three levels of government (national, regional, and local) through the integration and execution of management and policy standards, procedures, and instruments, guaranteeing compliance with these. PRODUCE relies on other public sector entities for specific regulation and oversight of specialized aspects of the aquaculture sector. Figure 5.22 presents the distribution of high-level competencies among the National Aquaculture System, highlighting the entities in charge of aquaculture activities by government level.

FIGURE 5.22 THE SCHEMATIC OVERVIEW OF THE PERUVIAN NATIONAL AQUACULTURE SYSTEM



LEVELS OF GOVERNMENT WITH DIRECT COMPETENCIES
ORGANIZATIONS ATTACHED TO PRODUCE
ENTITIES WITH SUPERVISORY AND ENFORCEMENT FACULTIES
OTHER GOVERNMENT AGENCIES WITH CONCURRENT COMPETENCIES

Source: World Bank staff elaboration based on government information.

Note: Translations are as follow: ANA = National Water Authority; DICAPI = General Directorate of Captaincies and Coast Guards; FONDEPES = National Fisheries Development Fund; GORE = Regional Governments; IMARPE = Peruvian Sea Institute; ITP = Technological Institute of Production; OEFA = Environmental Evaluation and Enforcement Agency; PRODUCE = Ministry of Production; SANIPES = National Fisheries Health Agency; SERNANP = National Service of Natural Areas Protected by the State; SUNAFIL = National Superintendence of Labor Inspection.

Barriers and challenges that need addressing

Since the year 2000, the three main value chains in Peruvian aquaculture—scallops, shrimp, and trout—have managed to attract investment, leading to an increase in production capacity. The sector would benefit from an environment that enhances the industry’s efficiency while ensuring international quality standards and avoiding the negative spillovers of possible bad practices. Relevant barriers to further growth of the sector are discussed along the categories of governance and management, technological innovation, and value-chain structure. They align with the cross-cutting constraints discussed earlier. Although the sector suffers from a lack of consistency in governance and a longer-term strategy, subnational issues in GOREs and municipalities are at the heart of many of the major challenges that need to be overcome for the sector to grow. Insufficient land management weighs on the sector by causing cost increases and delays in initiating the operation of firms and by exacerbating the issue of negative externalities.

Governance and management

The Peruvian aquaculture sector could benefit from a roadmap with long-term objectives and from regulatory stability. Although the overall regulatory framework is relatively clearly defined, agencies have a high turnover of high-level officials. PRODUCE was led by 26 ministers and 17 vice ministers between 2002 and 2021. These institutional weaknesses hinder an organized development of aquaculture, as there is a lack of continuity in policy making. This problem is compounded by GOREs’ scarce allocation of financial resources and human capital, which limits policy execution at a regional level.

Lack of continuity of governance makes it difficult to design, deploy, and evaluate policy instruments, restricting the provision of enabling conditions for aquaculture’s development. For example, in 2012, after the National Aquaculture Development Plan was approved by PRODUCE, the government developed guidelines for the preparation of Regional Aquaculture Plans to be executed by GOREs, to identify areas of support for the local aquaculture industry. However, as of January 2022, only 50 percent of Peru’s regions had an approved plan and the implementation of said plans are not explicitly mentioned as part of any strategic objective within the National Aquaculture Development Plan, thus their progress is not being supervised.¹⁸¹

Administrative processes to initiate operation in the aquaculture sector generate high opportunity costs, which could deter potential investors. For example, the studies required to obtain an operations permit (including water use, land rights, and environmental impact) are costly and time consuming. According to the records of the National Aquaculture Registry (Catastro Acuicola Nacional), the process of granting concession can exceed two years.

Aquaculture is affected by negative externalities of other economic activities, primarily by some informal mining that contaminates part of the water sources required for cultivation. This problem is a direct consequence mainly of gaps in spatial planning management and policies, coupled with the lack of both supervision throughout regions and mitigation of informal activities. Without strategic coordination between the sectors, these negative externalities can lead to substantive losses, as well as social conflicts. This lack of spatial planning also results in fewer opportunities to develop synergies from sharing the use of scarce inputs between productive sectors, such as the joint use or reuse of water in agriculture and aquaculture.¹⁸²

Overly rigid regulatory practices hamper innovation, impose additional cost, and lead to duplicative processes. Regulations focus on specific technical prescriptions with little flexibility to adapt and to take into consideration innovative ways of doing business. For example, the current regulatory framework limits the adoption of circular economy practices by not allowing the use of waste products of other industries such as the use of waste from the shrimp and trout industry in the formulation of animal feed,¹⁸³ or the recycling of scallop waste as input to develop construction material.¹⁸⁴ Such practices should be replaced by a risk-based approach to regulation that is regularly updated and allows for flexibility to find new and better practices. Further, the government does not accept international certifications of sanitary standards that firms must obtain for accessing high-value export markets, even when they exceed local requirements. This government position leads to a duplication of the cost of compliance and can lead to delays because the length of local audits frequently limits the export of firms' fresh products, thus generating further economic damage to companies with international quality standards.

Some policy measures are implemented without sufficient consideration for their overall effect on markets, leading to misalignment of incentives and desired goals. Some government objectives for the fisheries and aquaculture sector focus on boosting the internal market and supporting food security under the argument that these products' nutritional value could contribute to the population's health and well-being. As a result, policy making, for example, through tax incentives, has focused on the increase of the availability of aquaculture products in national markets. Although this focus is a valid and laudable policy objective, it needs to be balanced with export facilitation that can also support other important policy objectives such as enabling the access to more profitable markets.

Technological innovation

Improved practices and introduction of new technology can improve and stabilize aquaculture yields in the face of increasing climate volatility. Over the past years, aquaculture yields have been highly volatile because of climate changes that alter oceanic conditions and bring disease. The presence of pathogens exacerbates the already relatively high mortality of key species, like shrimp. The absence of modern technology to control for these factors and adapt to climate change, especially among AREL and APYME, leads to significant economic losses. Additionally, the supply of seeds for scallops depends on natural conditions threatened by climate change, while the country is dependent on imports from Ecuador for shrimp seeds. The global aquaculture industry is moving toward adopting intersectional waste management practices in the transformation stage. Adoption of such practices is lagging in Peru, despite the proximity of aquaculture and agriculture, which would lend itself to the introduction of practices that boost synergies in their productive processes. Such processes could include use of residual water from agriculture in aquaculture production and shared water usage in efficient schemes of integrated agriaquaculture systems such as aquaponics. Improved spatial planning could foster the development of joint activities for complementary industries. Also, a lack of technology adoption hinders the move of aquaculture toward more efficient intensive practices. Semi-intensive and intensive aquaculture requires higher up-front investment and demands advanced technologies and a high level of control that only a few companies have been able to implement, but not even throughout all their disposable land.

Research activities could be better tailored to the needs of aquaculture operations. Companies have not invested sufficiently in research and centers for genetic improvement and increases of local seed production. The introduction of better practices and technologies and their adaptation to specific geographical and climate conditions is hampered by high costs difficult for private companies to assume. At the same time, academic research is not easily adopted in the production process by private companies. Furthermore, since these research findings or discoveries require a certain level of formality, AREL and AMYPE, which account for most entrepreneurs, have difficulties accessing those resources.

Value-chain structure

Growth of the industry is constrained by a lack of vertical integration coupled with high levels of informality. High-value markets increasingly demand comprehensive certifications that require product tracing. Fragmented value chains, where small producers provide inputs to larger firms for processing, make tracing and certification difficult. This issue is exacerbated by the informality and inability to document adherence to sanitary and quality standards by small producers. Large producers who process for export need to compensate for the absence of continuous monitoring with costly quality tests by external certifiers. Informality also constrains firm growth as informal operators have less access to finance as well as difficulties obtaining sanitary certifications or benefit from government support.

A lack of public services and infrastructure in areas with aquaculture activity limits the sector's growth. For example, the scarcity of electricity and clean water at competitive costs in regions with the highest aquaculture production limit the potential for semi-intensive or intensive aquaculture as well as processing. Deficits of services and infrastructure perpetuate low productivity among AMYPE companies and discourage further investment in AMYGE operations.

A scarcity of qualified human capital in the regions with the highest aquaculture production prevents the adoption of innovative technology and limits productivity. Lack of qualified human capital leads to risks related to unsafe practices that reduce the ability to obtain sanitary certifications and risk penalties related to unsafe practices. Specialized human capital is required to implement and operate new technologies and optimize the supervision during the grow-out phase of aquaculture, particularly by improving sampling and monitoring processes. Grow-out and harvesting need to be carried out under highly controlled conditions to minimize mortality, a factor that is currently restraining productivity growth in aquaculture.

Opportunities and recommendations

Using the analysis of the sector and the descriptions of challenges, the aquaculture assessment identified a number of opportunities and recommendations for the sector. The primary bottlenecks identified include a lack of a national aquaculture policy framework that includes spatial planning and ensures the availability of public services, including infrastructure, in the primary growing areas.

Governance and management

The government should develop a unified regulatory framework for the aquaculture sector that focuses on creating an enabling environment that effectively manages risks while minimizing duplication and compliance costs. The sector will benefit from the strategic vision enshrined in the National Aquaculture Policy, published in January 2023. Its implementation will encourage the deployment of spatial planning regulation for efficiency and sustainability that will foster cooperation between ministries to mitigate negative externalities from other economic activities and ensure enforcement.¹⁸⁵ The Executive Board for the Development of the Aquaculture Sector, a public-private steering group for the sector created in 2017 and strengthened by the current government, could serve as a forum to share views and experiences. The success of this cooperation will depend on the active participation of authorities from different sectors and successful entrepreneurs in aquaculture. During the implementation of the National Aquaculture Policy, it is important to develop strategic incentives with a focus on value generation from participants in the private sector.

Tax incentives geared toward promotion of exports could be complemented by measures to improve productivity. As of December 2021, tax incentives have been restored for the aquaculture sector, mainly for cultivation. These incentives will enable exporters to take advantage of foreign increases in demand for aquaculture, as the sector expands the supply of these products. The tax incentives could be complemented with policies that foster quality improvement to increase both international and domestic demand for Peruvian aquaculture products, as well as campaigns to increase local consumption. The latter could be achieved through the strengthening of the A Comer Pescado program, or through the creation of new educational media campaigns that could influence children's habits, like the one promoted in the 2000s.

Specific steps to strengthen the value chains in Peruvian aquaculture could target two main objectives: (a) the formalization of aquaculture MSMEs and (b) the allocation of resources to diminish the infrastructure gap. These objectives would have a positive effect on production capacity, raising both productivity and quality standards, thereby providing an environment that fosters growth. Infrastructure improvements in electricity, water, and roads would not only benefit the aquaculture actors but also have positive externalities over the nearby communities.

Policy makers need to identify the regulations that have hindered, or could hinder, the development of an efficient and sustainable industry. For example, the lack of standardization between the international certification processes, which correspond to market trends, and audits of SANIPES have restricted the insertion of Peruvian products in new international markets. SANIPES could learn from the positive experience of SENASA in the agricultural sector (see box 5.2). Periodic updates and adjustment of regulations, enabled by a participatory regulatory-efficiency review that considers the sector's level of maturity and current market conditions, could help break down fictitious market barriers and hasten some administrative processes, among other benefits regarding efficiency.

Compliance costs could be significantly reduced through streamlining the interaction between the industry and government. The relaunch of the Ventanillas Únicas de Acuicultura (VUA) in November 2021 is a constructive step in this direction that should facilitate the granting of concessions with the use of technological tools.¹⁸⁶ A

few years after this relaunch, the VUA should be evaluated to see if it has reduced the opportunity cost associated with the inactivity of aquaculture companies; if not, it should be improved, complemented, or replaced.

Technological Innovation

One of the main opportunities for the aquaculture sector is the creation of centers for seed genetic optimization. Genetic optimization would improve productivity because it would allow a more efficient use of the climatic and geographical characteristics of the various production areas. If consumer preference for key species is taken into consideration, genetic modification can also help expand the existing markets and open access to new ones. For example, in Brazil some fish species have been bred according to their specific regional uses in the culinary industry.

Since aquaculture is deeply affected by natural conditions, focusing research on climate change adaptation measures could lead to productivity increases and growth. Adaptation measures could include new production systems and recirculating aquaculture systems, as well as community-based watershed management for small-scale production, installation of rainwater harvesting tanks, and use of pond-dike cropping. Such measures not only preserve the country's water bodies' biodiversity, an area where Peru is particularly rich, but they also can provide a path for private companies to adapt their value-chain processes to new climate conditions, increasing yields and reducing losses.

Investment in technologies for the intensification of the cultivation processes, with a focus on shrimp, could lead to a reduction of production costs. Although expanding the area where shrimp production takes place is feasible, tests carried out in the northern regions of the country show that production could be much more efficiently increased by investing in technologies to improve the intensification of the harvest.

Innovation in waste management opens an opportunity to take care of the environment and generate profitability with what is currently an operating expense. For example, the exoskeleton of shrimp and the stem of scallops can be used as inputs for products of the cosmetic industry, among others. This use of circular economy practices would help reduce environmental problems related to waste management.

With increasing global demand, new segments in international markets could be served with alternative presentations of Peru's key species, using technology-based innovation, thus increasing the volume of production at higher export prices. For example, for the shrimp industry, a new presentation of tails and skewers could be developed; for trout, it could be innovation in filleting; and the scallop shell could be offered in novel presentations to access new Asian markets.

Value-chain structure

Efficiency in the value-chain processes can be obtained by improving human capital through implementing short training programs as well as business supervision programs. Employee training programs are essential to guarantee high standards along the value chain (which can result in innovation, reduction in costs, and an increase in productivity, among others), while implementing business supervision programs can provide knowledge for decision making, thus improving businesses' performance. The latter is especially beneficial for AREL and AMYPE entrepreneurs.

The implementation of vertical integration or association schemes that could jointly reduce costs and increase the generation of value along the aquaculture value chain.

The recent uptake in Risk-Based Process Audits in aquaculture, which shifts the audit focus to market conditions, could reduce premarket bureaucracy. The wider the adoption of this auditing approach (that is, a risk-based process), the greater the acceptance of the quality of the processes covered by the certifications of the companies in the value chain.

See table 5.7 for a summary of recommendations.

TABLE 5.7 RECOMMENDATIONS TO PROMOTE THE AQUACULTURE SECTOR

OBJECTIVES	SPECIFIC ACTIONS	TIMELINE
GOVERNANCE AND MANAGEMENT		
Implement a roadmap with long-term objectives and improve efficiency in execution at a regional level	<ul style="list-style-type: none"> Implement the National Aquaculture Policy and regulatory framework that include spatial planning regulation and a business perspective Promote policies that foster product improvement and review tax incentives to promote domestic and international demand. Promote the formalization of aquaculture MSMEs. 	Short to medium term
Improve process of updating regulations to allow for innovative ways of doing business	<ul style="list-style-type: none"> Review terms and conditions for aquaculture concessions and regulatory burden to identify efficiency gains with private sector participation. Introduce a process to conduct such a review regularly. 	Medium term
Streamline processes to reduce compliance costs	<ul style="list-style-type: none"> Digitalize government processes. Reduce the number of processes and interactions, for example, through the introduction of one-stop shops. Align sanitary standards with requirements for international certification. 	Short term
Reduce infrastructure gaps in connectivity (mainly, electricity and roads)	<ul style="list-style-type: none"> Promote a policy to allocate a fixed amount of resources for the contribution of public goods needed for aquaculture. 	Medium term
TECHNOLOGY		
Reduce costs of adapting technology to specific geographical and climate conditions	<ul style="list-style-type: none"> Foster the provision of funds for research on climate change adaptation measures. Foster investment to adopt intensification practices related to the creation of centers for genetic seed optimization. 	Medium term
Leverage new opportunities in new markets and market segments	<ul style="list-style-type: none"> Promote alternative presentations of key species. Enable innovation in waste management to implement a circular economy. 	Medium term

Note: MSMEs = micro, small, and medium enterprises.

OBJECTIVES	SPECIFIC ACTIONS	TIMELINE
VALUE-CHAIN STRUCTURE		
Foster human capital for innovation and efficiency in processes	<ul style="list-style-type: none"> • Create and promote short training programs for MSMEs through strategic alliances. • Create policies to foster capacitation programs for aimed at AMYPE producers with participation from AMYGE firms. 	Short term
Build more capacity for small-scale producers to generate higher value	<ul style="list-style-type: none"> • Explore integration schemes for small-scale production to consolidate productive clusters. 	Short term

Note: AMYGE = medium and large business aquaculture (Acuicultura de Mediana y Gran Empresa); AMYPE = micro and small business aquaculture (Acuicultura de Micro y Pequeña Empresa); MSMEs = micro, small, and medium enterprises.

5.4 DIGITAL ECONOMY

Building a successful national development strategy needs to be supported by a country's ability to take advantage of digital technologies in various sectors: for example, health, education, transportation, commerce, and finance. For that reason, the digital economy (DE) constitutes a development pillar in many areas of the economy for producers and consumers alike, including governments. The DE in this current context consists of digital infrastructure, digital skills, e-government, digital business, and digital financial services.

However, Peru faces several limitations in the development of its DE in all areas and needs a more coherent strategy in the short to medium term. There is limited digital infrastructure in rural areas (internet exchange points, electricity, and roads) and even connectivity issues in urban areas (limited high-speed internet), which has resulted in uneven access to technology among citizens. The country also struggles with a regulatory framework and government norms that lack flexibility and insufficient knowledge combined with poor digital literacy in the population that translate to a lack of modernization in the government. This sectoral analysis intends to inform short- and medium-term (three to five years) strategic priorities for country engagement in the digital economy in Peru. It identifies gaps and opportunities in the sector and makes recommendations related to the five central elements of the DE: digital infrastructure, digital skills, digital financial services, digital government, and digital businesses. The diagnostic found evidence of several data gaps—especially in data disaggregated by gender and region. Supply-side data proved to be more readily available than demand-side data, particularly in relation to digital infrastructure and platforms. These gaps highlight the need to improve data collection related to the digital economy, to both improve policy making and track the progress of digital economy development.

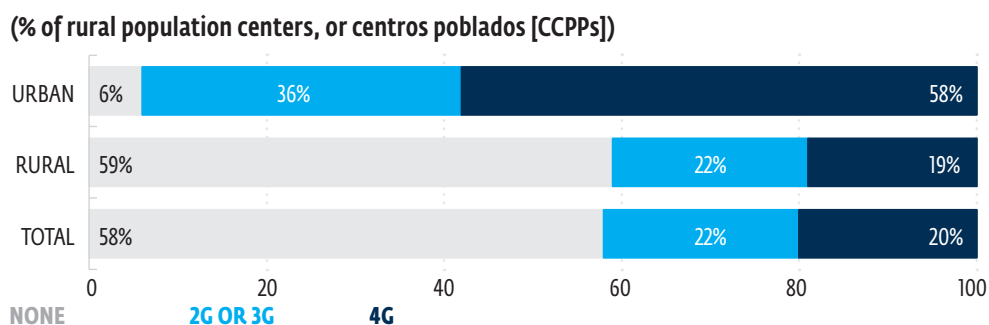
For 2021–26, Peru’s government policy does include a few actions related to the DE. It aims to reduce gaps in electricity access through renewable and nonrenewable energy, especially in rural areas. It also targets modernizing Banco de la Nación operations to address the population’s needs and promoting digital technology to reduce the costs related to taxes and to optimize tax collection, intended to increase firm competitiveness and access to formal value chains. It also aims to consolidate the implementation of digital citizenship through the creation of a digital identity. Finally, it promotes e-commerce, digital entrepreneurship, innovation, open data, and digitization.

Digital infrastructure

Peru’s poor infrastructure and limited connectivity are major impediments to fostering the DE. A main component of the DE is fiber-optic infrastructure and its support network (electricity). According to the Network Readiness Index of 2022, Peru ranks 78 out of 131 countries.¹⁸⁷ Fiber-optic infrastructure is robust around major cities; however, it remains limited in rural areas. Moreover, it has been deployed mainly in the coastal region, with very limited deployment in the Andean and the Amazonian regions. At the end of 2019, operators reported a total of 70,019 kilometers of fiber-optic cables deployed nationwide, of which 69,875 kilometers were installed and in operation. Of the fiber-optic networks in operation, 54 percent have been deployed in an interurban environment (between cities) and 46 percent have been deployed in an intraurban environment (within cities).

Moreover, more than half of rural population centers (centros poblados; CCPPs) or localities (smaller than a district) do not have mobile internet coverage, while, in contrast, almost all urban CCPPs do (figure 5.23). In regard to connectivity technology, in urban CCPPs, fourth-generation (4G) technology dominates, which enables better access and use of digital financial services (DFS). According to the Inclusive Internet Index, Peru has many limitations in its level of mobile network coverage: 82.5 percent of Peru’s districts have only 2G networks, the lowest technology available. 5G network deployment started at the end of 2020 in urban districts. In comparison, 4G network coverage is much higher in similar countries: Peru (52 percent), Chile (88 percent), Colombia (98 percent), Thailand (98 percent), and Türkiye (97 percent).

FIGURE 5.23 MOBILE INTERNET COVERAGE, ACCORDING TO AREA AND TECHNOLOGY, 2020



Source: World Bank staff elaborations based on Peru Ministry of Transportation and Communications (MTC).

Note: CCPP = population center (centros poblados).

The availability of cellular base stations (antennas) is also a major challenge. The network must be able to support the anticipated future increase in mobile internet services and wireless fixed internet traffic. The regulator, OSIPTEL, estimates that in 2019 there were 24,076 cellular base stations, but that in 2025, an additional 36,695 will be needed.¹⁸⁸ Moreover, there are significant regional differences; for example, Ica, Lambayeque, and Ucayali show the largest gaps and would require significantly more investment.

Several initiatives are underway to expand access to internet services, but their implementation has been slow. The National Telecommunications Program (PRONATEL) has been promoting regional projects since 2013, to provide coverage in rural areas and to provide access to specific critical institutions (educational institutions, health establishments, and police stations) as part of the national fiber-optic backbone infrastructure (Red Dorsal Nacional de Fibra Optica; RDNFO). However, of the 21 regional broadband projects, only four are in operation (Lambayeque, Huancavelica, Apurímac, and Ayacucho) and are under implementation. Three additional projects are under review after the initial contracts were canceled.

The Amazonian region needs significant investment in broadband internet access. There are currently three Amazonian projects: (a) increasing internet and intranet in the river basin regions of Napo, Putumayo, and Yurimaguas-Iquitos; (b) increasing internet and intranet for towns in the Manseriche district, the province of Marañón Datem, and the Loreto region; and (c) increasing internet service for rural towns that are at a distance from current telecommunications infrastructure, to benefit towns located in the regions of Loreto, Madre de Dios, Ucayali, and some districts of Amazonas. Stakeholder interviews indicate that it is necessary to advocate with the government—Ministry of Transportation and Communications (MTC), Ministry of Economy and Finance (MEF), and ProInversion—to accelerate and promote these projects. In the COVID-19 context, an Urgency Decree was approved (DU 014-2021, in February 2021) establishing a special procedure to contract the provision of internet service, supporting “Todos Conectados.” This decree establishes a special procedure for contracting internet service. Specific to the Amazon region, one of the actions to increase internet connection involves contracting satellite internet services for 860 locations in Amazonas, Loreto, Madre de Dios, and Ucayali, through the project Conecta Selva by 2022.

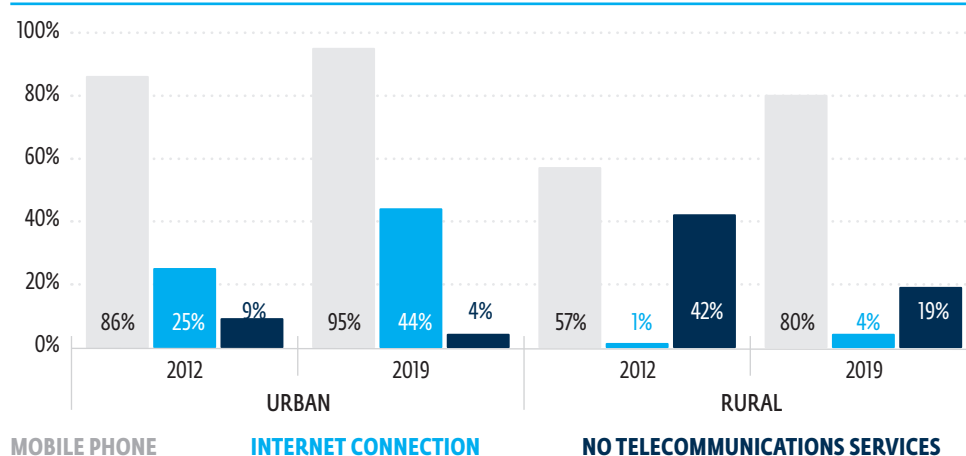
Peru is still facing uncertainty and challenges in operating RDNFO. The original concession, which resulted in the successful completion of the main capital investments, was based on a rigid pricing structure. High prices for data transfer allowed private operators to offer services at lower cost than RDNFO in more economically attractive regions, leading to a lack of financial viability and underuse of the national infrastructure. The government of Peru, through the MTC, declared the termination of the concession contract with the operator, Red Azteca, in July 2021. After a transition time, PRONATEL has taken over operation of the network on a temporary basis while a new operator is being identified. Lack of an operational backbone infrastructure that would allow for broad access at the national level is the most serious challenge to digital development that has been identified by stakeholders. Additional delays in defining a new policy and business model for RDNFO would hinder the development of the sector and the urgent need to provide affordable connectivity to all citizens in the different parts of the Peruvian territory.¹⁸⁹

The main challenges in this subsector are related to policy and administrative uncertainty. Since March 2018, MTC has had eight different ministers, which has led to a lack of continuity in policies, initiatives, and projects. There have also been significant delays in the implementation of regional projects, which are related to issues in developing strategic plans and strict mechanisms for their approval.

Digital skills

In Peru, a vast majority of households have access to mobile phones, but there are significant differences among urban and rural areas; the internet situation is even more serious, and this has not improved over time (figure 5.24). To build digital skills, people need access to devices and communications services. As described in the previous section, internet connectivity is more available in urban areas, but other factors explain the lack of growth, such as prices. In addition, prepaid mobile broadband internet dropped to the same price as postpaid service between 2012 and 2019.

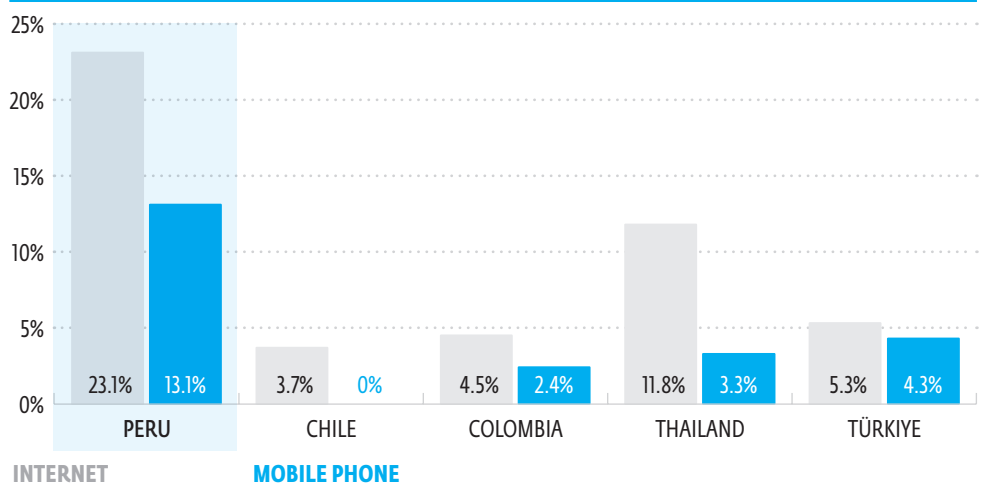
FIGURE 5.24 URBAN AND RURAL HOUSEHOLDS WITH MOBILE PHONE, INTERNET CONNECTION, OR NO TELECOMMUNICATIONS SERVICES, 2012–19 (%)



Source: World Bank staff elaboration based on National Household Survey (Encuesta Nacional de Hogares; ENAHO) 2012–19.

A gender gap and a regional gap exist in internet and mobile phone access. Compared with Colombia, Chile, Thailand, and Türkiye, Peru has the largest gender gap. Men have more access to the internet (23.1 percent gap) and mobile phones (13.1 percent gap) than women. The other countries have a gap of less than 5 percent, except for Thailand, where men have 11.8 percent more access to the internet than women (figure 5.25). Internet use also remains significantly lower in rural areas than in urban areas. In both areas, internet use increased from 2012 to 2019, but urban use was triple that of rural use in 2019 (62 percent versus 18 percent).

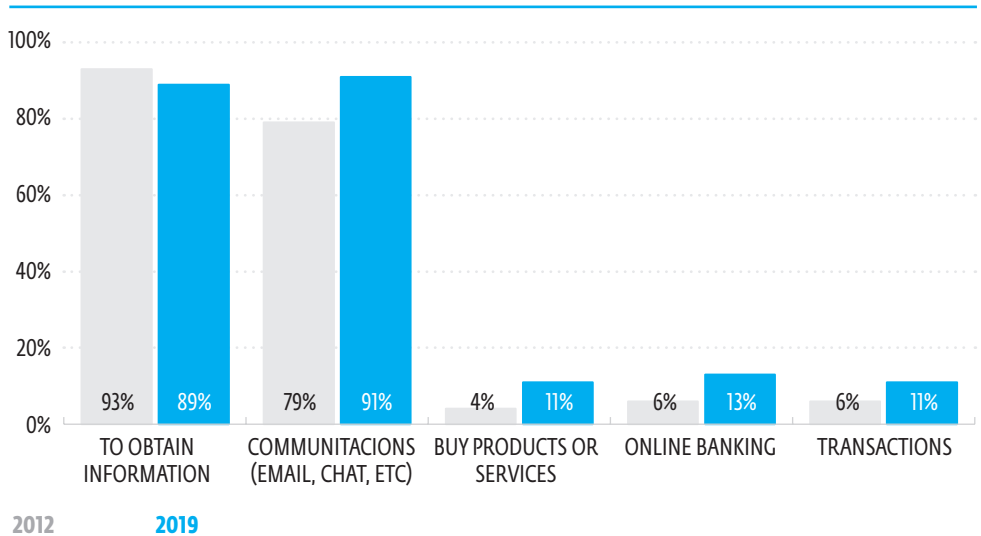
FIGURE 5.25 GENDER GAPS IN DIGITAL CONNECTIVITY 2021 (%)



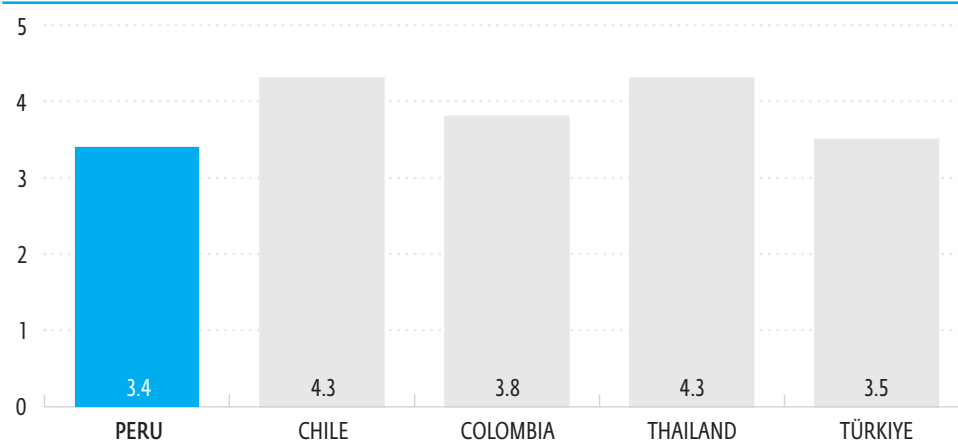
Source: Estimates from the Inclusive Internet Index 2021.

The Peruvian population uses the internet for very basic tasks. Internet usage is concentrated in the categories of “to obtain information” and “to communicate.” More-advanced uses are less popular, which could be an indicator of lack of digital literacy, lack of trust, and lack of interest, among other reasons. Some improvement was made between 2012 and 2019, but the percentages are still low (figure 5.26). Similarly, the percentages were higher for basic computer activities. Activities related to finding, downloading, installing, and configuring software show the lowest total percentage (34 percent), and it shows the need for improvement in digital skills. Also, the active population with sufficient digital skills (for example, computer skills, basic coding, and digital reading) is less when compared with other countries (figure 5.27).¹⁹⁰ When usage is compared with US public data, Peruvians have the same digital skill levels as elderly people.

FIGURE 5.26 TYPE OF INTERNET USE IN PERU, 2012–19 (% OF PEOPLE)



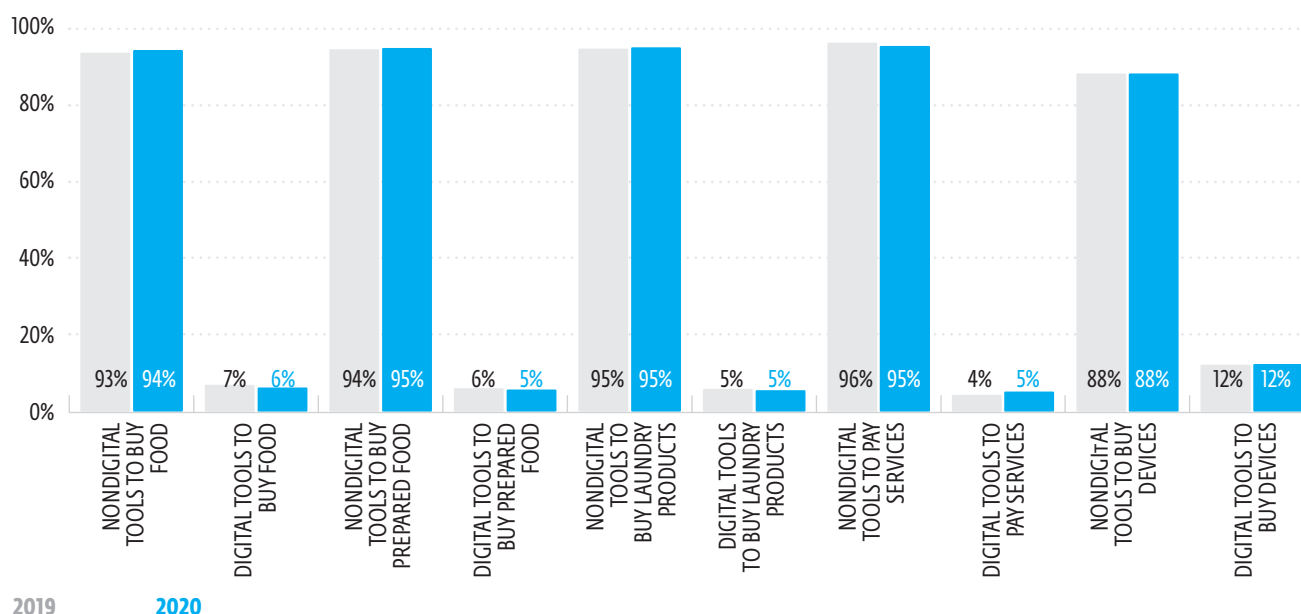
Source: World Bank staff elaborations based on National Household Survey (Encuesta Nacional de Hogares; ENAHO), 2012–19.

FIGURE 5.27 DIGITAL SKILLS AMONG ACTIVE POPULATION (15+ YEARS OLD), 2019

Source: Estimates from the Global Competitiveness Report 2019.

Note: The results show rankings between 1 and 7, with 7 being the best.

More evidence indicates that Peru's population still has low digital skills, limiting wider and more active use and application of digital tools and services, as well as potential benefits (figure 5.28). The lack of access to the internet and communications devices poses some of the demand constraints. Even considering the COVID-19 pandemic that generated a trend toward online shopping, the growth of such shopping was limited in Peru to people who were already internet users or who had credit or debit cards.

FIGURE 5.28 PROPORTION OF PEOPLE WHO USE DIGITAL AND NONDIGITAL TOOLS FOR PURCHASES AND TO PAY FOR SERVICES (%) 2019-2020

Source: National Institute of Statistics and Informatics (INEI).

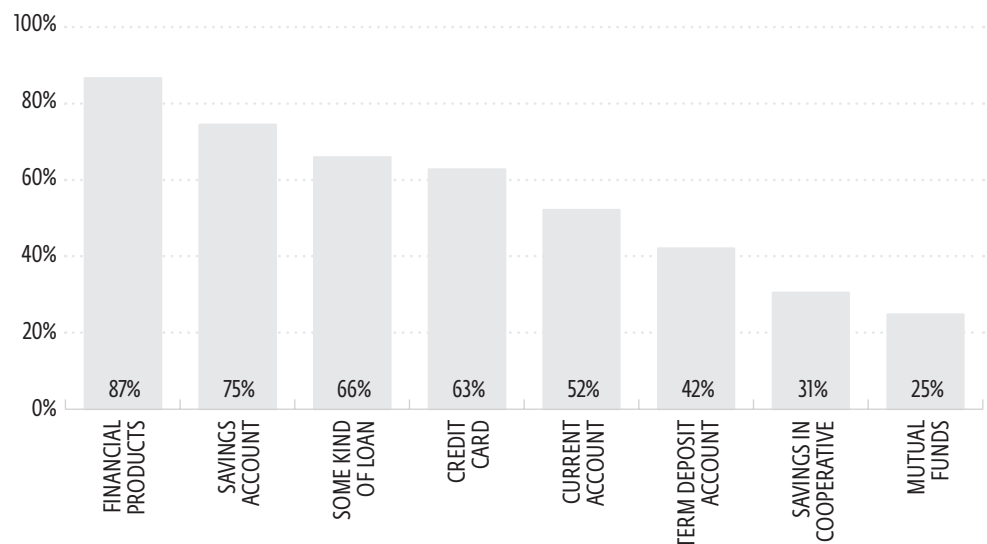
Note: Digital tools: credit cards, debit cards, and online. Nondigital tools = cash.

Information and communication technology (ICT) specialists are few or are working in other productive activities. Interviews revealed that even basic coding is an issue for ICT enterprises, and there is a large mismatch between male and female specialists, not only in quantity but also in the quality of knowledge. Graduates who majored in STEM (science, technology, engineering, and mathematics) represent only 20 percent of the total (only 32 percent of whom are women), which is low when compared with Chile (45 percent) and Mexico (42 percent), and this shortage creates a supply bottleneck.¹⁹¹

Digital financial services

Before the COVID-19 pandemic, digital payments and online purchases were undeveloped, hampered by low levels of financial inclusion and knowledge in the population, with a focus on card-based point-of-sale transactions. In 2019, 48 percent of the population had access to savings accounts. Thirty-four percent of adults reported having made or received a digital payment during 2017, with most relying on card-based instruments issued by banks. Banks have been slow to offer digital products and platforms to their clients: just 12 percent of account holders report having used a mobile phone or the internet to access their account.¹⁹² Citizens know about various kinds of financial services, primarily about traditional products such as savings, loans, and credit cards (figure 5.29). A lack of knowledge about Digital Financial Services (DFS) reduces uptake of such services. Moreover, gender gaps in access, usage, and knowledge of financial services persist.

FIGURE 5.29 PEOPLE WHO KNOW ABOUT FINANCIAL PRODUCTS, 2019 (%)



Source: Estimates from the Financial Capabilities Measurement Survey (FCM) 2019.

Digital financial inclusion can help remedy low levels of financial inclusion, particularly in remote rural areas. The Financial Inclusion Indicators Report shows that in June 2020, 85 percent (1,603) of all districts had at least one branch office, ATM, banking agent, or basic operations office.¹⁹³ Only 16.3 percent (300) districts have a branch of a private financial institution, 55.7 percent (1,027) districts have access to banking agents, while 14.7 percent (271) districts do not have a single physical access point. Low levels of financial inclusion are substantially more prevalent in more remote, poorer rural areas with low population densities that cannot economically be served by physical locations. Accordingly, the Strategic Multisectoral Plan (SMP), which is part of the National Policy of Financial Inclusion, includes provisions to increase access to physical banking locations and measures to promote digital financial inclusion. However, it could be useful in this process to ensure interoperability between electronic wallets that have only advanced enabling QR codes for payments (following the India model) but without advances to facilitate payments between different electronic wallets.

The government of Peru has used its COVID-19 response to expand access to DFS, in line with the SMP. Peru's public Banco de la Nación is rolling out digital accounts linked to citizens' national ID document (DNI). The first stage of these DNI accounts aimed to enroll 2 million citizens and allowed them to access the social transfer payments. The program was expected to open accounts for 50 percent of citizens by December 2022, but it will be critical to strengthen the security of accounts and minimize cases of fraud. In total, the government developed four safety net programs using a combination of Banco de la Nación and private channels, including mobile wallets (for example, Tunki, Bim, Yape), mobile banking, savings accounts, and banking agents to disburse benefits. In addition, the government has enacted the emergency decree DU No. 056-2020 (approved in May 2020), intended to facilitate the opening of bank accounts (digital accounts) in all financial institutions, electronic wallet providers, and pension fund managers without signing contracts. The decree also allows providers to disable accounts automatically if not used for six months. These measures have accelerated the financial inclusion of microentrepreneurs and citizens, which was especially critical during the COVID-19 state of emergency.

As a result of government action and increased demand during the pandemic, mobile wallet uptake has grown by 66 percent. Yape, mobile wallet of Banco de Crédito del Perú, has 7 million accounts with 1.2 million of those accounts held by people who have never had an account before. Yape currently estimates that 1.7 million of its users are using the service commercially. Plin, BBVA's mobile wallet, has more than 4.5 million accounts and BIM has 1.4 million accounts. Innovative changes, like using QR or Facebook messenger for transactions, (that is, friendlier applications, agreements with local governments to affiliate merchants in markets and stores, and regulatory changes that strengthen the system) have led to the increase in accounts.¹⁹⁴ Although sufficient bandwidth for low data intensity DFS transactions is nearly universally available in Peru, uptake is constrained by the availability of smartphones, particularly in rural areas. Smartphone sales are projected to grow from 5.6 million units in 2020 to 7.6 million in 2026.¹⁹⁵ Uptake in remote rural areas is further constrained by the need to deposit money into digital wallets and the costly rollout of vendors.

The number of financial technology (fintech) companies has been growing, including companies directly serving clients. Between 2014 and 2021, the number of fintech companies grew from 50 to 170.¹⁹⁶ Fintech companies in Peru primarily provide banking services, especially to middle- and low-income urban citizens with an average loan size of US\$624.¹⁹⁷ Traditional financial institutions are increasingly partnering with fintech companies to improve their relationships with their clients and to offer new products to unbanked people. For example, Rappi, which began as a mobile application in Colombia, and Interbank, one of the largest banks in Peru, have joined forces to provide financial services. Through the application, Interbank offers several transactions such as receiving refunds for purchases, requesting debit cards, making free and immediate Interbank transfers, making transfers using the mobile number of the RappiBank account, withdrawing cash from ATMs and Interbank agents, paying services, and many others.¹⁹⁸ Several alliances are also working on developing their money exchange services and have started some hybrid products with microfinance institutions or opening accounts in banks. Other fintech firms are developing new algorithms to qualify loans with microfinance institutions (CMAC, Financieras) for unbanked people.

Peru is implementing specific laws governing fintech companies, but they are still in the early stages. The Urgency Decree (Decreto de Urgencia; DU) for promoting the financing of SMEs, enterprises, and start-ups (DU No. 013-2020) included provisions for the creation of a Fintech Superintendency as part of the Stock Market Superintendency (SMV). Currently, the fintech sector is only regulated through this DU and the SMV. The sector is monitored by Superintendency of Banking, Insurance and AFP (Superintendencia de Banca, Seguros y AFP; SBS), which uses the money laundering and terrorist financing prevention system. For this purpose, fintech firms must report to the Financial Intelligence Unit in SBS via their compliance officer for all money transfers at least once a year or when the SBS requests this information.¹⁹⁹ However, SBS does not report consolidated information on the sector, and there is no regulation for information privacy beyond the general privacy framework.²⁰⁰ Moreover, the SBS Resolution that regulates temporary pilot schemes (Res. SBS No. 02429-2021) does not include fintech or start-ups, only those already supervised by the institution. A comprehensive legal framework for fintech is needed to standardize terminology, ensure sound data management practice, and identify ways to correct market failures (such as information asymmetry and principal-agent conflicts). Currently, different public authorities are involved in actions related to fintech and their roles still need to be properly and formally defined (see table 5.10) for comparison across similar countries).

TABLE 5.10 ADVANCES IN THE REGULATION OF THE FINTECH INDUSTRY BY COUNTRY, 2021

REGULATION	MEXICO	COLOMBIA	PERU	ARGENTINA	BRAZIL	CHILE	URUGUAY
Fintech law	✓	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Crowdfunding	✓	✓	✓	✓	✓	✓	✓
Factoring	✓	✓	✓	✓	✓	✓	✓
Cryptoassets	✓	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Open banking	✓	n.a.	n.a.	n.a.	✓	n.a.	n.a.
Insurtech	✓	✓	o	o	✓	n.a.	n.a.
Cybersecurity	✓	✓	✓	✓	✓	✓	n.a.

Source: Elaboration based on information from Dario Bregante and María del Pilar Sabogal, "Guía de Negocios FinTech 2021/2022" (EY Law, November 22, 2021), https://www.ey.com/es_pe/law/guia-fintech.

Note: n.a = not available.

The government has started working on legislation to allow for digital-only banking but there remain several regulatory challenges. The General Law of the Financial System and the Insurance System and the Law of the Superintendency of Banking and Insurance do not currently allow digital-only banks. In addition, there is a need for a legal framework related to digital identification and authentication processes, as well as contracting, to be able to provide a complete digital experience for clients. The Presidency of the Council of Ministers (PCM) is overseeing the National Platform for Identification and Authentication of Digital Identity (ID Gob.pe). However, there are overlapping competencies with the National Register of Identification (RENIEC), the institution in charge of this process before the Law of Digital Government (DL No. 1412) was published in September 2018, regarding, for instance, the information included in the Digital Identity.

There is a lack of capacity in financial institutions regarding topics like open banking and cybersecurity. Cybersecurity is regulated, but private financial institutions need to improve their digital security and management of vulnerabilities. Many financial institutions are not yet implementing tools, controls, or processes using emerging digital technologies and tools, such as big data, machine learning, and artificial intelligence. These are important in preventing cyberattacks and determining suspicious patterns associated with fraud, among other detection capabilities.

e-Government

The government of Peru has been developing and strengthening its own payments and information platforms. Government digital platforms are essential to simplifying administrative processes and improving interactions with citizens. The government has already made large investments to adopt new practices and modernize services to better respond to citizens' demands. The most important platforms are (a) Págalo, a digital platform to simplify the payment of fees and services for procedures in different public entities, without having to do a physical transaction at a branch of Banco de la Nación; and (b) GOB, a centralized digital platform for government transactions. The Secretary of Digital Government, through PCM, has promulgated a degree (DS No. 029-2021-PCM) to establish the conditions, requirements, and use of technologies and electronic media in administrative procedures that will form the basis for improvements of these platforms and establish requirements for digital ID.

Several government programs implemented user service platforms and virtual marketing spaces during COVID-19. MIDAGRI created a platform to carry out the business rounds of its Agroideas program, and PRODUCE digitized its Tu Empresa program training process for microentrepreneurs and created a platform to register stores nationwide with digital payments and share the information with the population.²⁰¹ Ministry of Labor and Employment Promotion (Mintra Ministerio de Trabajo y Promocion del Empleo; MINTRA) developed a platform to formalize informal sector workers through electronic payroll within the framework of the national program Verifica Tu Chamba.²⁰²

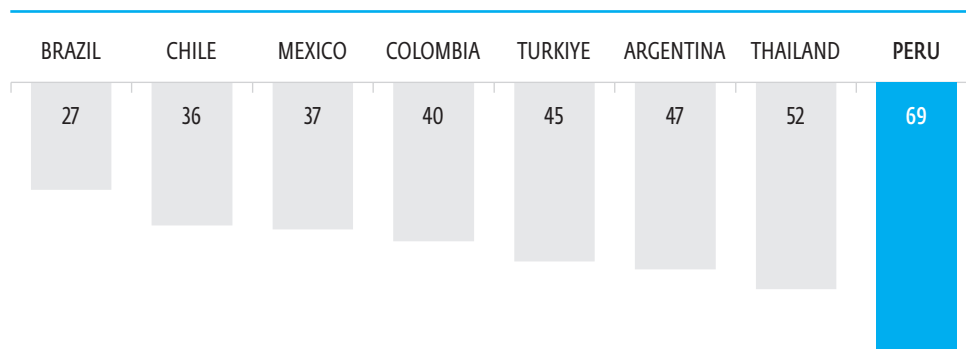
However, there has been little progress in administrative procedures related to identification (ID cards, birth certificates, and passports) through digital tools. Delays in the implementation of electronic ID and access to public records have led to long delays of processes for the public to obtain records and use electronic ID for private and government transactions. A major issue to resolve is the question of which institution will house the relevant civil and ID registries and how to ensure interoperability of systems—for example, between the registry and line ministries that need to verify or authenticate identities of beneficiaries. Peru's national ID document has a microchip, but only to facilitate the use of digital signatures in government documents and contracts. An interesting example of digital identity can be found in India, where the Unique Identification Authority developed an app to allow identify citizens through QR, email contacts, and other resources. With this app, citizens can access government services and the e-know-your-customer process for banking.

Digital business

Digital entrepreneurship ecosystems are clusters that contain, within a bounded geography, a self-reinforcing process of creating, growing, and sustaining start-ups, (that is, businesses that are enabled by digital technologies). As such, hosting a strong ecosystem is a key asset for a country's digital economy and contributes substantially to innovative capacity and country competitiveness. Ecosystems require several components to thrive, including (a) presence of addressable demand for digital solutions; (b) quality of digital entrepreneurship talent; (c) availability of vibrant venture capital markets to provide access to funding; (d) networks and links that connect different modes within the ecosystem; and (e) policies and regulations that provide an adequate enabling environment. This section focuses on the first four pillars, while the final pillar is addressed in the "Recommendations" section.

The Peruvian digital entrepreneurship ecosystem continues to trail behind its regional peers; however, it has started to demonstrate early signs of evolution. The country placed 69th out of the top 100 countries in the StartupBlink start-up ecosystem ranking in 2023, while Lima was ranked as the 6th largest start-up hub within Latin America and the 201st largest globally (figure 5.30).²⁰³ The development of the country's ecosystem has traditionally lagged that of other countries in the Latin American region, especially Argentina, Brazil, Chile, Colombia, and Mexico. Brazil and Mexico, specifically, host thriving venture capital markets, where venture capital financing and entrepreneurial tech talent have produced several unicorns and generated substantial buzz around their start-up ecosystems.²⁰⁴ Peru has some foundations in place to similarly advance its digital entrepreneurship ecosystem, as described in the next paragraph, but the country remains characterized by key demand- and supply-side challenges that deter the development of its ecosystem, especially (a) limited access to funding, (b) challenges in nurturing talent, and (c) limited private sector activities and networks that support innovation and global knowledge exchange.²⁰⁵

FIGURE 5.30 RANKINGS OF COUNTRIES' DIGITAL ENTREPRENEURSHIP ECOSYSTEMS BY STARTUPBLINK, 2022



Source: Ranking elaborated based on information from StartupBlink, "The Global Startup Ecosystem Index Report 2022," StartupBlink, 2023, <https://report.startupblink.com/>.

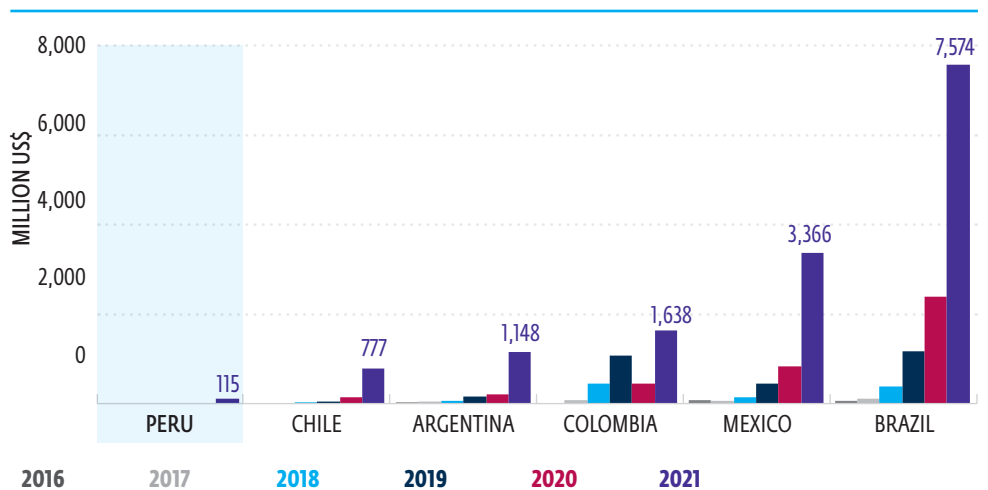
Note: Selected countries' rankings, in the top 100 countries, are shown.

Peru's ecosystem is concentrated in Lima and has some critical foundations in place, such as seed-stage activity and active support from entrepreneurial intermediaries. Start-up activity in the country increased because of the digitalization tailwinds from the COVID-19 pandemic. However, as Peru and Lima dropped several positions in the StartupBlink ranking between 2019 and 2021, the overall ecosystem's growth was outpaced by that of other tech hubs across the globe. Most start-ups focus on e-commerce and fintech, a sign of the early stage of the ecosystem, as well as education technology, a highly popular technology vertical throughout Latin America.²⁰⁶ With the exception of a dozen successful start-ups, such as Fandango Latam (a unicorn) and Crehana, most start-ups remain small and require support from entrepreneurial intermediaries, which entail incubators, accelerators, and venture studios. About 63 percent of start-ups in the country have been supported by more than 80 intermediaries, including regional or global organizations such as Endeavor, NXTP Labs, and Y Combinator.²⁰⁷ Other foundations of the ecosystem include increasing levels of digital infrastructure, availability and increased uptake of fintech products by consumers (as discussed earlier), and positive trends in venture capital (VC) deal flows—although this is mainly driven by significant investment in a single start-up.

Although Peru is an entrepreneurial country, the ecosystem lacks experienced talent required to scale start-ups. According to the Global Entrepreneurship Monitor, Peru is one of the most entrepreneurial countries in the world and adults tend to have positive attitudes regarding entrepreneurship.²⁰⁸ However, technology start-ups require founders and employees with experience, especially in the sector they seek to disrupt, sophisticated business management skills, and advanced digital or technical skills. The country currently lacks experienced entrepreneurs who know how to scale start-ups, given the early stage of the ecosystem, and, as discussed previously, there are relatively few ICT specialists.²⁰⁹ The country ranks 68th out of 82 emerging markets in the level of ICT skills,²¹⁰ and STEM graduates represent only 20 percent of the total number of graduates,²¹¹ thereby constituting a bottleneck for the materialization of ideas for innovative digital business models.²¹² Increasing the uptake of education technologies, which currently stands at about 10 percent of the adult population,²¹³ in combination with boot camp programs such as the social enterprise Laboratoria,²¹⁴ could result in a gradual reduction in the gap in technical skills.

There is a substantial gap in access to venture capital financing for technology start-ups. Private venture capital investment as a share of the size of the Peruvian economy was close to zero between 2016 and 2020, substantially below Brazil (0.07 percent), Mexico (0.03 percent), and Chile (0.02 percent). In that period, Peruvian start-ups completed about 18 deals and raised a total of about US\$31 million in VC funding, of which 90 percent was invested in seed-stage start-ups.²¹⁵ From 2020 to 2021, against the background of a global surge in interest in venture capital as an asset class, investment in Peruvian start-ups increased fivefold to US\$115 million in 2021 (figure 5.31). However, most funding was concentrated in Crehana, an educational technology (edtech) start-up that raised a Series B funding round of US\$70 million. Given the limited availability of venture capital financing, especially when compared with the size of Peru’s economy, start-ups often resort to government grant funding and debt financing.²¹⁶

FIGURE 5.31 TOTAL VOLUME OF VENTURE CAPITAL INVESTMENT, 2016–21



Source: Pitchbook and GPCA (Global Private Capital Association).

TABLE 5.11 COMPARATIVE OVERVIEW OF VENTURE CAPITAL LANDSCAPE, 2021

COUNTRY	VC VOLUMES (US\$, MILLIONS)	NUMBER OF DEALS	VC PENETRATION RATE (%)
Peru	115	17	0.05
Chile	777	81	0.07
Colombia	1,638	74	0.24
Thailand	424	26	0.08
Türkiye	2,792	51	0.35

Source: Pitchbook and GPCA (Global Private Capital Association).

Note: VC penetration is the VC volume divided by gross domestic product (GDP). GDP data are derived from the International Monetary Fund. VC = venture capital.

The lack of venture capital funds anchored in Peru and the limited appreciation of venture capital as an asset class among local institutional investors explain the venture capital gap. Given that the relatively small market size is a limiting factor, Peru currently hosts few local venture capital fund managers that, in mature ecosystems, are usually the most in tune with the ecosystem and best placed to source and co-invest in high-potential start-ups.²¹⁷ Stakeholder interviews also revealed that crowdfunding and angel investors are relatively uncommon. As a result, it is challenging for start-ups to pass the seed stage and, for them to do so, they must cross geographical boundaries and spark interest among global or regional investors. Crehana, for example, predominantly received equity investments from General Atlantic, Mountain Nazca, and Salesforce Ventures. These challenges have a self-reinforcing effect throughout the ecosystem; most companies struggle to access early-stage capital, while potential fund managers refrain from investing in the ecosystem because ticket sizes are too small, it is challenging to find co-investors, and exit potential (that is, ability for funds to receive returns on their capital through initial public offerings or sales to later-stage investors) remains limited. The availability of local private sector fund managers, supported by institutional investors, high net-worth individuals (HNWIs), corporates, and other commercial investors, and complemented by incipient angels, crowdfunding platforms, incubators, and accelerators currently present in Peru, are necessary for the ecosystem to move forward.

Innovation and lack of research and development (R&D) limit the quality of start-ups in Peru. The country scores relatively low on the quality of research institutions, corporate R&D, and international research collaborations, as well as academic performance in STEM education (mathematics and science), significantly underperforming in comparison with other technology hubs.²¹⁸ Supporting innovation and R&D could enable start-up solutions to become more “cutting edge” rather than “copy-paste,” to enable the country to expand to more technologically advanced verticals.

Government support and entrepreneurship intermediaries play a key role in mitigating some of these challenges but are limited in reach, and greater private sector activity in supporting the ecosystem is necessary. Government funds, such as the recently established the Capital Fund for Innovative Ventures (Fondo de Capital Para Emprendimientos Innovadores) by the Peruvian Ministry of Production (PRODUCE) and the development bank (COFIDE), constitute a stepping stone to fill the financing gaps. Government and university incubators and accelerators, such as Start-up Peru, Innovate Peru, and Empeñe UP, have similarly brokered more interest in creating and funding start-ups. A challenge is that such initiatives often focus on university graduates, rather than potential founders with sector experience, which tend to be more successful entrepreneurs. The country is also increasingly home to associations, such as Asociación Peruana de Capital Semilla y Emprendedor (PECAP) and Angel Ventures Peru, that support domestic knowledge exchange. It is key to enhancing linkages of Peru’s ecosystem with global and regional private sector stakeholders (fund managers, unicorn start-ups), as these bring to the market experience and “best practices” that are required to advance the quality of start-ups in the ecosystem, including beyond Lima.

Uptake of digital solutions by traditional businesses

Digital technologies can enhance productivity growth of corporations and MSMEs by offering solutions that automate traditionally manual business functions. Businesses in Peru tend to experience productivity challenges derived from the inefficient allocation of labor and capital. Although information technology solutions have been increasingly available, most businesses continue to rely on manual processes to complete relatively simple and low-paying operational tasks, partly because the traditional monetization model of installing and hosting products at client sites involves high sunk costs that are often unaffordable and there is limited availability of software-as-a-service (SaaS) in Peru.

In Peru, most businesses use at least some form of ICT; however, there is scope for improvement, as uptake of advanced technologies, such as SaaS, remains more limited. There are various ways in which the digital revolution is transforming business models, production, and competitiveness. In Peru, 69 percent of businesses interviewed by the World Bank Enterprise Surveys have their own website, although this percentage is lower than peer countries (table 5.12). However, high informality levels in Peru may distort this picture (37 percent of MSMEs were not registered at SUNAT). The survey shows the number of sectors investing in software is increasing. Previously, the main sectors with such activity were finance, insurance, and banking. Recent surveys also indicate that there is digitalization in retail/consumer goods, mining, and agro-industries investing. Leading sectors investing in technology and innovation are private education (41.5 percent), information and communications (38.3 percent), and electricity (38.2 percent). However, only 26.7 percent of businesses make investment in technology and innovation a priority, and FDI in software development in Peru fell in 2020 to US\$4.5 million, making it seventh in Latin America and the country that lost the most in Latin America and the Caribbean. Furthermore, uptake of more advanced technologies remains limited—both among corporates and MSMEs.²¹⁹

TABLE 5.12 UPTAKE OF DIGITAL TOOLS OF BUSINESSES BY COUNTRY 2021 (%)

PERCENTAGE OF BUSINESSES WITH...	PERU	CHILE	COLOMBIA	THAILAND	TÜRKIYE
Line of credit	77.8	79.6	62.4	15.5	34.8
Savings account	96.2	97.9	98.9	87.7	81.3
Website	69.2	78.7	79.2	45.5	64.6
Email	96.7	96.6	98.7	52.9	—

Source: World Bank Enterprise Surveys 2021.

Note: — = not available.

Digital payments and online purchases for firms are also not very developed. The 2019 business survey indicates that only 13.2 percent of firms have digital tools to make sales, only 8.2 percent sell online, and 19 percent purchase online. However, during the pandemic, 7 percent of businesses increased their sales online. Between July and August 2020 alone, the growth in digital payments was exponential, but with the opening of activities, numbers started to decrease. A key deterrent to business-to-business/business-to-consumer, (B2B/B2C), payments continue to be the lack of interoperability across payment systems, as discussed earlier.

The legal framework has been developed to begin improving digitalization of corporations and MSMEs in Peru. DU No. 013-2020 promotes financing small and medium enterprises (SMEs) and start-ups through negotiable invoices, purchase orders, and services issued by state entities or others, including training for start-ups and fintech firms. These initiatives are led by PRODUCE. There is also a program, Innovate Peru, to promote innovation and digital business transformation. This program, which has only a temporary budget, aims to improve business productivity through innovation and digitization, working inside PRODUCE. The program has funds from Fondo Crecer and Fondo MiPYME Emprendedor, and because of its budgetary limitations, it has worked with MSMEs through biannual contests.

Recommendations

To address regional disparities in access, the government should promote investments with a focus on lagging regions. The most important priority should be finding a solution that ensures the ongoing operation of RDNFO and the implementation of last-mile infrastructure projects in areas lacking access. Further areas that require action include promoting mechanisms for infrastructure sharing, efficient spectrum use, and competition in the fixed internet market. Addressing universal access and rural connectivity would benefit from additional resources within the Ministry of Transport and Communications to help with strategic planning and rollout of projects. Simplifying and streamlining the legal and regulatory framework would help spur investments in digital infrastructure. The government of Peru is planning to reduce the number of regulations by 30 percent by 2024 to simplify procedures and improve

processes to increase internet quality and mobile phone services. A key aspect is to clearly define the role of all the public institutions that perform actions related to digital infrastructure (OSIPTEL, PRONATEL, MTC, and so on) and identify new business models, including PPPs, where purely private service provision is not economically viable.²²⁰ The sector would generally benefit from improved collection and availability of data for planning purposes.

Peru needs to accelerate its plans to improve the digital skills of the population. A National Program of Digital Literacy led by the Secretariat of Digital Government should be developed in collaboration with other government agencies. This program should complement the Multisectoral Plan of the National Policy of Financial Inclusion, which is oriented toward DFS, with efforts to reach a broader public, including students and MSMEs, with a focus on lagging groups, including women and rural populations. Measures should include public-private initiatives to increase the availability of resources and ensure the relevance of skills acquired. Best-practice examples from other countries to be considered include Colombia, which fosters digital skills with a wide variety of initiatives.²²¹ These include ICT training programs, the development of digital culture, training to use ICT in libraries and improve education quality, responsible use of ICT, ICT for disabled people, empowerment of citizens to use ICT to interact with the state, and training for MSMEs in ICT use.

The Strategic Multisectoral Plan of the National Policy of Financial Inclusion, which sets the basis for expanding the use of DFS, should be complemented by key measures to increase uptake of DFS. The sector would benefit from the implementation of a comprehensive legal framework and from strengthening and streamlining existing regulations regarding cybersecurity, anti-money laundering/combating financing of terrorism (AML/CFT), and privacy regulations. The current ad hoc regulation through a decree and Superintendence of Financial Markets (Superintendencia de Mercados Financieros) should be transitioned to a dedicated regulatory agency. The new regulation and supervision framework, based on best-practice examples from peers such as Mexico, Brazil, and Colombia, should aim to provide a sound basis for the operation of fintech firms, cryptoassets, open banking and insurtech. The regulatory and supervision framework should include the standardization of terminology, data management, and reporting requirements, as well as the regulation of start-ups. Interoperability between electronic wallets is also critical to the development of DFS in Peru. This effort needs an understanding of advances in this sphere, and transaction characteristics in the country—led by SBS and MEF. The first step in this process is to participate in the recently created Financial Inclusion Consultative Committees regarding Interoperability and Digital Transformation, in coordination with the MEF. The government of Peru should consider amending the General Law of the Financial System and the Insurance System and the Law of the Superintendency of Banking and Insurance to allow for digital-only banking. While Peru addresses these issues, it is important to ensure coordination between the members of the Multisectoral Commission on Financial Inclusion (CMIF) and the General Direction of Finance and Private Pension Markets, led by the MEF.

Strengthening e-government in Peru should focus on introducing a digital ID, resolving the interoperability of electronic payment systems, and consolidating the gains in the introduction of e-government platforms. Digital ID is a foundational technology that would improve Peruvians' ability to benefit from digital finance, e-government, and electronic businesses. This process would include resolving institutional and administrative concerns about which institution houses the civil and identification registries, and how they interact with other relevant government data repositories. The government should learn from best-practice examples, for example, in India. Recent successes in the development and improvement of e-government platforms need to be complemented by measures to promote adoption. These measures would include advisory services for the digital transformation of the Banco de la Nación, understanding the adoption process of digital payments, and filling the DFS knowledge gap. Platforms oriented toward SMEs and small agricultural producers could benefit from simplification.

To attract more VC investment and generate more buzz around its relatively young ecosystem, funds and entrepreneurship intermediaries should promote regional expansion early in the life of a start-up. Creating unicorns or sufficiently scaled start-ups is critical to the development of the ecosystem because they could make regional and global institutional investors take notice of the country. To achieve this and overcome the issue of a relatively small market size, Peruvian start-ups should be encouraged to engage in global or regional scale-up early on, leveraging the Latin America and the Caribbean region's relative homogeneity of language and culture. For example, local VC funds and entrepreneurship intermediaries may create inhouse "CFO-in-Residence" programs that guide investees on scaling up rapidly beyond the country borders. To further enhance quality of start-ups in the ecosystem and access to venture capital funding, Peru should also develop partnerships with regional technology hubs (for example, Brazil, Mexico) to improve financial and knowledge flows. With regard to financial flows, Peru should approach regional VC funds active in Brazil and Mexico—for instance, through showcase events by accelerators—to enhance interest of funds in local start-ups. Regarding knowledge flows, international exchange programs should be established for founders, focused on enabling regional or global scale-up of Peruvian ventures and learning best practices. Examples include Hungary's INPUT program and partnerships between ecosystems in India and Mexico with Silicon Valley.

To enhance development of the local venture capital market, Peru should incentivize local and international private sector investors to invest in Peruvian start-ups. Examples of investors are HNWI, corporate VC, banks, and pension funds. Successful examples include a dedicated fund in which the government matches private capital funding, thereby enhancing the comfort of local and international institutional investors with investing in risk capital in Peru.

See table 5.13 for a summary of recommendations.

TABLE 5.13 RECOMMENDATIONS TO FOSTER DIGITAL DEVELOPMENT

OBJECTIVE	SPECIFIC ACTIONS	TIMELINE
IMPROVE DIGITAL INFRASTRUCTURE		
Improve digital backbone and last-mile infrastructure	<ul style="list-style-type: none"> • Select a new operator for RDNFO based on a sound, financially sustainable business model that allows adjusting to new technology and market changes. • Prioritize the implementation (and, where needed, restructuring) of last-mile connectivity projects with focus on underserved rural areas to achieve efficient use of their installed capacity, with focus on the RDNFO and regional projects. • Find viable business models (for example, PPPs) in digital infrastructure, particularly last-mile projects, where purely private provision is not economically feasible. • Improve gathering and availability of public data, including georeferenced information, for improved decision making. 	Short to medium term
Improve infrastructure sharing	<ul style="list-style-type: none"> • Introduce policies that optimize infrastructure use, for example, through infrastructure sharing, efficient use of spectrum, and competition in the fixed internet market. 	Short to medium term
DEVELOP DIGITAL SKILLS		
Improve digital literacy and skills	<ul style="list-style-type: none"> • Develop a National Program of Digital Literacy led by the Secretariat of Digital Government in collaboration with other government agencies. • Expand existing digital skills projects to reach students and MSMEs with focus on disadvantaged populations. • Foster public-private initiatives, based on international best-practice examples such as Colombia. 	Short to medium term
STRENGTHEN DIGITAL FINANCIAL SERVICES		
Improve the regulatory environment	<ul style="list-style-type: none"> • Introduce a comprehensive regulation and supervision framework based on experience from successful peer countries. • Finalize amendments to the General Law of the Financial System and the Insurance System and the Law of the Superintendency of Banking and Insurance that allow for the operation of digital-only banks. 	Short to medium term

Note: MSME = micro, small, and medium enterprise; PPPs = public-private partnerships; RDNFO = Red Dorsal Nacional de Fibra Optica.

OBJECTIVE	SPECIFIC ACTIONS	TIMELINE
E-GOVERNMENT		
Ensure interoperability of payment systems	<ul style="list-style-type: none"> Design and implement policy and regulatory approaches to promote interoperability between forms of electronic payments including e-wallets and bank accounts. 	Short to medium term
Introduce digital ID	<ul style="list-style-type: none"> Introduce a digital ID that can be used for private applications as well as e-government transactions. Provide training to PCM in the development of the digital platform ID GOB.pe. 	Short to medium term
Improve e-government platforms	<ul style="list-style-type: none"> Strengthen existing e-government platforms and simplify their use. Provide training for the digital transformation of the Banco de la Nacion. 	Short to medium term
PROMOTE DIGITAL BUSINESSES		
Promote use of digital practices by existing firms	<ul style="list-style-type: none"> Support existing businesses in the adoption of digital practices, for example, by providing training to learn about international experiences and find better practices to improve digital payments B2B, B2P. Evaluate Innovate program to advocate for its inclusion in the permanent budget of the sector. 	Medium term
Support start-ups	<ul style="list-style-type: none"> Support accelerators, incubators, and tech hubs. Ensure that regulation and compliance requirements are adequate for start-ups and provide capacity building as required. 	Medium term
Improve VC environment	<ul style="list-style-type: none"> Improve regional integration of start-ups and promote collaboration with regional hubs. Attract international funding for Peruvian start-ups. 	Short to medium term

Note: B2B = business-to-business; B2P = business-to-person; MSME = micro, small, and medium enterprise; PCM = Presidency of the Council of Ministers; RDNFO = Red Dorsal National de Fibra Optica; VC = venture capital.

APPENDIX

KEY EXPORTERS IN THE AQUACULTURE SECTOR 2021

SPECIES	PRODUCT	COMPANY	MARKET SHARE
Trout	Frozen	PERUVIAN ANDEAN TROUT S.A.C.	42.7%
		PISCIFACTORIAS DE LOS ANDES S.A	39.9%
		MAR ANDINO PERU S.A.C.	16.6%
	Canned	PACIFIC FREEZING COMPANY S.A.C.	72.0%
		CORPORACION PESQUERA APOLO SAC	13.3%
		CONSERVERA SAN LUCAS SOCIEDAD ANONIMA CERRADA - CONSERVERA SAN LUCAS S.A.C.	12.5%
Fresh, chilled	MAR ANDINO PERU S.A.C.	99.8%	
Scallop	Fresh, chilled	ARMADORES Y CONGELADORES DEL PACIFICO SA	34.1%
		TRITON EXPORT & IMPORT S.A.C.	32.9%
		PERU SEAFOODS MARKET S.R.L.	17.7%
	Frozen	ALTAMAR FOODS PERU S.R.L.	25.0%
		AQUACULTIVOS DEL PACIFICO S.A.C.	21.0%
		INVERSIONES PRISCO S.A.C.	16.2%
Shrimp	Frozen, tails	MARINAZUL S.A.	29.4%
		INVERSIONES PRISCO S.A.C.	19.7%
		SEAFROST S.A.C.	12.3%
	Whole	MARINAZUL S.A.	52.4%
		ECO - ACUICOLA SOCIEDAD ANONIMA CERRADA	17.6%
		LANGOSTINERA TUMBES S.A.C.	9.1%

Own elaboration: Source: Sistema Integral de Información de Comercio Exterior (2021). Retrieved 5 January, 2022, from SIICEX - *Lista completa de productos – Pesquero – Comercio – Principales empresas exportadoras*: https://www.siicex.gob.pe/siicex/portal5ES.asp?_page_=217,00000&_portletid_=sFichaProductoRegistro&scriptdo=sc_fp_productosector

Note: The information is classified by the seven tariff item codes that correspond to the three key resources.

NOTES

- 1 FAO (Food and Agriculture Organization of the United Nations), "The State of World Fisheries and Aquaculture 2020: Sustainability in Action" (FAO, Rome, 2020).
- 2 World Development Indicators (WDI), GDP growth at constant local currency unit (LCU).
- 3 INEI (National Institute of Statistics and Information), "Capítulo 4: La Informalidad y la Fuerza de Trabajo [Chapter 4: Informality and the Workforce]" in *Producción y Empleo Informal en El Perú. Cuenta Satélite de la Economía Informal 2007-2019 (Incluye Sección Especial: Efectos de la COVID-19 en la Actividad Económica y el Empleo Informal)*. [Production and Informal Employment in Peru. Satellite Account of the Informal Economy 2007-2019 (includes Special Section: Effects of COVID-19 on Economic Activity and Informal Employment)] (Lima: INEI, 2020), https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1764/capo4.pdf; Eventos Naturales, Antrópicos y Desastres database, https://www.inei.gob.pe/media/MenuRecursivo/indices_tematicos/68.xlsx.
- 4 World Bank, "Peru Country Climate and Development Report (CCDR) Concept Note" (World Bank, Washington, DC, 2022).
- 5 The term "climate-smart growth" is used in this document as a shorter term for "low-carbon and climate-resilient economic growth."
- 6 World Bank, "Peru CCDR Concept Note."
- 7 The dispersion in household expenditures per capita across districts accounted for 46 percent of the variance in household expenditures per capita (a proxy for inequality) at the national level in 2018, according to the World Bank Poverty Assessment for Peru (forthcoming internal document).
- 8 World Bank, "Repensar el futuro en el Perú—Aportes para la reactivación económica y el desarrollo sostenible" ["Rethinking the Future in Peru—Contributions for Economic Reactivation and Sustainable Development"] (Peru Policy Note, World Bank, Washington, DC, 2021).
- 9 This turnover is further aggravated by the fact that local authorities cannot be reelected.
- 10 The number of natural and human-induced disasters recorded in Peru increased by about 240 percent between 2003 and 2019 (INEI, "Capítulo 4: La Informalidad y la Fuerza de Trabajo"). Source: Eventos Naturales, Antrópicos y Desastres database, https://www.inei.gob.pe/media/MenuRecursivo/indices_tematicos/68.xlsx.
- 11 BID-CEPAL, "La Economía del Cambio Climático en el Perú" (Banco Interamericano de Desarrollo, Comisión Económica para América Latina y el Caribe, 2014).
- 12 World Bank, "Perú: Hacia un sistema integrado de ciudades— una nueva visión para crecer" (Notas de Política, World Bank, Washington, DC, 2015).
- 13 World Bank, "Peru: Strengthening of the Property Legalization Process as Alternative to Formalization" (P155274, World Bank, Washington, DC, 2015).
- 14 J. Rentschler and M. Salhab, "People in Harm's Way: Flood Exposure and Poverty in 189 Countries" (Policy Research Working Paper 9447, World Bank, Washington, DC, 2020).
- 15 J. C. Saavedra, "Reforma Laboral: Del Consenso a la Acción," *Revista Poder*, October, 2014; J. Toyama, "La Rigidez Laboral Peruana," *Revista Poder*, October 2014.
- 16 The Labor Market Rigidity Index measures the stringency of several statutory labor market regulations across countries over time, focusing on hiring, working hours, redundancy rules, and redundancy costs.
- 17 A. C. David, F. Lambert, and F. Toscani, "More Work to Do? Taking Stock of Latin American Labor Markets" (IMF working paper WP/19/55, International Monetary Fund, Washington, DC, 2019); A. David, S. Pienknagura, and J. Roldos, "Labor Market Dynamics, Informality, and Regulations in Latin America" (IMF working paper WP/20/19, International Monetary Fund, Washington, DC, 2020).
- 18 V. Alaimo et al., "Measuring the Cost of Salaried Labor in Latin America and the Caribbean" (IDB technical note 1291, Inter-American Development Bank, Washington, DC, 2017).
- 19 However, a more stable and predictable political context—a factor the CPSD cannot address—would be needed.
- 20 World Bank, *Peru Country Climate and Development Report (CCDR)* (Washington, DC: World Bank, 2022).
- 21 ILO (International Labour Organization), "Hacia una recuperación sostenible del empleo en el sector del turismo en América Latina y el Caribe" (ILO, Geneva, Switzerland, 2021), https://www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/documents/publication/wcms_809290.pdf.
- 22 According to the Network Readiness Index 2022. See https://networkreadinessindex.org/wp-content/uploads/reports/nri_2022.pdf.
- 23 These estimates use data from ENAHO (National Household Survey) 2019 for Peru, and PovCaINET database for World Bank regions (US\$5.50-a-day poverty line), available upon request.
- 24 INEI (National Institute of Statistics and Informatics), "Peru: Forms of Access to Water and Basic Sanitation" (INEI, Lima, 2018).

- 25 LAC Equity Lab tabulations of SEDLAC (CEDLAS and the World Bank, 2019).
- 26 National poverty went from 20.2 to 30.1 percent between 2019 and 2020 (INEI–Enaho).
- 27 World Bank Group, “Peru: Enabling a Green and Resilient Development” (Development Policy Financing, P177765, World Bank, Washington, DC, 2022).
- 28 World Bank, “Peru Poverty Assessment” (World Bank, Washington, DC, forthcoming).
- 29 It is important to mention that even though the number of jobs destroyed was higher in the informal sector, the rate of job destruction (that is, jobs destroyed as a share of the baseline) was higher in the formal sector. Informality is often related to rigid labor regulations, which would affect the formal sector harder during a shock.
- 30 World Bank, “Peru Poverty Assessment.”
- 31 At the national level, employment creation was driven mostly by small firms with 10 or fewer employees while total employment in firms with more than 50 employees was 18.5 percent lower than in 2019.
- 32 Follows the methodology of table 4 in Paul Johnson and Chris Papageorgiou, “What Remains of Cross-Country Convergence?,” *Journal of Economic Literature* 58, no. 1 (2020): 129–75.
- 33 For example, while poverty fell substantially in Huancavelica (figure 2.4a), its poverty headcount ratio went from 6.3 times that of Lima in 2007 to almost 10 times in 2019.
- 34 Estimates were based on ENAHO (National Household Survey) 2020.
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- 37 World Bank Group, *Peru Country Climate and Development Report (CCDR)* (Washington, DC: World Bank, 2022).
- 38 World Bank, “Peru Climate and Development Report (CCDR) Concept Note” (World Bank, Washington, DC, 2022).
- 39 The six pillars comprise a total of 40 indicators, which are built from the latest data available from official sources. The index is based on the same methodology as the one used for the World Economic Forum’s Global Competitiveness Index.
- 40 World Bank, *Peru Country Climate and Development Report (CCDR)* (Washington, DC: World Bank, 2022); G. Carrasco-Escobar et al., “Travel Time to Health Facilities as a Marker of Geographical Accessibility across Heterogeneous Land Coverage in Peru,” *Frontiers in Public Health* 16 (2020): 498.
- 41 World Bank, *Peru CCDR*.
- 42 Marta Ruiz-Arranz and Cecilia Deza, “Creciendo con Productividad: Una Agenda para la Región Andina” (Inter-American Development Bank, Washington, DC, 2018).
- 43 This result must be interpreted with caution given that mining and manufacturing are also the most capital-intensive sectors.
- 44 World Bank, *Gaining Momentum in Peruvian Agriculture: Opportunities to Increase Productivity and Enhance Competitiveness* (Washington, DC: World Bank, 2017).
- 45 See INEI (National Institute of Statistics and Information), “Chapter 4: Informality and the Workforce” in *Production and Informal Employment in Peru. Satellite Account of the Informal Economy 2007–2019 (includes Special Section: Effects of COVID-19 on Economic Activity and Informal Employment)* (Lima: INEI, 2020).
- 46 It is important to distinguish between firm informality and labor informality. Informal firms are those that are not incorporated nor registered with the tax administration (SUNAT), except for the primary sector, where all firms that are not incorporated are considered informal. In the case of employment, informal workers are those who work in an informal firm, in a salaried position without social security, or as an unpaid family worker. Therefore, all workers employed in an informal firm are considered informal workers. However, there can be informal workers working in the formal sector (for example, if they work in a registered firm but do not receive social security benefits).
- 47 The informal sector includes firms and self-employed people who are not registered with SUNAT and all household-production units in the primary sector (that is, households that produce goods and services using their own capital and their own labor). Informal employment includes self-employed people and employers who are not registered with SUNAT, wage workers without social insurance coverage, and unpaid workers.
- 48 INEI (National Institute of Statistics and Information), “Behavior of Labor Market Indicators at the National Level,” 2021, <https://www.inei.gob.pe/media/MenuRecursivo/boletines/o3-informe-tecnico-empleo-nacional-abr-may-jun-2021.pdf>.
- 49 The dispersion in household expenditures per capita across districts accounted for 46 percent of the variance in household expenditures per capita (a proxy for inequality) at the national level in 2018.
- 50 World Bank, “Repensar el Futuro en el Perú—Aportes para la Reactivación Económica y el Desarrollo Sostenible” [“Rethinking the Future in Peru: Contributions for Economic Reactivation and Sustainable Development”] (Peru Policy Note, World Bank, Washington, DC, 2021).
- 51 *Macro-regiones* refers to the union of regions to create a bigger unit for spending purposes, and *coparticipación* refers to a model of distribution of revenues collected by the central government, between it and regional and local governments under clear and objective criteria.

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- 53 INEI (National Institute of Statistics and Informatics), "Perú: Formas de Acceso al Agua y Saneamiento Básico," 2018.
- 54 Darin Christensen and Francisco Garfias, "The Politics of Property Taxation: Fiscal Infrastructure and Electoral Incentives in Brazil," *Journal of Politics* 83, no. 4 (2021): 1399–416.
- 55 In addition to the subnational issues, weak competition is an issue at the national level also (box 4.1). The first *Subnational Doing Business for Peru* is now available. It benchmarks 12 locations, finding that entrepreneurs in the country face different realities depending on where they establish their businesses. Doing business is the easiest in Lima, followed by Huaraz and Tarapoto. For local entrepreneurs, starting a business is easier in Lima and Arequipa, while it is more difficult in Chiclayo. Lima also ranks at the top in registering property because the process is more efficient and the quality of the land administration system is higher than in the rest of the country. Dealing with construction permits is easiest in Trujillo, and Huancayo stands out in contract enforcement despite lagging in the other areas.
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- 57 World Bank, "Peru: Strengthening of the Property Legalization Process as Alternative to Formalization" (World Bank, Washington, DC, 2015).
- 58 INDECOPI (National Institute for the Defense of Competition and the Protection of Intellectual Property), "Abogacía de la Competencia en el Mercado del Servicio de Transporte Turístico de Acceso a la Ciudadela Inka de Machu Picchu," April, 2017, <https://repositorio.indecopi.gob.pe/handle/11724/7761>.
- 59 See resolutions: 0081-2020/CEB-INDECOPI (Telecommunications Partners S.A.C. and Municipality of Lima); 117-2020-CEB-INDECOPI (Torres Unidas del Perú S.R.L and Municipality of Ancon); 0196-2020/CEB-INDECOPI (Entel Perú S.A. and Municipality of Lima); 0238-2020/CEB-INDECOPI (Andean Telecom Partners Perú S.R.L. and Municipality of San Borja); 266-2020/CEB-INDECOPI (Telecom Business Solution S.R.L. and Municipality of Lima); 411-2020/CEB-INDECOPI-LAM (Torres Unidas del Perú S.R.L. and Municipality of Tumbay); 420-2020/CEB-INDECOPI-LAM (Torres Unidas del Perú S.R.L. and Municipality of La Victoria); and 455-2020/CEB-INDECOPI-LAM (Torres Unidas del Perú S.R.L. and Municipality of Pacora).
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- 61 ProInversion, Foreign Direct Investment, 2022, <https://www.investinperu.pe/es/clima/inversion-extranjera/inversion-extranjera-directa>.
- 62 INDECI (National Institute of Civil Defense), "Emergencias due to Natural and Anthropoc Events," 2019, https://www.inei.gob.pe/media/MenuRecursivo/indices_tematicos/68.xlsx.
- 63 World Bank, "Repensar el Futuro en el Perú."
- 64 Fernando Aragon and Hernan Winkler, "The Long-Term Impact of a Resource-Based Fiscal Windfall: Evidence from the Peruvian Canon" (World Bank, Washington, DC, 2022).
- 65 World Bank, "Peru: Towards an Integrated System of Cities—A New Vision for Growth" (Policy Note, World Bank, Washington, DC, 2015).
- 66 They are the Superintendencia Nacional de Bienes Estatales (SBN), Organismo de Formalización de la Propiedad Informal (Cofopri), and Programa Generación de Suelo Urbano (PGSU). See World Bank, "Peru: Towards an Integrated System of Cities."
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- 71 Erika Field, "Entitled to Work: Urban Property Rights and Labor Supply in Peru," *Quarterly Journal of Economics* 122, no. 4 (2007): 1561–602.
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- 196 Darío Bregante and María del Pilar Sabogal, "Guía de Negocios FinTech 2021/2022" (EY Law, November 22, 2021), https://www.ey.com/es_pe/law/guia-fintech.
- 197 Bregante and Sabogal, "Guía de Negocios FinTech."
- 198 See "RappiBank, la novedad de Interbank junto a Rappi que garantiza una nueva forma de hacer banca, Mercado Negro, 2020, <https://www.mercadonegro.pe/marketing/rappibank-la-novedad-de-interbank-junto-a-rappi-que-garantiza-una-nueva-forma-de-hacer-banca/>.
- 199 The Peruvian government has enacted the Law Creating the Peru Financial Intelligence Unit (Law 27693) and its implementing regulation (Supreme Decree 020-2017-JUS) as part of a set of anti-money laundering/combating the financing of terrorists rules and regulations.
- 200 Electronic wallets are regulated and supervised by SBS as electronic money-issuing companies.
- 201 See <https://www.tuempresa.gob.pe/ubicatubodega#!/>.
- 202 App Verifica tu chamba allows formal labor for the population in Peru. See <https://www.gob.pe/institucion/sunafil/noticias/552718-uso-de-aplicativo-verifica-tu-chamba-de-sunafil-permitio-que-mas-de-200-mil-personas-ingresen-a-planilla-este-ano>.

- 203 StartupBlink, "The Global Startup Ecosystem Index Report 2022," StartupBlink, 2022, <https://report.startupblink.com/>.
- 204 A unicorn is a private company with a valuation over US\$1 billion. See CB Insights, <https://www.cbinsights.com/research-unicorn-companies>.
- 205 Demand-side challenges relate to uptake of digital solutions from start-ups aimed at consumers (B2C), businesses (B2B), and government (B2G). These have been discussed at length in previous sections on digital infrastructure and digital financial services, and were characterized for each type of user, that is, consumers ("digital skills"); businesses ("digital businesses-part A"); and government ("e-Government").
- 206 IADB (Inter-American Development Bank, Education Technology in Latin America and the Caribbean (Washington, DC: IADB, 2021), <https://publications.iadb.org/publications/english/document/Education-Technology-in-Latin-America-and-the-Caribbean.pdf>.
- 207 PECAP (Asociación Peruana de Capital Semilla y Emprendedor), "1er censa de Startups Peruanas" (PECAP, Lima, 2022), <https://en.pecap.pe/miembros>.
- 208 See GEM 2018: <http://gem-consortium.ns-client.xyz/economy-profiles/peru/policy> and <https://www.gemconsortium.org/economy-profiles/peru-2>.
- 209 StartupBlink, "Global Startup Ecosystem."
- 210 World Economic Forum, *The Global Competitiveness Report*, https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf.
- 211 Page Group, IT Talent Study in Latin America.
- 212 IADB, *Education Technology in Latin America and the Caribbean*.
- 213 International Telecommunication Union (ITU) of the United Nations, World Telecommunication/ICT Indicators Database 2022 (26th edition/July 2022), <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>.
- 214 *Laboratoria* is a social enterprise that trains women in coding and user experience (UX) skills and subsequently places them at corporations (that is, not start-ups). It started in Peru and subsequently expanded to Brazil, Colombia, Chile, and Mexico, having received significant backing (for example, from Google, BlackRock).
- 215 PECAP, "1er censa de Startups Peruanas."
- 216 PECAP, "1er censa de Startups Peruanas."
- 217 PECAP, "1er censa de Startups Peruanas."
- 218 Data used were from the Global Competitiveness Index (World Economic Forum), Network Readiness Index, and Global Entrepreneurship Monitor.
- 219 Antonio García Zaballos and Enrique Iglesias Rodríguez, "Cloud Computing: Opportunities and Challenges for Sustainable Economic Development (IADB, Washington, DC, 2018), <https://publications.iadb.org/publications/english/document/Cloud-Computing-Opportunities-and-Challenges-for-Sustainable-Economic-Development-in-Latin-America-and-the-Caribbean.pdf>; Network Readiness Index, 2020: Peru ranks 67th out of 131 countries in the use of digital tools by businesses.
- 220 Supervisory Agency for Private Investment in Telecommunications (Organismo Supervisor de Inversión Privada en Telecomunicaciones; OSIPTEL).
- 221 See MinTIC (Colombia Ministry of Information Technology and Communications), "Iniciativas," https://mintic.gov.co/portal/vivedigital/612/w3-propertyname-509.html#iniciativas_usuarios.

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